



APPENDIX 6-1

BAT SURVEY REPORT

Bat Survey Report

Meenbog Wind Farm, Co.
Donegal





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Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



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Table of Contents

1.	INTRODUCTION	2
1.1	Background	2
1.2	Bat Survey and Assessment Guidance	3
1.3	Irish Bats: Legislation, Policy and Status	4
1.4	Statement of Authority	5
2.	SITE LOCATION	8
3.	METHODS	11
3.1	Consultation	11
3.2	Desk Study	11
3.2.1	Previous Baseline Surveys	11
3.2.2	Bat Records	11
3.2.3	Bat Species' Range	12
3.2.4	Designated Sites	12
3.2.5	Landscape Features	12
3.2.5.1	Ordnance Survey Mapping	12
3.2.5.2	Underground Sites	12
3.2.5.3	National Biodiversity Data Centre Bat Landscape Mapping	12
3.2.5.4	Additional Projects in the Wider Landscape	13
3.3	Field Surveys	14
3.3.1	Multidisciplinary Surveys	14
3.3.2	Bat Habitat Suitability Appraisal	14
3.3.3	Roost Surveys	14
3.3.4	Manual Transects	16
3.3.5	Ground-level Static Surveys	16
3.4	Bat Call Analysis	20
3.5	Assessment of Bat Activity Levels	22
3.6	Assessment of Collision Risk	23
3.6.1	Population Risk	23
3.6.2	Site Risk	24
3.6.3	Overall Risk Assessment	24
3.7	Limitations	25
4.	RESULTS	26
4.1	Consultation	26
4.2	Desk Study	26
4.2.1	Previous Baseline Surveys	26
4.2.2	Bat Records	26
4.2.3	Bat Species Range	28
4.2.4	Designated Sites	28
4.2.5	Landscape Features	28
4.2.6	Additional Projects in the Wider Landscape	28
4.3	Field Surveys	30
4.3.1	Bat Habitat Suitability Appraisal	30
4.3.2	Roost Surveys	32
4.3.2.1	Daytime Roost Inspections	32
4.3.3	Manual Transects (2024)	35
4.3.4	Ground-level Static Surveys (2024)	40
4.4	Assessment of Bat Activity Levels	45
4.4.1	Adapted Site-specific Ranges	45
4.4.2	Importance of Bat Population Recorded at the Wind Farm Site	47
5.	ASSESSMENT OF SITE RISK	48
5.1	Collision Mortality	48
5.2	Loss of, or damage to Commuting and Foraging Habitat	49

5.3	Loss of, or Damage to Roosts.....	49
5.4	Displacement of Individuals or Populations.....	49
6.	CONCLUSION	50
7.	REFERENCES	51

TABLE OF TABLES

<i>Table 1-1 Irish bat species conservation status, pressures and threats (NPWS, 2025). 'Influence' of pressures and threats are ranked from Low to High in the 2025 Article 17 report</i>	<i>4</i>
<i>Table 1-2 Project team roles, qualifications, training and experience.....</i>	<i>6</i>
<i>Table 3-1 Multidisciplinary survey dates.....</i>	<i>14</i>
<i>Table 3-2 Buildings and structures inspected within the Wind Farm Site</i>	<i>15</i>
<i>Table 3-3 Manual transect survey effort (2024)</i>	<i>16</i>
<i>Table 3-4 Ground-level static detector locations (2024).....</i>	<i>17</i>
<i>Table 3-5 Ground-level static survey effort (2024).....</i>	<i>18</i>
<i>Table 3-6 Site-specific activity level categories based on Maximum Bat Passes per Hour (bpph)</i>	<i>22</i>
<i>Table 3-7 Site-specific ranked bat activity intensity classes for risk assessment use</i>	<i>23</i>
<i>Table 3-8 Population vulnerability of Irish bat species (adapted from NatureScot (2021)).....</i>	<i>24</i>
<i>Table 3-9 Site-risk level assessment matrix (Table 3a, NatureScot (2021)).....</i>	<i>24</i>
<i>Table 3-10 Overall risk assessment matrix (Table 3b, NatureScot (2021)).....</i>	<i>24</i>
<i>Table 4-1 National Bat Database of Ireland records within 10 km of the Wind Farm Site</i>	<i>27</i>
<i>Table 4-2 National Biodiversity Data Centre bat records within 10 km of the Wind Farm Site</i>	<i>27</i>
<i>Table 4-3 Wind Farm developments within 5 km and 10 km of the Wind Farm Site.....</i>	<i>29</i>
<i>Table 4-4 Seasonal bat activity expressed as bat passes per hour (bpph) per species, with total survey hours for each survey period</i>	<i>41</i>
<i>Table 4-5 Median and maximum nightly bat activity (bpph) per species, season and detector location (2024) – assessment categories None, Low, Moderate, High.....</i>	<i>46</i>
<i>Table 5-1 Site-risk level determination for the Prospective Development (adapted from NatureScot, 2021)</i>	<i>48</i>

TABLE OF PLATES

<i>Plate 3-1 Spectrogram of echolocation pulses of (A) Soprano pipistrelle (Peak Frequency 55kHz), (B) Common pipistrelle (Peak Frequency 45kHz) and (C) Nathusius' pipistrelle (Peak Frequency 39kHz).....</i>	<i>20</i>
<i>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.</i>	<i>21</i>
<i>Plate 4-1 Area of spoil and bare ground assigned Negligible suitability for commuting and foraging bats.....</i>	<i>30</i>
<i>Plate 4-2 Area of wet grassland assigned Low suitability for commuting and foraging bats.....</i>	<i>30</i>
<i>Plate 4-3 Dystrophic Lake assigned Moderate suitability for foraging bats</i>	<i>31</i>
<i>Plate 4-4 Conifer forestry edges and corridors assigned Moderate suitability for commuting and foraging bats ..</i>	<i>31</i>
<i>Plate 4-5 Conifer plantation (WD4) within the BMEP Site showing forestry edges assessed as Low to Moderate suitability for commuting and foraging bats</i>	<i>32</i>
<i>Plate 4-6 Conifer plantation (WD4) within the BMEP Site on peat substrate assessed as Low suitability for foraging and commuting bats and no roosting potential</i>	<i>32</i>
<i>Plate 4-7 Small concrete shed with no gaps, cavities or other features suitable for bat access or roosting and assessed as Negligible roosting potential.....</i>	<i>33</i>

<i>Plate 4-8 Substation Building 1 showing solid construction and sealed exterior.....</i>	<i>33</i>
<i>Plate 4-9 Substation Building 2 illustrating lack of bat access points.</i>	<i>33</i>
<i>Plate 4-10 Bridge within the Wind Farm Site approximately 1.3 km west of turbine T10, showing modern concrete construction.</i>	<i>34</i>
<i>Plate 4-11 Underside view of bridge showing absence of features suitable for bat roosting.</i>	<i>34</i>
<i>Plate 4-12 Prefabricated buildings, showing sealed construction and absence of bat roosting features.</i>	<i>34</i>
<i>Plate 4-13 Metal shipping container illustrating lack of roosting features.</i>	<i>34</i>
<i>Plate 4-14 Species composition recorded during manual activity surveys (2024).....</i>	<i>35</i>
<i>Plate 4-15 Seasonal relative bat activity recorded during manual activity surveys (2024).....</i>	<i>36</i>
<i>Plate 4-16 Static detector surveys 2024: Species composition across all deployments (total bat passes)</i>	<i>40</i>
<i>Plate 4-17 Static detector surveys 2024: Seasonal bat activity across all deployments, expressed as bat passes per hour (bp/h)</i>	<i>41</i>
<i>Plate 4-18 Static detector surveys 2024: Median bat pass rate (bp/h) including absences, per detector location and survey period</i>	<i>43</i>
<i>Plate 4-19 Static detector surveys 2024: Median nightly bat pass rate (bp/h)</i>	<i>44</i>

TABLE OF FIGURES

<i>Figure 2-1 Site location</i>	<i>10</i>
<i>Figure 3-1 Location of static detector deployments, transect routes and inspected structures within the Wind Farm Site (2024)</i>	<i>19</i>
<i>Figure 4-1 Spring manual transect results (2024)</i>	<i>37</i>
<i>Figure 4-2 Summer manual transect results (2024).....</i>	<i>38</i>
<i>Figure 4-3 Autumn manual transect results (2024)</i>	<i>39</i>

APPENDICES

Appendix 1 – Bat Habitat Suitability Appraisal

Appendix 2 – Site Risk Assessment

1. INTRODUCTION

MKO was commissioned to undertake bat surveys to inform the Environmental Impact Assessment Report (EIAR) process for Meenbog Wind Farm, County Donegal. The assessment has been prepared in support of an application for Substitute Consent under Section 177E of the Planning and Development Act 2000 (as amended), in respect of the Existing Development and the Prospective Development.

Meenbog Wind Farm was originally granted planning permission by An Bord Pleanála (now An Coimisiún Pleanála) under Planning Ref. ABP-300460-17, as amended by ABP-303729-19. The Substitute Consent application relates to the Subject Development, comprising both the works completed to date (the Existing Development) and the works required to complete, operate and ultimately decommission the wind farm (the Prospective Development), as described in Chapter 1 of both the Remedial Environmental Impact Assessment Report (rEIAR) and the Environmental Impact Assessment Report (EIAR).

This report presents the findings of bat surveys undertaken during 2024 across the Site, comprising the Wind Farm Site, Grid Connection Site and BMEP Site. The report describes the survey design, methodology and results used to inform the EIAR process. Terminology used throughout this report is consistent with the definitions provided in Chapter 1 of both the rEIAR and EIAR.

1.1 Background

Wind energy forms a key component of Ireland's renewable energy strategy, providing a low-carbon alternative to fossil fuel-based electricity generation. However, wind farm developments have the potential to result in ecological impacts, particularly for bats, through both direct effects, such as collision-related mortality, and indirect effects, including habitat loss, disturbance and changes to landscape connectivity.

International studies have documented bat fatalities at operational wind farms, raising concerns regarding potential cumulative effects on bat populations (Arnett *et al.*, 2016). While no large-scale, systematic bat mortality studies have been undertaken in Ireland to date, evidence from the United Kingdom indicates that fatality rates may range from approximately 0–5.25 bats per turbine per month (Mathews *et al.*, 2016). Although these figures are not directly transferable to the Irish context, the broadly comparable bat assemblages and ecological conditions in Ireland and Great Britain mean that such data provide a useful reference point for impact assessment.

The principal mechanisms of bat mortality at wind farms are understood to include collision with rotating turbine blades (Horn *et al.*, 2008; Cryan *et al.*, 2014) and barotrauma, whereby internal injuries occur because of rapid air pressure changes in the vicinity of operating turbines (Baerwald *et al.*, 2008). In addition, bats may be attracted to wind farm infrastructure due to a combination of behavioural and environmental factors, including associations with linear landscape features, mating and social behaviour, and favourable weather conditions.

In this context, robust bat surveys are required to establish baseline bat activity, identify important roosting, commuting and foraging resources, and to inform the assessment of potential effects associated with wind farm construction, operation and decommissioning. For the Meenbog Wind Farm, bat surveys have been undertaken to support the rEIAR for the Existing Development and the EIAR for Prospective Development.

This report presents the findings of bat surveys undertaken within the Site and provides the necessary information to inform the assessment of the effects of the Subject Development on bats.

Survey design and impact assessment were informed by relevant legislation, published scientific literature and best-practice guidance, and take account of the spatial, temporal and behavioural characteristics of bat ecology relevant to wind farm developments.

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 Subject Development. 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.

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.

1.3 Irish Bats: Legislation, Policy and Status

Ireland supports nine resident bat species, representing more than half of the country's native terrestrial mammal fauna (Montgomery *et al.*, 2014). All bat species occurring in Ireland are afforded strict protection under European and national legislation.

Under the EU Habitats Directive (92/43/EEC), all Irish bat species are listed on Annex IV, requiring strict protection of individual bats, their breeding sites and resting places. The lesser horseshoe bat (*Rhinolophus hipposideros*) is additionally listed on Annex II of the Directive, requiring the designation of Special Areas of Conservation for the species. In accordance with the Directive, Ireland is required to maintain bat species at favourable conservation status.

The Habitats Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011, as amended). Irish bats are also protected under the Wildlife Acts 1976–2018, which make it an offence to intentionally kill, injure or disturb a bat, or to damage or disturb a bat roost. Works affecting bats or their roosts may only be undertaken with the agreement of the National Parks and Wildlife Service (NPWS).

The NPWS monitors the conservation status of protected habitats and species and reports to the European Commission every six years through the Article 17 reporting process. The most recent Article 17 report for the Republic of Ireland was submitted in 2025. This reporting assesses conservation status and identifies key pressures and threats affecting each species.

Table 1-1 summarises the current conservation status of Irish bat species and the principal pressures and threats identified in the 2025 Article 17 report. These data provide an important context for assessing the sensitivity of bat populations to wind energy developments and for evaluating the significance of potential effects.

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

Bat Species	Conservation Status	Principal Pressures and Threats
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Favourable	PX04 No pressures or threats
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Favourable	PX04 No pressures or threats
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Unknown	PD01 Wind, wave and tidal power (including infrastructure)
Leisler's bat <i>Nyctalus leisleri</i>	Favourable	PD01 Wind, wave and tidal power (including infrastructure) -Low PF02 Construction or modification (e.g. of housing and settlements) in existing built-up areas - Low

Bat Species	Conservation Status	Principal Pressures and Threats
Daubenton's bat <i>Myotis daubentoni</i>	Favourable	PA22 Drainage for use as agricultural land - <i>Medium</i> PF12 Residential, commercial and industrial activities and structures generating noise, light, heat or other forms of pollution - <i>Medium</i>
Natterer's bat <i>Myotis nattereri</i>	Favourable	PA04 Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) - <i>Low</i> PB09 Clear-cutting, removal of all trees - <i>Low</i> PE01 Roads, paths, railroads and related infrastructure - <i>Low</i> PF01 Conversion from other land uses to built-up areas - <i>Low</i> PF02 Construction or modification (e.g. of housing and settlements) in existing built-up areas - <i>Low</i>
Whiskered bat <i>Myotis mystacinus</i>	Favourable	PA04 Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) - <i>Low</i> PB09 Clear-cutting, removal of all trees - <i>Low</i> PE01 Roads, paths, railroads and related infrastructure - <i>Low</i> PF01 Conversion from other land uses to built-up areas - <i>Low</i> PF02 Construction or modification (e.g. of housing and settlements) in existing built-up areas - <i>Low</i>
Brown long-eared bat <i>Plecotus auritus</i>	Favourable	PX04 No pressures or threats
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Inadequate	PA04 Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) - <i>Medium</i> PA15 Use of other pest control methods in agriculture (excluding tillage) - <i>Medium</i> PB09 Clear-cutting, removal of all trees - <i>Medium</i> PE01 Roads, paths, railroads and related infrastructure - <i>Medium</i> PF01 Conversion from other land uses to built-up areas - <i>Medium</i> PF02 Construction or modification (e.g. of housing and settlements) in existing built-up areas - <i>Medium</i> PF13 Drainage, land reclamation and conversion of wetlands, marshes, bogs, etc. for built-up areas - <i>Low</i> PH04 Vandalism or arson (incl. human introduced wildfire) - <i>Low</i> PJ01 Temperature changes and extremes due to climate change - <i>Low</i> PM07 Natural processes without direct or indirect influence from human activities or climate change - <i>Low</i>

1.4

Statement of Authority

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

Survey scoping was prepared by Aoife Joyce and Nathan Finn. The daytime walkover survey and inspections were carried out by Nathan Finn. Manual activity surveys were carried out by Nathan Finn, Charlie Meehan and Megan Doyle. Manual identification of bat call data was carried out by Frederick Mosley, Charlie Meehan and Nathan Finn. This report was prepared by Clare Mifsud with support from Kate Leahy and reviewed and approved by Aoife Joyce. The roles, qualifications and

training of all personnel involved in the surveys and assessment are presented in Table 1-2. All staff were appropriately qualified and experienced to undertake the surveys and assessments assigned to them.

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

Staff	Role	Qualifications, Training and Experience
Aoife Joyce (BSc, MSc, MCIEEM)	Project Director - Bat Ecologist	BSc (Hons) Environmental Science, University of Galway, Ireland MSc (Hons) Agribioscience, University of Galway, Ireland Full member of Chartered Institute of Ecology and Environmental Management Ecological Impact Assessments, Appropriate Assessment Screening Reports, Natura Impact Statements, Advanced Bat Survey Techniques (BCI), Bat Impacts and Mitigation (CIEEM), Bat Tree Roost Identification and Endoscope Training (BCI), Bats in Heritage Structures (BCI), Bats and Lighting (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics) Extensive experience in leading, managing and reviewing bat assessments for wind farm developments, including survey design, impact assessment, mitigation strategy development and technical review of EIAR documentation in line with current guidance.
Clare Mifsud (PhD)	Project Manager - Bat Ecologist	BSc (Hons) Biology and Chemistry (Hons), University of Malta MSc Bat Ecology and Conservation, University of Malta PhD Bat Ecology, Genetics and Conservation, University of Malta Bat Habitat Appraisal, Bat acoustic surveys (manual transects and statics deployment), Bat echolocation analysis and species identification (Kaleidoscope, Wildlife Acoustics), Roost survey techniques and winter bat hibernation census surveys (Wroclaw University, Poland), Preliminary Roost Assessments (PRA) - buildings and trees, Thermal Imaging for bat surveys, Bat capture, tissue sampling and handling techniques (University of Leeds, UK) Extensive experience in bat survey design, data analysis and impact assessment for wind farm developments, including baseline surveys, collision risk assessment and preparation of EIAR bat reports.
Nathan Finn (BSc, MSc)	Bat Ecologist	BSc (Hons) Science, National University of Ireland, Galway MSc (Hons) Environmental Science, University College Dublin Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Internal), Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal) Experience in undertaking bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and acoustic data analysis.
Charlie Meehan (BA, MSc)	Bat Ecologist	BA History and Classical Studies, National University of Ireland, Galway MSc Sustainable Environments, National University of Ireland, Galway 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)

		Experience in undertaking bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and acoustic data analysis.
Frederick Mosley (BA, MSc)	Bat Ecologist	BA (Hons) Biological and Biomedical Science Mod. Zoology, Trinity College, Dublin MSc Marine Biology, University College Cork 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) Experience in undertaking bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and acoustic data analysis.
Kate Leahy (BSc)	Bat Ecologist	BSc (Hons) Zoology, National University of Ireland, Galway 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) Experience supporting bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and acoustic data analysis, and contribution to technical reporting.
Megan Doyle (BSc)	Bat Ecologist	BSc (Hons) Wildlife Biology, Munster Technological University, Tralee Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal) Experience in undertaking bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and dusk emergence surveys.

2.

SITE LOCATION

The Site, which refers to the three distinct elements – the Wind Farm Site, the Grid Connection Site, and the BMEP Site, measures approximately 1,018 hectares (ha) within the townlands of Meenbog, Croaghonagh, Ardinawark, Keadew Upper, Keadew Lower, Cullionboy, Cashelnavean, Tawnawully Mountains, Friarsbush and Tievecloghoge. The location and extent of the Site are shown in Figure 2-1.

Wind Farm Site

The Wind Farm Site, which refers to the area of the Site surrounding the wind turbines and associated infrastructure (including the onsite 110kV substation) from the wind farm site entrance off the N15 National Road (N15), is located in County Donegal, approximately 8 km southwest of the twin towns of Ballybofey and Stranorlar and approximately 12 km northeast of Donegal Town.

The Wind Farm Site measures approximately 892 ha, within the townlands of Meenbog and Croaghonagh. The Wind Farm Site borders County Tyrone in Northern Ireland, specifically the administrative division of Omagh West, Barony of Termonamongan and the townlands of Slievadoo, Meenakeeran, and Sixth Corgary or Second Croagh along the Southeast of the Wind Farm Site boundary. The Wind Farm Site lies within four Electoral Divisions (EDs); Golland, Dooish, Tawnawully and Clogher, in County Donegal. Current land-use at the Wind Farm Site is comprised of the partially constructed Meenbog Wind Farm and areas of commercial forestry and blanket bog. The surrounding land-use predominantly comprises peat bogs, commercial forestry and other seminatural areas with limited residential use along local roads, as well as a quarry adjacent to the Wind Farm Site entrance off the N15 National Road.

The elevation of the Wind Farm Site is between approximately 180 metres above Ordnance Datum (mOD) and 313 mOD, with elevations on the Wind Farm Site generally decreasing and sloping in a north or north-westerly direction. A small section to the south of the Wind Farm Site slopes to the southeast. The Wind Farm Site is generally bordered on all sides by forestry plantations with the southeastern boundary also being defined by the Northern Ireland border. The Wind Farm Site drains directly to the Bunadownen River and the Shruhanganarve stream, which flow to the north, each of which are tributaries of the larger Mourne Beg River that proceeds to flow downstream into the River Derg. The Wind Farm Site also drains into the Glendergan River to the south-southeast, which is also a tributary of the River Derg.

Existing access is from the N15 National Road in the northwest of the Wind Farm Site and the L-6554 Local Road to the north of the Wind Farm Site. The N15 National Road runs south-west to north-east with the Wind Farm Site lying to the east of the road.

Grid Connection Site

The Grid Connection Site has a total area of approximately 9 ha and extends from the Wind Farm Site entrance along the N15 National Road to the L-2595 Local Road, then proceeds to the L-1985 Local Road where it travels east along the road and through agricultural lands parallel to the local road before continuing along the L-19852 Local Road and finally following a private road to reach the Clogher 110kV substation.

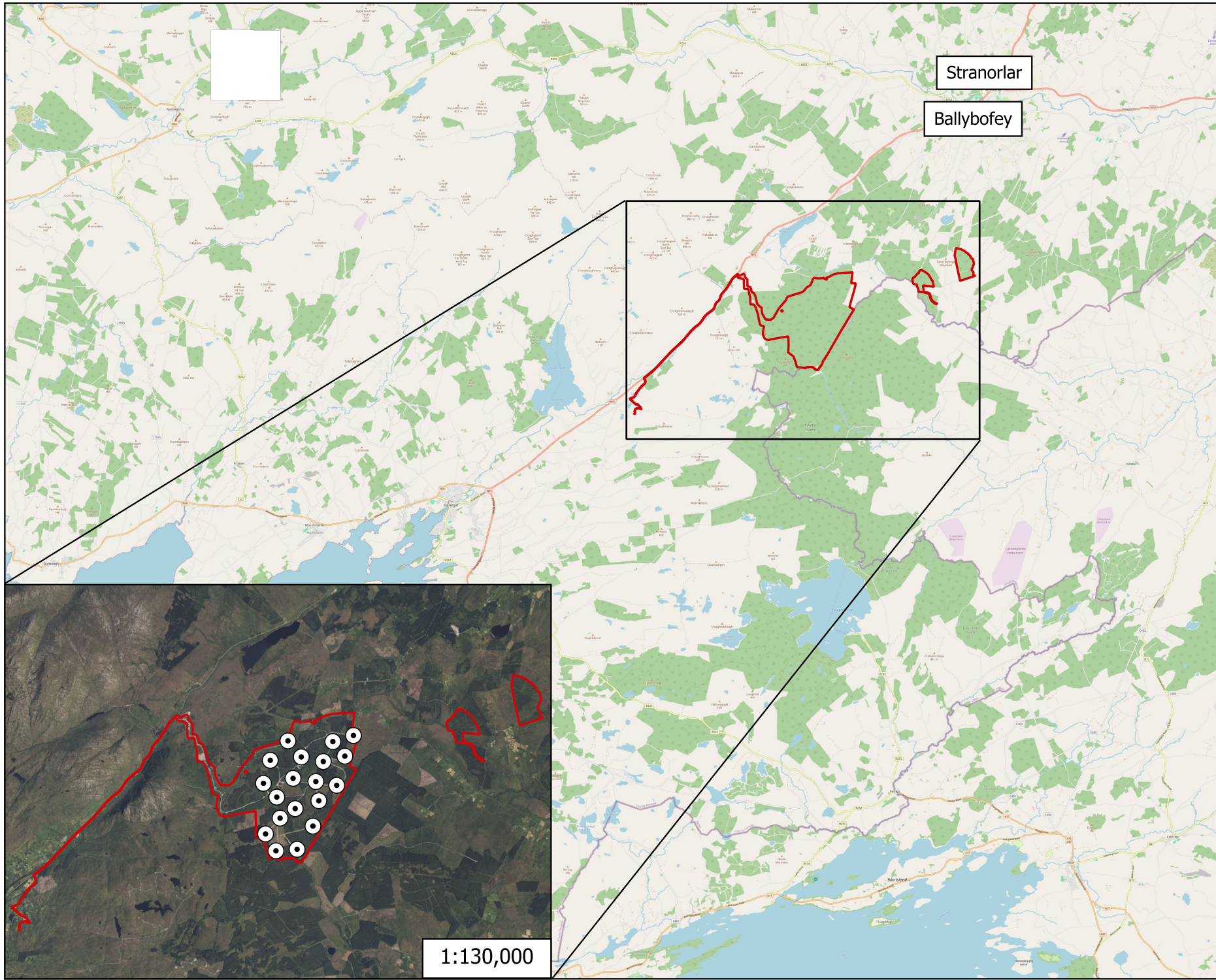
The Clogher 110kV electrical substation is situated approximately 6.5 km southwest of the on-site 110kV electrical substation. The Grid Connection Site traverses the townlands of Ardinawark, Keadew Upper, Keadew Lower, Cullionboy, Cashelnavean, Tawnawully Mountains and Friarsbush.

BMEP Site

The Biodiversity Management and Enhancement Site (BMEP Site) measures approximately 117 ha. The BMEP Site is comprised of two parcels of land both contained entirely within the townland of Tievecloghoge, referred to as Parcel 1 (to the east) and Parcel 2 (to the west), which have a combined area of approximately 117 ha, ~108 ha of which are intended for enhancement. Land use on the BMEP Site within Parcel 1 and Parcel 2 currently comprises coniferous forestry and associated forestry access tracks, which is proposed to be felled and converted to peatland and scrub habitats. Site access to Parcel 1 is via a new access track located along the L-65242 Local Road, whilst site access to Parcel 2 is via an existing access track (to be extended and upgraded) located along the L-2974 Local Road. Parcel 2 is located approximately 2.3 km east of the Wind Farm Site, and Parcel 1 is located approximately 4.2 km east of the Wind Farm Site. There is an elevation difference of 4 m (174 mOD elevation SW to 170 mOD elevation NE) on the BMEP Site.

Parcel 1 will be accessed from existing public roads to the south of the parcel. Parcel 2 will be accessed via an existing forestry track and a proposed new forestry track. The existing forest track terminates after approximately 565 m, and from there it is proposed to extend the existing forestry track by constructing approximately 835 m of new forest road to complete access to this parcel as part of the BMEP. In addition, a turning head will be constructed within Parcel 1 to facilitate the safe turning of forestry vehicles and machinery. The existing forest tracks will be upgraded by laying a new surface dressing on the existing section of roadway where necessary.

Parcel 2 is located approximately 2.3 km east of the Wind Farm Site, and Parcel 1 is located approximately 4.2 km east of the Wind Farm Site.



Map Legend

- Planning Application Boundary
- Turbine Locations



Drawing Title

Site Location

Project Title

Meenbog WF

Drawn By

KL

Checked By

CM

Project No.

240352

Drawing No.

Figure 2-1

Scale

1:200,000

Date

21.05.2026



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735511
email: info@mkofireland.ie
Website: www.mkofireland.ie

3. METHODS

3.1 Consultation

A scoping exercise was undertaken as part of the rEIAR and EIAR for the Subject Development. A scoping letter, providing details of the Subject Development, was prepared by MKO and circulated in September 2025. As part of this exercise, prominent Irish conservation groups were contacted, and Bat Conservation Ireland (BCI) and National Parks and Wildlife Service (NPWS) were specifically invited to comment on the potential of the Subject Development to affect bats.

Details of consultation responses specifically related to bats are provided in Section 4.1 below. Further details of consultation are outlined in Chapter 2 of both the rEIAR and 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 Site in order to assist bat survey planning and assessment. This included the identification of designated sites, species of interest or any other potential risk factors within the Wind Farm 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

As part of previous planning application for the Permitted Development, MKO ecologists undertook bat surveys within the Wind Farm Site and the surrounding area in 2014, 2016 and 2017. A review of baseline survey data collected during this period was undertaken to inform the assessment for the Subject Development.

These previous 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 Hundt (2012) and BCI (2012). Results from the previous baseline surveys are summarised in Section 4.2.

3.2.2 Bat Records

The National Bat Database of Ireland holds records of bat observations received and maintained by Bat Conservation Ireland (BCI). These records include results of national monitoring schemes, roost records as well as ad-hoc observations.

A search of the National Bat Database of Ireland was undertaken to examine bat presence and roost records within a 10 km radius of a central point within the Wind Farm Site (Irish Grid Reference: H 07524 85860) (NatureScot, 2021; BCI, 2026). Available bat records were provided by BCI on 15th August 2025. A subsequent data check with BCI confirmed on 11th June 2026 that no additional bat records had been received for the Wind Farm Site since this extract.

In addition, records held by the National Biodiversity Data Centre were reviewed to identify bat species within the relevant 10 km grid squares of the Wind Farm Site (NatureScot, 2021; BCI, 2026) (last accessed on 10th April 2026).

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, reports are submitted to the European Commission every six years. In December 2025, Ireland submitted the fourth national assessment of conservation status for Annex-listed habitats and species, including all bat species (NPWS, 2025).

The 2025 Article 17 Reports were reviewed to identify species' range and distribution in relation to the Wind Farm Site. This information was used to determine whether any species present are located towards the edge of their known range, which may indicate increased sensitivity to potential impacts (NatureScot, 2021; BCI, 2026).

3.2.4 Designated Sites

The National Parks and Wildlife Service (NPWS) map viewer and website provide information on rare and protected species, sites designated for nature conservation and their conservation objectives.

A search was undertaken to identify designated sites with qualifying interests relating to bats or supporting habitats within a 10 km radius of the Wind Farm Site (NatureScot, 2021; BCI, 2026). This included European sites, i.e. Special Areas of Conservation, (SACs), and nationally designated sites, i.e. National Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs).

3.2.5 Landscape Features

3.2.5.1 Ordnance Survey Mapping

Ordnance Survey Ireland (OSI) mapping (1:5,000 and 1:50,000 scale) and aerial imagery were reviewed to identify habitats and landscape features with potential to support bat activity. The Site and surrounding landscape were examined to identify features of potential suitability for foraging and commuting bats including woodlands and forestry, hedgerows, treelines and watercourses.

In addition, any potential roosting features, such as buildings and bridges, were identified to inform subsequent field survey requirements.

3.2.5.2 Underground Sites

The Geological Survey Ireland (GSI) online mapping tool and University of Bristol Speleological Society (UBSS) Cave Database for the Republic of Ireland were reviewed to identify any natural subterranean features, such as caves, within 10 km of the Site (NatureScot, 2021) (last accessed on 10th April 2026).

In addition, the National Monument Service database was reviewed to identify any man-made underground structures (e.g. souterrains) within or close to the Site that may provide roosting opportunities for bats (last accessed on 10th April 2026).

3.2.5.3 National Biodiversity Data Centre Bat Landscape Mapping

The National Biodiversity Data Centre (NBDC) map viewer provides "Bat Landscape" maps for individual species and for all species combined. These maps are based on modelling undertaken by Lundy *et al.* (2011), which used Maximum Entropy Models to assess the relative importance of landscape and habitat associations for bats in Ireland.

The resulting outputs present a five-point habitat suitability index ranging from *High* suitability (shown in red) to *Low* suitability (shown in green). It is noted that areas classified as *Lower* suitability may still support localised bat activity.

The Site was reviewed in the context of these habitat suitability indices to provide an indication of potential suitability for bat species. These outputs are based on predictive modelling rather than confirmed records; however, they provide useful contextual information on potential bat-habitat associations within the Wind Farm Site and the surrounding landscape.

3.2.5.4 **Additional Projects in the Wider Landscape**

Information on existing, permitted and proposed developments within the vicinity of the Site is presented in Chapter 2 of both the rEIAR and the EIAR.

3.3 Field Surveys

3.3.1 Multidisciplinary Surveys

The Site has been subject to extensive ecological field surveys carried out as part of the 2017 EIAR and during the construction of the Permitted Development such as pre-commencement mammal surveys. These surveys informed the pre-development baseline and are provided in the 2017 EIAR and formed part of the construction supervision procedures followed.

Multidisciplinary walkover surveys were also undertaken in 2021, 2022, 2023, 2024, 2025 and 2026 on the dates listed in Table 3-1. The Site was systematically and thoroughly walked in a ground-truthing exercise with the habitats assessed and classified. The habitats (including any trees/structures/culverts/bridges) were assessed for bat commuting, foraging and roosting suitability. This included a bat habitat suitability appraisal and identification of potential roost features (PRFs), which informed subsequent detailed bat surveys.

Table 3-1 Multidisciplinary survey dates

Multidisciplinary Survey
03.06.2021
20.01.2022
23.08.2023
24.08.2023
18.12.2023
19.12.2023
13.05.2024
23.07.2024
28.08.2024
29.08.2024
11.09.2025
04.03.2026

3.3.2 Bat Habitat Suitability Appraisal

Daytime bat walkover surveys of the Site were carried out in 2024, with additional site visits undertaken in 2025 and 2026. During these surveys, habitats within the Site, including the Wind Farm Site, Grid Connection Site and BMEP 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 defined as *High*, *Moderate*, *Low*, *Negligible* or *None* and are described fully in **Appendix 1**.

The bat habitat suitability appraisal reflects current conditions following the completion of works undertaken to date as part of the Existing Development and provides an accurate baseline of current conditions on the Site.

3.3.3 Roost Surveys

Roost surveys were undertaken to identify the presence of Potential Roost Features (PRFs) for bats and to inform the assessment of effects arising from the Existing Development and potential effects of the Prospective Development. The surveys established baseline roosting conditions within the Site, allowing consideration of whether works completed to date may have affected roosting features, and identifying any features that could be affected by future construction, operation or decommissioning activities.

In accordance with NatureScot (2021), targeted roost searches were undertaken within 200 m plus the rotor radius (66.5 m) of turbine locations associated with the Prospective Development.

In addition, all buildings and structures within the Site, including the Wind Farm Site, Grid Connection Site and BMEP Site, were identified and inspected for their potential to support roosting bats, ensuring that all features potentially affected by the Existing Development and those that could be affected by the Prospective Development were included in the assessment.

The Wind Farm Site was subject to multiple visits during 2024 with additional site visits undertaken during construction supervision and in 2025 and 2026 at the Grid Connection Site and BMEP Site. During these site visits twelve structures within the Wind Farm Site were identified and assessed for bat roost potential using the criteria set out in **Appendix 1**. Structures inspected included both permanent and temporary site infrastructure. Temporary or mobile structures (e.g. prefabricated units, containers) were included as a precautionary measure; however, these are considered to be of *Negligible* suitability for bat roosting due to their construction, condition and frequent disturbance.

No buildings or structures with significant bat roost potential were identified within the Grid Connection Site or the BMEP Site.

Roost assessments comprised detailed inspection of external features and, where accessible, internal areas, with particular 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 3-1, with further details provided in Table 3-2.

Table 3-2 Buildings and structures inspected within the Wind Farm Site

Structure No.	Structure Description	Structure Type	Irish Grid Reference	Nearest Turbine	Distance to nearest turbine (m)
1	Quarry Buildings	Permanent	H 04821 87719	T14	2,468
2	Small Shed	Permanent	H 06342 86259	T10	582
3	Substation Building 1	Permanent	H 05218 86578	T10	1,705
4	Substation Building 2	Permanent	H 05143 86610	T10	1,789
5	Security Building	Permanent	H 05256 86594	T10	1,686
6	Bridge	Permanent	H 05683 85252	T10	1,312
7	Prefab 1	Temporary	H 06815 85575	T08	340
8	Prefab 2	Temporary	H 06815 85575	T08	338
9	Prefab 3	Temporary	H 06815 85575	T08	331
10	Temporary Construction compound and first aid point	Temporary	H 06815 85575	T08	204
11	Wooden Cable Drum Rollers	Temporary	H 05237 86575	T10	1,692

In accordance with Collins (2023), detailed tree roost inspections are typically undertaken where trees exhibit features with potential to support roosting bats, particularly where such trees are subject to felling or disturbance.

The scope of tree roost surveys varied across the Site in accordance with the presence of trees and the nature of works associated with the Existing and Prospective Development. The Grid Connection Site is largely confined to an existing road corridor, and no removal of trees with bat roosting potential was required as part of the Existing Development; therefore, no tree roost inspections were required within this area.

Within the Wind Farm Site and the BMEP Site, vegetation is dominated by commercial conifer plantation, with only small numbers of scattered, scrubby broadleaved trees (including willow *Salix* spp. and birch *Betula* spp.) occurring locally along forestry edges. These trees occur within areas subject to both completed and proposed works within the Wind Farm Site, and within areas proposed for habitat enhancement within the BMEP Site.

These broadleaved trees were subject to ground-level inspection and did not exhibit characteristics associated with potential bat roost features. No PRFs were identified within these areas.

Commercial conifer plantation was not subject to detailed individual tree inspection, as such trees do not typically provide suitable roosting features due to their uniform age structure, species composition and intensive management regime, which limit the development of cavities, cracks or loose bark. However, all areas of plantation within approx. 100m of the Subject Development footprint were subject to general visual inspection during walkover surveys to confirm the absence of features with roosting potential.

3.3.4 Manual Transects

Manual activity surveys comprised of walked or driven transects after dusk. A series of representative transect routes were selected throughout the Wind Farm Site. The aim of the transect surveys was to identify bat species using the Wind Farm Site and to gather information on bat activity, behaviour and the use of landscape features. Transect routes were selected with reference to turbine locations associated with the Prospective Development, desk study information and walkover survey findings, as well as health and safety considerations and site access constraints. As such, transect routes generally followed existing roads and tracks. Transect routes undertaken in 2024 are presented in Figure 3-1.

Transects were walked or driven by two surveyors, recording bats in real time. Surveys commenced at sunset or shortly after sunset and continued for up to three hours thereafter. Surveyors were equipped with active full spectrum bat detectors, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland), and all bat activity was recorded for subsequent analysis to confirm species identifications. Driven transects were undertaken in accordance with the methodology described by Roche *et al.* (2012). Transects surveys were undertaken in spring, summer and autumn 2024. Table 3-3 summarises survey effort in relation to manual transects.

Table 3-3 Manual transect survey effort (2024)

Date	Surveyors	Sunset	Start – End Time	Weather Conditions	Transect Length (km)
13 th May 2024	NF & CM	21:29	21:14 – 00:30	18-13°C, dry, calm	5.6
23 rd July 2024	NF & CM	21:50	21:50 – 00:50	16°C, dry, calm	5.9
12 th September 2024	NF & MD	19:55	19:55 – 22:55	10-3°C, dry, calm	23.8
Total Survey Effort					35.3

The greater transect length recorded during the autumn survey period reflects the use of a driven transect, whereas spring and summer surveys comprised walked transects only. Driven transects allow a larger proportion of the Wind Farm Site to be surveyed within the same survey window and were undertaken in accordance with published guidance (Roche *et al.*, 2012). To ensure comparability between seasons and survey methods, transect results were standardised and expressed as bat passes per kilometre surveyed, thereby accounting for differences in transect length and survey effort.

3.3.5 Ground-level Static Surveys

Ground-level static bat activity surveys were undertaken to characterise bat activity at proposed turbine locations within the Wind Farm Site and establish the current baseline activity levels and species composition.

Survey design and effort followed NatureScot (2021). Where developments comprise more than ten turbines, NatureScot (2021) recommends the deployment of one detector per turbine for the first ten turbines, with one additional detector for every three turbines thereafter. As the Prospective

Development comprises 19 no. proposed turbines, a total of 13 static bat detectors were deployed to ensure compliance with NatureScot (2021).

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). Static detectors were positioned at proposed turbine locations and these are described in Table 3-4. Detector locations were selected to provide representative coverage of turbine locations across the Wind Farm Site. Figure 3-1 presents static detector locations in relation to the proposed turbine locations.

Table 3-4 Ground-level static detector locations (2024)

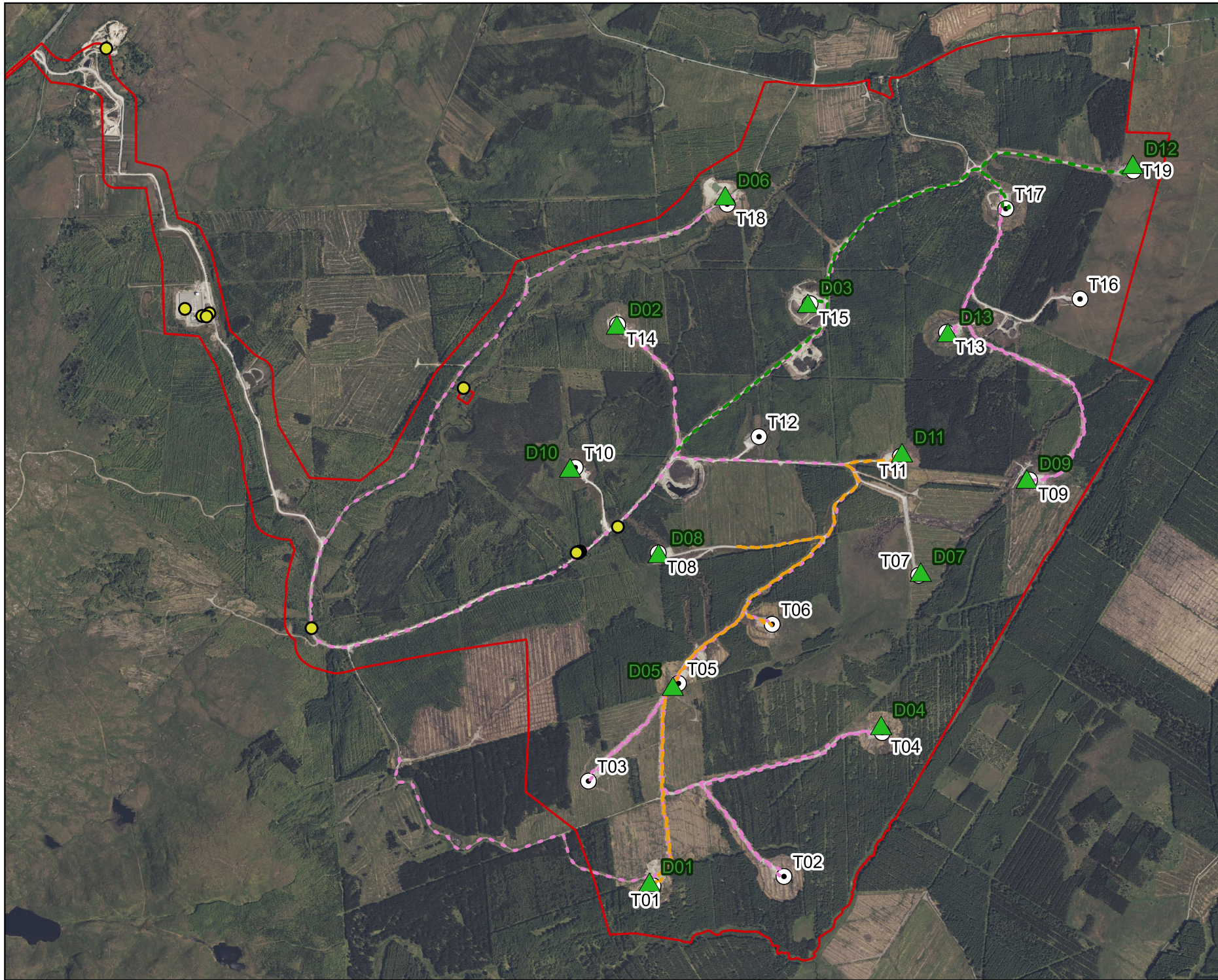
ID	Location	Habitat Context	Linear Feature within 50 m	Nearest Turbine
D01	H 07118 84157	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	None	T01
D02	H 06979 86527	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T14
D03	H 07790 86619	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Small stream; Conifer plantation edge	T15
D04	H 08101 84826	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T04
D05	H 07217 84992	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T05
D06	H 07439 87076	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T18
D07	H 08269 85476	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T07
D08	H 07156 85556	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T08
D09	H 08720 85873	Upland blanket bog (PB2)/Wet heath (HH3), Buildings and artificial surfaces (BL3)	Small stream; Conifer plantation edge	T09
D10	H 06780 85920	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T10
D11	H 08190 85984	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T11
D12	H 09170 87209	Upland blanket bog (PB2)/Wet heath (HH3), Buildings and artificial surfaces (BL3)	None	T19
D13	H 08385 86495	Conifer plantation (WD4), Buildings and artificial surfaces (BL3)	Conifer plantation edge	T13

Bat activity was recorded using Song Meter SM4BAT full-spectrum bat detectors (Wildlife Acoustics, Maynard, MA, USA). Detectors were programmed to record from 30 minutes before sunset until 30 minutes after sunrise, with sunset and sunrise times automatically adjusted using the Solar Calculation Method based on GPS coordinates. Detector settings followed recommended configurations for bat surveys, with minor adjustments to gain and band-pass filters applied where necessary to reduce background noise.

On-site weather conditions were monitored concurrently with static detector deployments using a Vantage Pro 2 weather station (Davis Instruments, CA, USA). Night-time weather data were reviewed to ensure that surveys captured a sufficient number of nights meeting suitable conditions for bat activity, namely dusk temperatures above 8°C, wind speeds below 5 m/s and no or only very light rainfall, in line with NatureScot (2021). Table 3-5 summarises survey effort achieved in 2024 for each of the detector locations.

Table 3-5 Ground-level static survey effort (2024)

Season	Survey Period	Total Survey Nights per Detector Location	Total Nights with Suitable Weather Conditions
Spring	24 th April – 12 th May 2024	19	14
Summer	25 th June – 22 nd July 2024	29	28
Autumn	22 nd August – 11 th September 2024	21	18
Total Survey Effort		69	60



Map Legend

□ Planning Application Boundary

○ Turbine Locations

▲ Detector Locations

--- Spring Transect
Route 13.05.2024

--- Summer Transect
Route 22.07.2024

--- Autumn Transect
Route 12.09.2024

Inspected Structures

● Negligible



Drawing Title

Survey Effort

Project Title

Meenbog WF

Drawn By

KL

Checked By

CM

Project No.

240352

Drawing No.

Figure 3-1

Scale

1:21,000

Date

21.05.2026



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735511
email: info@mkofireland.ie
Website: www.mkofireland.ie

3.4

Bat Call Analysis

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

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

Myotis species potentially including Daubenton's bat (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*) and Natterer's bat (*Myotis nattereri*) were classified as a single *Myotis* spp. group, due to the recognised difficulty in reliably distinguishing these species based on echolocation parameters alone (Russ, 2012). The echolocation calls of soprano pipistrelle (*Pipistrellus pygmaeus*) and common pipistrelle (*Pipistrellus pipistrellus*) are more readily distinguished based on peak frequency of maximum energy in search-phase calls (approximately 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.

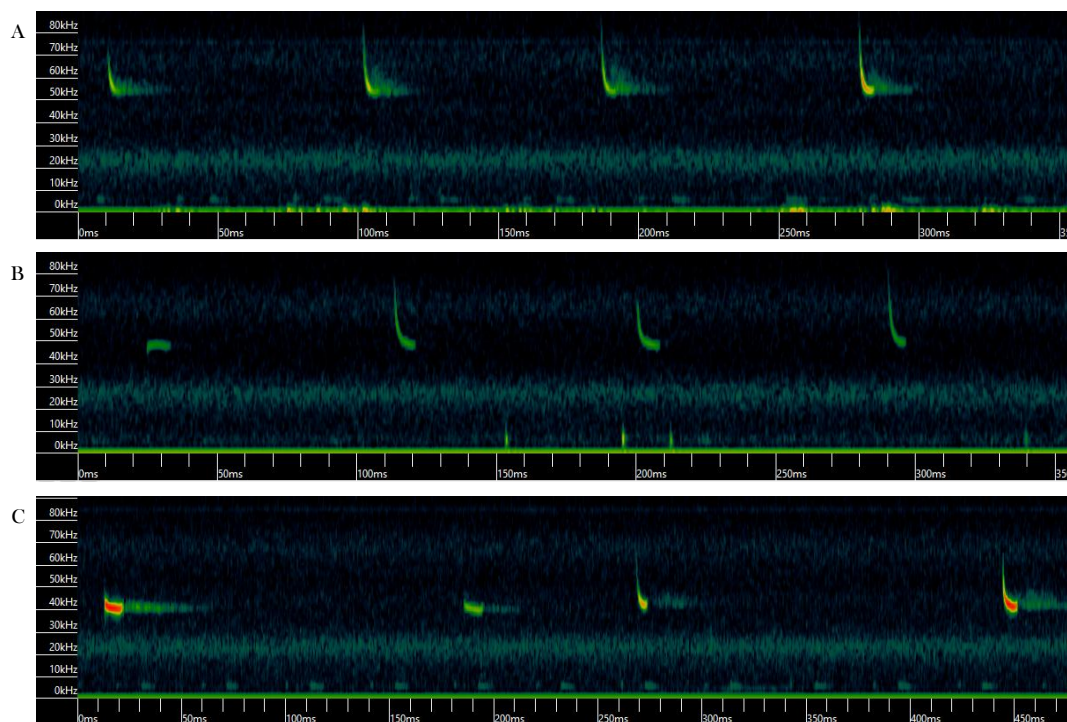


Plate 3-1 Spectrogram of echolocation pulses of (A) Soprano pipistrelle (Peak Frequency 55kHz), (B) Common pipistrelle (Peak Frequency 45kHz) and (C) Nathusius' pipistrelle (Peak Frequency 39kHz).

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

hard to detect species have been captured. Despite manual checking, a level of underrepresentation is still expected for these two species, and this is accounted for in the assessment of activity levels. Plate 3-2 shows typical spectrograms of echolocation pulses for *Myotis* spp., brown long-eared bat, Leisler's bat and a typical noise file, all recorded with the same SM4BAT recording device and illustrated using Wildlife Acoustics Kaleidoscope software.

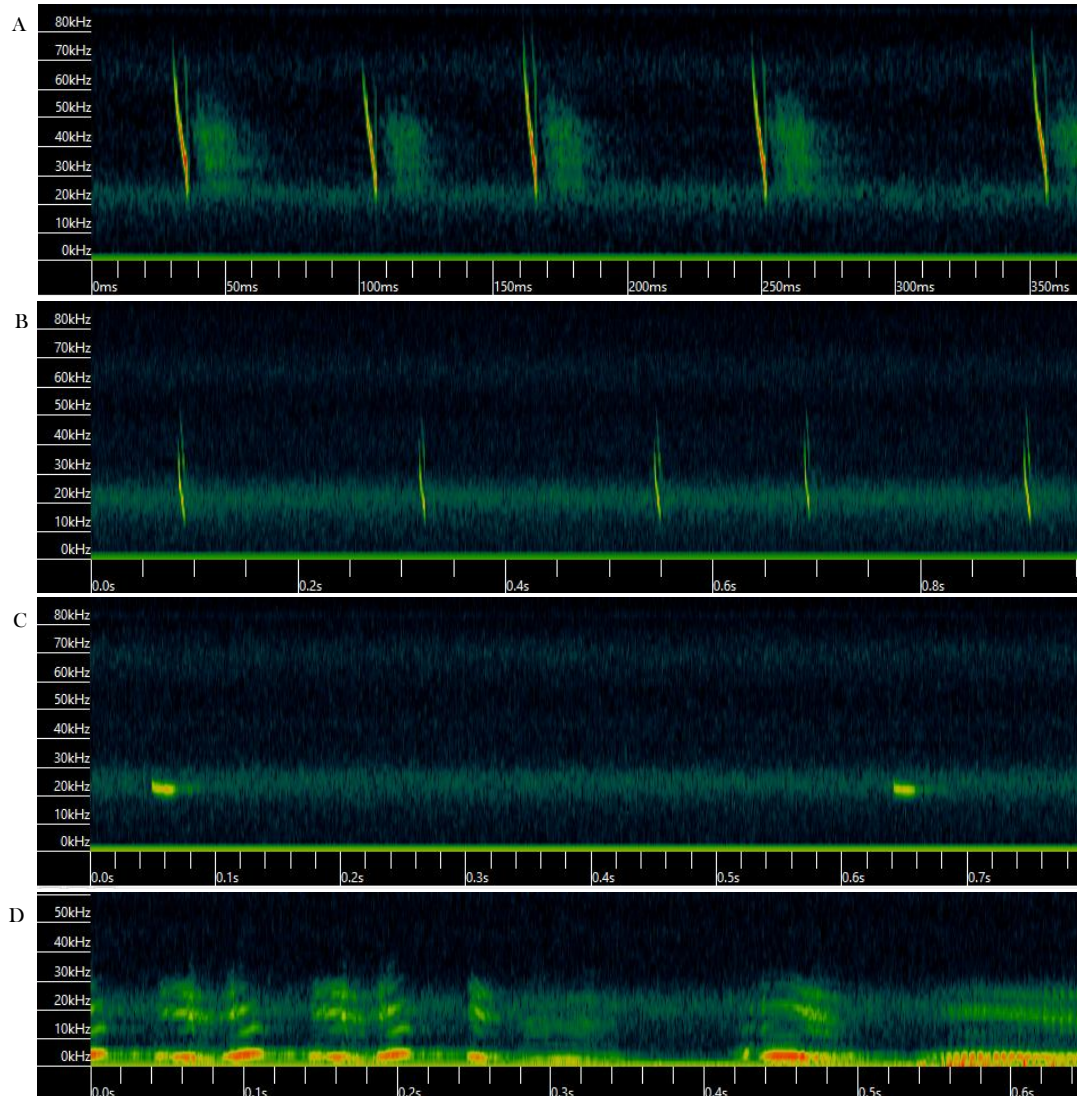


Plate 3-2 Spectrogram of typical echolocation pulses of (A) *Myotis* spp., (B) Brown long-eared bat, (C) Leisler's bat and (D) typical non-bat sounds.

Individual bats of the same species cannot be distinguished reliably using echolocation calls alone. Bat activity was therefore quantified using 'bat passes' as an index of activity (Collins, 2023). A bat pass was defined as a recording of an individual species or species group containing a minimum of two echolocation pulses and of a maximum duration of 15 seconds. All bat passes recorded during this study were classified in accordance with these criteria, allowing consistent comparison across survey locations and survey periods.

In some cases, a single recording file contained more than one bat pass. Where this occurred, the final species identification assigned to the file was that of the rarer or less frequently recorded bat species present. This precautionary approach minimises the risk of under-representing less commonly encountered taxa in multi-bat recordings and avoids bias towards more abundant or highly detectable species. This approach ensures a precautionary and conservative interpretation of bat activity and associated potential effects.

Assessment of Bat Activity Levels

Data Processing and Standardisation

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

Derivation of Site-Specific Activity Thresholds

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

Median and maximum nightly activity (bp/h) at each detector location were categorised as *Low*, *Moderate* or *High* for each recorded season. Figures below 25% of the maximum or mean maximum nightly pass rate were classified as *Low* activity, while values above 75% were classified as *High* activity. Values falling between these two quartiles were defined as *Moderate* activity. To avoid distortion of thresholds, statistical outliers were identified using box-and-whisker plots and excluded prior to final threshold calculation. The resulting site-specific activity thresholds for each species group are presented in Table 3-6.

Table 3-6 Site-specific activity level categories based on Maximum Bat Passes per Hour (bp/h)

Assessment Level	Activity Threshold as Bat Passes per Hour (bp/h) for Bat Species				
	<i>Common and soprano pipistrelle</i>	<i>Nathusius' pipistrelle</i>	<i>Leisler's bat</i>	<i>Myotis</i> spp.	<i>Brown long-eared bat</i>
<i>Low</i>	< 0.50	< 0.10	< 0.60	< 1.40	< 1.10
<i>Medium</i>	0.50 – 1.51	0.10 – 0.30	0.60 – 1.79	1.40 – 4.20	1.10 – 3.30
<i>High</i>	> 1.51	> 0.30	> 1.79	> 4.20	> 3.30

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

A weighted site-specific activity score was also calculated for each detector and season. This method integrates the relative contribution of *Low*, *Moderate* and *High* activity records using a weighted mean approach, where numeric weights of 1 (*Low*), 2 (*Moderate*) and 3 (*High*), were applied to the number of records falling within each activity class. The weighted mean score was then rescaled and converted into a five-tier ranked activity scale, as shown in Table 3-7.

Table 3-7 Site-specific ranked bat activity intensity classes for risk assessment use

Ranked Score	Bat Activity Class
1	<i>Low</i>
2	<i>Low – Moderate</i>
3	<i>Moderate</i>
4	<i>Moderate – High</i>
5	<i>High</i>

This approach ensures that detectors with a higher proportion of *Moderate* and *High* activity records receive proportionately higher ranked scores, rather than relying solely on maximum values. This ranked system provides a five-class site-specific activity framework aligned in terminology with commonly used bat activity classifications but is derived entirely from absolute site-specific bat pass rates (bp/h) values rather than from regional percentile comparison. These ranked scores are applied within the subsequent collision risk and impact assessment to provide a consistent and transparent basis for comparative risk evaluation across detector locations and seasons.

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

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

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.

Table 3-8 presents an assessment of the vulnerability of Irish bat species to collision with wind turbine blades. The assessment is based on species-specific collision risk as defined in NatureScot (2021), combined with consideration of relative abundance within Ireland. Relative abundance was informed by population data presented in the 2025 Article 17 reports (NPWS, 2025). The overall framework for the assessment was informed by published guidance on the valuation of bats in ecological impact assessment (Wray et al., 2010), with species ecology, including feeding and commuting behaviour and habitat preferences, also taken into account.

Table 3-8 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
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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-tabulation result of habitat risk and project size determines the site risk (i.e. *Low*, *Medium* or *High*) (Table 3-9) i.e. Table 3a from NatureScot (2021). Table 5-1 in the results section describes the criteria and site-specific characteristics used to determine an indicative risk level for the Wind Farm Site. All site assessment levels, as per NatureScot (2021) are presented in **Appendix 2**.

Table 3-9 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)
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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 bat activity category, as shown in the overall risk assessment matrix table (Table 3-10) i.e. Table 3b from NatureScot (2021). The assessment was carried out for both median and maximum activity categories in order to provide insight into typical bat activity (i.e. median values) and activity peaks (i.e. maximum values) (**Appendix 3**).

Table 3-10 Overall risk assessment matrix (Table 3b, NatureScot (2021))

Site Risk Level	Bat activity category					
	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)
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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 3-8 above).

3.7 Limitations

A comprehensive programme of bat surveys was undertaken within the Site during 2024 in accordance with current best-practice guidance, including NatureScot (2021) and Collins (2023). No equipment failures, deployment incidents or data loss occurred during the survey programme, and a full suite of data was available to inform the assessment.

As with all ecological assessments, the interpretation of bat activity is subject to inherent limitations associated with acoustic survey methods and the absence of standardised, Ireland-specific methodologies for defining activity levels. However, these limitations are not considered to affect the overall interpretation of bat activity or the conclusions of the assessment.

Overall, the survey data and assessment are considered sufficient to support informed decision-making in relation to the effects arising from the Existing Development and potential effects of the Prospective Development on bats.

4. RESULTS

4.1 Consultation

A consultation response was received from the Department of Housing, Local Government and Heritage, which did not raise any specific comments or recommendations in relation to bats. The response was received on 20th October 2025 and is provided in Appendix 2-2 within Chapter 2 of the EIAR.

No response was received from Bat Conservation Ireland (BCI) at the time of reporting.

Further details of the scoping and consultation process are provided in Chapter 2 of the EIAR.

4.2 Desk Study

4.2.1 Previous Baseline Surveys

The previous baseline surveys described in section 3.2.1 comprised a combination of roost inspections, walked transects and ground-level static detector surveys. In 2017, static detector surveys were also undertaken at height to assess bat activity within the rotor-swept zone.

Across these survey periods, a total of six bat species or species groups were recorded, with common pipistrelle and soprano pipistrelle accounting for the majority of activity.

Species recorded included:

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

Low levels of bat activity were recorded on the Wind Farm Site during transect surveys (max. 0.6 bat passes per km) and no bats were recorded on the static detectors deployed on the Wind Farm Site in 2014, with low levels recorded in 2016 and 2017 (max 0.57 passes per hour).

In addition to activity survey results, two roosts were identified within the wider area during the earlier survey period. One roost was recorded at a bridge (Irish Grid Reference: H 08148 87622), located approximately 750 m north of turbine T17 and outside the Wind Farm Site. A second roost was recorded at an abandoned farmstead (Irish Grid Reference: H 09276 87698), located approximately 490 m northeast of turbine T19, also outside the Wind Farm Site.

4.2.2 Bat Records

Bat Conservation Ireland

The National Bat Database of Ireland was searched for records of bat activity and bat roosts within a 10 km radius of the Wind Farm Site central point (Irish Grid Reference: H 07524 85860). Bat records were provided by Bat Conservation Ireland (BCI) on 15th August 2025 and a subsequent data check confirmed no additional records for the search area on the 11th June 2026.

The search included two roost records, two transect records and eleven ad-hoc bat observations. At least six of Ireland's nine resident bat species have been recorded within 10 km of the Wind Farm Site, namely common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat, Daubenton's bat and whiskered bat. The two roost records are those listed in the previous Section 4.2.1.

The results of the BCI database search are summarised in Table 4-1.

Table 4-1 National Bat Database of Ireland records within 10 km of the Wind Farm Site

Record	Species	Approx. Irish Grid Reference	Date	Location
Roost	<i>Myotis daubentonii</i>	H 08000 87000	N/A	Croaghonagh/Meenbog, Co. Donegal
	<i>Plecotus auritus</i>	H 09000 87000	N/A	Private
Transect	<i>Myotis daubentonii</i>	H 13512 94675	N/A	Drumbo Woods Transect
	<i>Pipistrellus pygmaeus</i> , <i>Pipistrellus pipistrellus</i> , <i>Myotis</i> spp.	H 10100 93000	N/A	H13 (20) 2006-2007
Ad-Hoc	<i>Nyctalus leisleri</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	H 02000 90900	27/05/2011	Consultancy Surveys
	<i>Myotis</i> spp.	H 05700 89400	15/09/2009	BATLAS 2010
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Nyctalus leisleri</i>	H 08999 75983	12/07/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Nyctalus leisleri</i> , <i>Myotis daubentonii</i>	H 10491 76228	12/07/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Nyctalus leisleri</i>	H 12959 81160	28/06/2018	BATLAS 2020
	<i>Nyctalus leisleri</i>	H 01125 83846	28/06/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Nyctalus leisleri</i> , <i>Plecotus auritus</i> , <i>Myotis mystacinus</i>	H 14350 85203	28/06/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Nyctalus leisleri</i>	H 03662 86443	28/06/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Nyctalus leisleri</i> , <i>Myotis daubentonii</i>	H 15256 94609	29/05/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Nyctalus leisleri</i> , <i>Myotis daubentonii</i> , <i>Plecotus auritus</i> , <i>Myotis mystacinus</i>	H 12466 95038	29/05/2018	BATLAS 2020
	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i> , <i>Plecotus auritus</i> , <i>Nyctalus leisleri</i> , <i>Myotis daubentonii</i>	H 13000 94000	10/10/2002	Consultancy Surveys

National Biodiversity Data Centre

The National Biodiversity Data Centre (NBDC) database was searched for bat records within a 10 km radius of the Wind Farm Site central point on the 10th April 2026.

A total of eight of Ireland's nine resident bat species have been recorded within 10 km of the Wind Farm Site. The results of the NBDC database search are summarised in Table 4-2.

Table 4-2 National Biodiversity Data Centre bat records within 10 km of the Wind Farm Site

Hectads	Species	Database	Designation
H07, H08, H09, H18, H19	Leisler's bat (<i>Nyctalus leisleri</i>)	National Bat Database of Ireland	HD Annex IV, WA
H07, H08, H09, H18, H19	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	National Bat Database of Ireland	HD Annex IV, WA
H07, H08, H09, H18, H19	Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	National Bat Database of Ireland	HD Annex IV, WA

H07, H09	Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	National Bat Database of Ireland	HD Annex IV, WA
H08, H09, H18, H19	Brown long-eared bat (<i>Plecotus auritus</i>)	National Bat Database of Ireland	HD Annex IV, WA
H07, H08, H09, H19	Daubenton's bat (<i>Myotis daubentonii</i>)	National Bat Database of Ireland	HD Annex IV, WA
H09	Natterer's bat (<i>Myotis nattereri</i>)	National Bat Database of Ireland	HD Annex IV, WA
H18, H19	Whiskered bat (<i>Myotis mystacinus</i>)	National Bat Database of Ireland	HD Annex IV, WA

4.2.3 Bat Species Range

Bat species range maps presented in the most recent Article 17 Reports (NPWS, 2025) were reviewed in relation to the location of the Wind Farm Site, with regard to the presence of species occurring at or near the edge of their known range, as highlighted in NatureScot (2021).

Based on the Article 17 range mapping, the Wind Farm Site lies within the mapped distribution range of common pipistrelle, soprano pipistrelle, Leisler's bat, Daubenton's bat, brown long-eared bat and Natterer's bat.

4.2.4 Designated Sites

Within Ireland, the lesser horseshoe bat is the only bat species for which Special Areas of Conservation (SACs) are designated. A review of designated sites identified that no SACs designated for lesser horseshoe bat occur within 10 km of the Wind Farm Site.

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) may be designated for the conservation of bat species and associated habitats. A review of designated sites within a 10 km radius of the Wind Farm Site identified no NHAs or pNHAs designated for the conservation of bats.

4.2.5 Landscape Features

A review of mapping and aerial photography was undertaken to characterise the habitats and landscape features present within the Wind Farm Site. The Wind Farm Site comprises areas of existing wind farm infrastructure, forestry plantations and peatland habitats.

A review of the Geological Survey Ireland (GSI) online mapping did not indicate the presence of any natural subterranean features within 10 km of the Wind Farm Site. In addition, a search of the National Monuments Database did not identify any man-made subterranean structures, such as souterrains, within 10 km of the Wind Farm Site.

A search of the University of Bristol Speleological Society (UBSS) Cave Database for the Republic of Ireland identified no recorded caves within 10 km of the Wind Farm Site.

Review of the National Biodiversity Data Centre bat landscape mapping indicated that the Wind Farm Site falls within an area characterised by a *Low* habitat suitability index (8.56–11.33), as presented by Lundy *et al.* (2011). This mapping provides a broad, modelled indication of relative habitat suitability and is not based on confirmed bat records.

4.2.6 Additional Projects in the Wider Landscape

Table 4-3 provides an overview of existing, permitted and proposed wind farm developments located within 5 km and 10 km of the Wind Farm Site. These developments were identified to inform consideration of potential cumulative effects.

Table 4-3 Wind Farm developments within 5 km and 10 km of the Wind Farm Site

Wind Farm	Status	No. of Turbines	Turbine Tip Height (m)
Within < 5 km			
Barnesmore Wind Farm	Existing	25	61
Barnesmore Repowering Wind Farm	Permitted	13	180
Straness Wind Farm	Existing	15	115
Meenakeeran Wind Farm	Proposed	5	150
Within 5 - 10 km			
Meenadreen Wind Farm	Existing	4	76
Meenadreen Wind Farm Extension	Existing	8	115
Lough Cuill Wind Farm	Existing	8	115
Croaghanmeal Wind Farm	Existing	7	115
Crighshane Wind Farm	Existing	14	105.5
Pullytean Wind Farm	Proposed	7	150

Additional projects with potential to contribute to cumulative effects on bats within 10 km of the Wind Farm Site

Plans and projects within 10 km of the Wind Farm Site with the potential to contribute to cumulative effects on bats include the following planning applications:

- EIA Portal Code: 2019002 - Planning permission for amendments and extension to an existing biogas facility - changes to process & infrastructure
- EIA Portal Code: 2017055 - Quarry

4.3 Field Surveys

4.3.1 Bat Habitat Suitability Appraisal

Wind Farm Site

The habitats within the Wind Farm Site are dominated by conifer plantation, with smaller areas of wet heath occurring as a mosaic with upland blanket bog. Habitats within the Wind Farm Site are described in detail in Chapter 6 of the rEIAR and EIAR.

The desktop study and walkover surveys were used to assess habitats for their suitability to support foraging, commuting, and roosting bats, according to Collins (2023). Bat habitat suitability categories, divided into *High*, *Moderate*, *Low*, *Negligible* or *None* are described fully in **Appendix 1**. The habitat suitability appraisal reflects current Wind Farm Site conditions following works undertaken to date as part of the Existing Development and provides the baseline against which the potential effects of the Prospective Development are assessed.

Areas of spoil and bare ground (ED2), recolonising bare ground (ED3), buildings and artificial surfaces (BL3), active quarries and mines (ED4) and other exposed ground, lacking structural connectivity, were assessed as being of *Negligible* suitability for foraging and commuting bats (Plate 4-1). These areas are generally open and exposed and lack linear features, shelter or habitat complexity likely to be used by bats as commuting routes or foraging habitat.

Areas of wet heath (HH3), upland blanket bog (PB2), cutover bog (PB4), wet grassland (GS4) and recently-felled woodland (WS5) were considered to be of *Low* suitability for foraging and commuting bats (Plate 4-2). While these habitats may occasionally be used by a small number of foraging bats, they are typically open in nature, offer limited shelter, and do not form strong or continuous linear features within the wider landscape.

Conifer plantation (WD4), scrub (WS1), eroding/upland rivers (FW1), dystrophic lakes (FL1) and other artificial lakes and ponds (FL8), in particular, conifer plantation edges were assessed as providing *Moderate* suitability to foraging and commuting bats (Plate 4-3; Plate 4-4). In the absence of hedgerows or traditional treelines, conifer woodland edges and associated linear features represent the primary sources of shelter, navigational structure and connectivity within the Wind Farm Site and provide the main commuting and foraging opportunities for bats within the predominantly commercial forestry landscape. No habitats within the Wind Farm Site were assessed as offering *High* suitability for commuting or foraging bats.



Plate 4-1 Area of spoil and bare ground assigned *Negligible* suitability for commuting and foraging bats



Plate 4-2 Area of wet grassland assigned *Low* suitability for commuting and foraging bats



Plate 4-3 Dystrophic Lake assigned Moderate suitability for foraging bats



Plate 4-4 Conifer forestry edges and corridors assigned Moderate suitability for commuting and foraging bats

A total of twelve buildings and structures within the Wind Farm Site were inspected for bat roosting suitability. All twelve structures were assessed as offering *Negligible* roosting potential due to the absence of suitable access points and potential roosting features. As a result, no further surveys, such as dusk emergence or dawn re-entry surveys, were required. No structures or features with *Low*, *Moderate* or *High* roosting suitability were identified during the surveys. Details of the inspected structures are presented in Section 4.3.2.

All trees within the Wind Farm Site occur within commercial conifer plantations and were assessed as having *Negligible* roosting potential. This assessment reflects the characteristics of the conifer trees present, which are of uniform age and structure and are subject to intensive plantation management, limiting the development of cavities, cracks, loose bark or other features typically associated with bat roosting, in line with Collins (2023).

Grid Connection Site

Overall, the Grid Connection Site is of *Low* to *Negligible* suitability for foraging and commuting bats, being located almost exclusively within the existing road network. Any sections where it is not in the road, it is adjacent to it in areas that supported *Negligible* suitability.

A total of 25 culverts are present along the Grid Connection Site, comprising primarily concrete box and pipe culverts, which are considered to provide *Negligible* suitability for bat roosting. In addition, three bridges were identified and assessed as having *Low* suitability; These were crossed using horizontal directional drilling (HDD) and were not subject to disturbance as part of the Existing Development.

No other habitats within the Grid Connection Site provide suitable features for bat roosting.

BMEP Site

The BMEP Site comprises two blocks of land (eastern and western) dominated by commercial conifer plantation (WD4), primarily Sitka spruce, established on peat substrates. The forestry is generally uniform in structure, with dense planting and limited structural diversity, and forestry access tracks are present throughout the Site (Plates 4-5 and 4-6).

In terms of foraging and commuting suitability, conifer plantation is considered to provide *Low* suitability for bats due to its dense structure and limited habitat diversity. Forestry edges and track margins may provide slightly higher suitability, with some potential for bat activity, and are therefore considered to be of *Low* to *Moderate* suitability locally. Overall, the BMEP Site is assessed as being of *Low* suitability for foraging and commuting bats.

The conifer plantation does not provide suitable features for bat roosting. Trees are conifers with few features such as cavities, cracks or loose bark that could support roosting bats. No habitats within the BMEP Site are considered suitable for bat roosting.



Plate 4-5 Conifer plantation (WD4) within the BMEP Site showing forestry edges assessed as Low to Moderate suitability for commuting and foraging bats



Plate 4-6 Conifer plantation (WD4) within the BMEP Site on peat substrate assessed as Low suitability for foraging and commuting bats and no roosting potential

4.3.2 Roost Surveys

4.3.2.1 Daytime Roost Inspections

A total of twelve structures were identified within the Wind Farm Site and inspected for bat roosting potential during daytime surveys undertaken in 2024, in accordance with the grading criteria set out in Collins (2023) (**Appendix 1**). Inspections assessed the presence of potential bat access points, suitable roosting features and any evidence of bat use, including droppings, feeding remains, staining, audible bat noise or live or dead bats.

All structures were assessed as providing *Negligible* roosting suitability due to the absence of suitable access points or features capable of supporting roosting bats. Most of the structures identified are temporary in nature and are associated with construction-phase infrastructure, further reducing their suitability for use by roosting bats. Further details of the inspected structures are summarised in Table 3-2 above.

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

Quarry Buildings

A group of three quarry buildings associated with the adjacent quarry is located within the north-western portion of the Wind Farm Site. Internal access was not available at the time of survey, and the buildings were therefore inspected externally only. The buildings comprise solid construction with smooth external walls and tightly sealed joints, offering no crevices, cavities or other features suitable for bat roosting. No evidence of bat use, such as droppings, staining or feeding remains, and no potential bat access points were identified during the external inspection. These structures were therefore assessed as having *Negligible* roosting potential.

Small Shed

A small concrete shed is located approximately 580 m north-west of turbine T10. The structure comprises solid concrete walls and a sealed roof, with no gaps, cavities or other features suitable for bat access or roosting. An external inspection identified no evidence of bat use, such as droppings,

staining or feeding remains, and no potential bat access points were observed. The structure was therefore assessed as having *Negligible* roosting potential.



Plate 4-7 Small concrete shed with no gaps, cavities or other features suitable for bat access or roosting and assessed as Negligible roosting potential

Substation Buildings 1 and 2

Two buildings are located within the north-western section of the Wind Farm Site within the on-site substation. Both buildings were subject to external inspection only. The structures comprise solid construction with smooth external walls and sealed joints, offering no crevices, cavities or other features suitable for bat access or roosting (Plate 4-8 & Plate 4-9). No evidence of bat use, such as droppings, staining or feeding remains, and no potential access points were identified during the inspection. Both buildings were therefore assessed as having *Negligible* roosting potential.



Plate 4-8 Substation Building 1 showing solid construction and sealed exterior.



Plate 4-9 Substation Building 2 illustrating lack of bat access points.

Security Building and Associated Portable Toilet

A prefabricated security building (and an associated portable toilet – at time of survey) are located near the substation within the north-western section of the Wind Farm Site. The security building was externally inspected, while the portable toilet was inspected both externally and internally. Both structures comprise temporary or prefabricated construction with smooth surfaces and tightly sealed joints, offering no cavities, crevices or other features suitable for bat access or roosting. No evidence of bat use, such as droppings, staining or feeding remains, was identified during the inspections. Both structures were therefore assessed as having *Negligible* roosting potential.

Bridge

A bridge is located within the Wind Farm Site approximately 1.3 km west of turbine T10. The structure was thoroughly inspected during daytime surveys for potential bat roosting features, including gaps, crevices and expansion joints. No evidence of roosting bats was observed during the inspection.

The bridge is of modern concrete construction, with smooth surfaces and limited structural complexity (Plate 4-10 & Plate 4-11). Gaps within concrete joints were found to be sealed with insulation material, substantially reducing the availability of access points or suitable roosting features. On this basis, the bridge was assessed as having *Negligible* suitability for roosting bats.



Plate 4-10 Bridge within the Wind Farm Site approximately 1.3 km west of turbine T10, showing modern concrete construction.



Plate 4-11 Underside view of bridge showing absence of features suitable for bat roosting.

Prefabricated Buildings 1, 2 and 3, Shipping Container and First Aid Point

A cluster of three metal prefabricated buildings and a metal shipping container form the temporary construction compound were located within the western section of the Wind Farm Site in the vicinity of turbines T08 and T10 at the time of the survey. All structures comprise metal panel construction with tightly fitted doors and joints, offering no crevices, cavities or features suitable for bat access or roosting (Plate 4-12 & Plate 4-13). External inspection identified no evidence of bat use, such as droppings, staining or feeding remains, and no potential access points were observed. Internal inspection of one prefabricated building was possible and did not identify any evidence of roosting bats. These structures were therefore assessed as having *Negligible* roosting potential.



Plate 4-12 Prefabricated buildings, showing sealed construction and absence of bat roosting features.



Plate 4-13 Metal shipping container illustrating lack of roosting features.

A first aid point consisting of a metal shipping container, forming part of the temporary construction compound associated with the Existing Development, is located between turbines T08 and T10 within the Wind Farm Site. The structure was inspected both externally and internally. The container comprises smooth metal surfaces with tightly sealed doors and joints, providing no features suitable for bat access or roosting. No evidence of bat use, such as droppings, staining or feeding remains, was

identified during the inspection. The structure was therefore assessed as having *Negligible* roosting potential.

Wooden Cable Drum Rollers

Multiple wooden cable drum rollers were recorded in the vicinity of the substation buildings within the Wind Farm Site. These structures are temporary in nature and comprise open, exposed wooden frames lacking enclosed spaces, cavities or other features suitable for bat roosting. No evidence of bat use, such as droppings or staining were identified during the inspections. The wooden cable drum rollers were therefore assessed as having *Negligible* roosting potential.

4.3.3

Manual Transects (2024)

Overall bat activity recorded during manual transects in 2024 was low, with a total of 26 bat passes recorded across all survey periods. During manual transects, Leisler's bat was the most frequently recorded species (n = 17), followed by soprano pipistrelle (n = 6). Common pipistrelle (n = 2) and *Myotis* spp. (n = 1) were also recorded. Plate 4-14 illustrates the overall species composition recorded during the manual activity surveys in 2024.

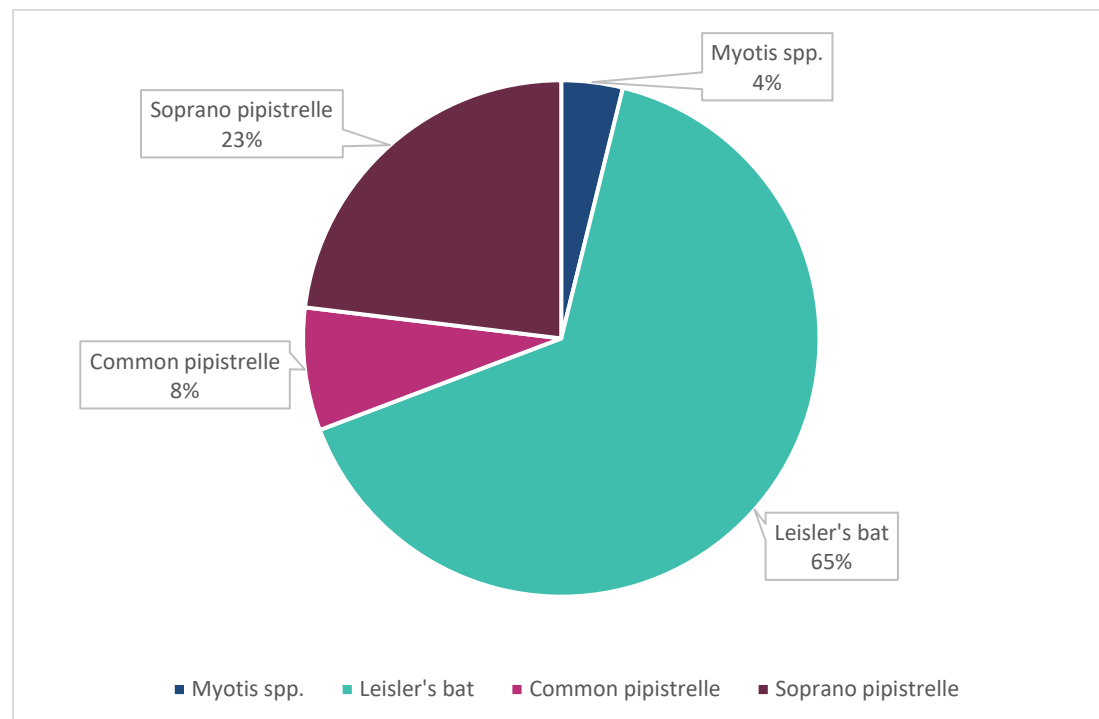


Plate 4-14 Species composition recorded during manual activity surveys (2024)

The 2024 spring walked transect followed existing wind farm and forestry roads in the vicinity of the locations of turbines T15, T17 and T19. Bat activity during this survey was very low and comprised four bat species or species groups. Common and soprano pipistrelles were observed commuting and foraging along conifer forestry edges. The majority of bat calls recorded during the spring survey were Leisler's bat (n = 12) while single passes of *Myotis* spp., common pipistrelle and soprano pipistrelle were also recorded. Most activity was concentrated in the area between turbines T17 and T19.

The 2024 summer walked transect followed existing access roads leading to turbines T01, T05, T06 and T11. Bat activity remained low with Leisler's bat again accounting for the majority of records (n = 4), followed by soprano pipistrelle (n = 2) and common pipistrelle (n = 1). Soprano pipistrelle was recorded commuting in the vicinity of T05, common pipistrelle was recorded commuting between T05 and T01, and Leisler's bat was recorded commuting between T06 and T11, and between T05 and T01.

The 2024 autumn transect was driven and covered a larger proportion of the Wind Farm Site, including the locations of turbines T01, T02, T03, T04, T05, T06, T09, T13, T14 and T18. Bat activity recorded during this survey was also low, with only four bat passes recorded. Soprano pipistrelle (n = 3) and Leisler's bat (n = 1) were detected during the survey. Survey conditions during the autumn transect were less favourable, with temperatures dropping quickly as the night progressed.

Transect survey results were standardised and expressed as bat passes per kilometre surveyed to account for differences in transect length and survey effort (Plate 4-15). Bat activity recorded during transect surveys was highest during the spring survey period, followed by summer and autumn. Figures 4-1 to 4-3 illustrate the spatial distribution of bat activity recorded during the transect surveys.

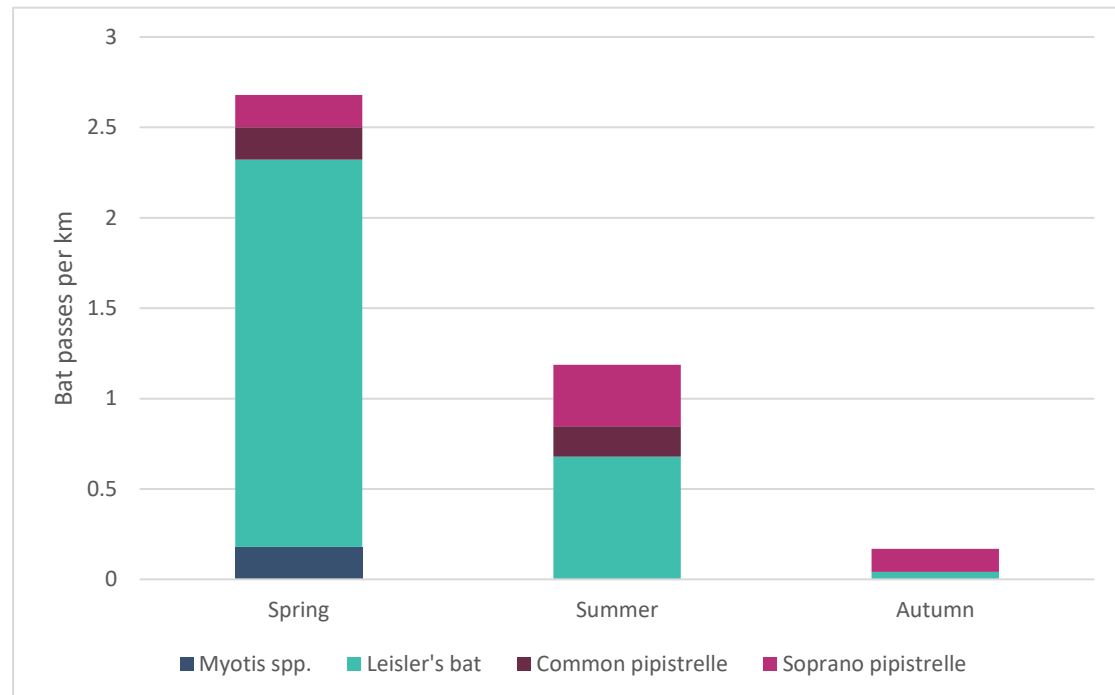
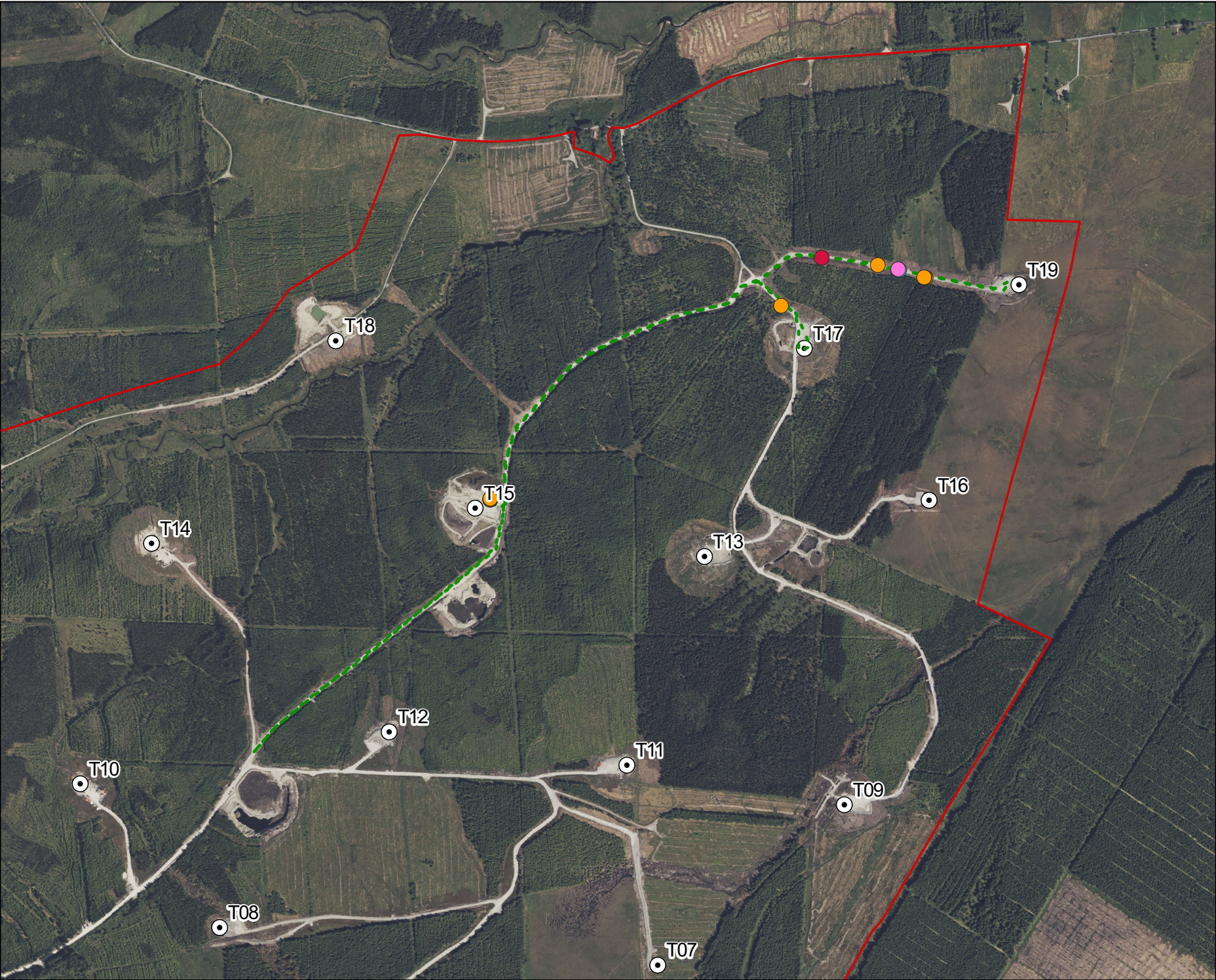


Plate 4-15 Seasonal relative bat activity recorded during manual activity surveys (2024)



Map Legend

- Planning Application Boundary
- Turbine Locations
- Spring Transect Route 13.05.2024

Species

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



Microsoft product screen shots reprinted with permission from Microsoft Corporation

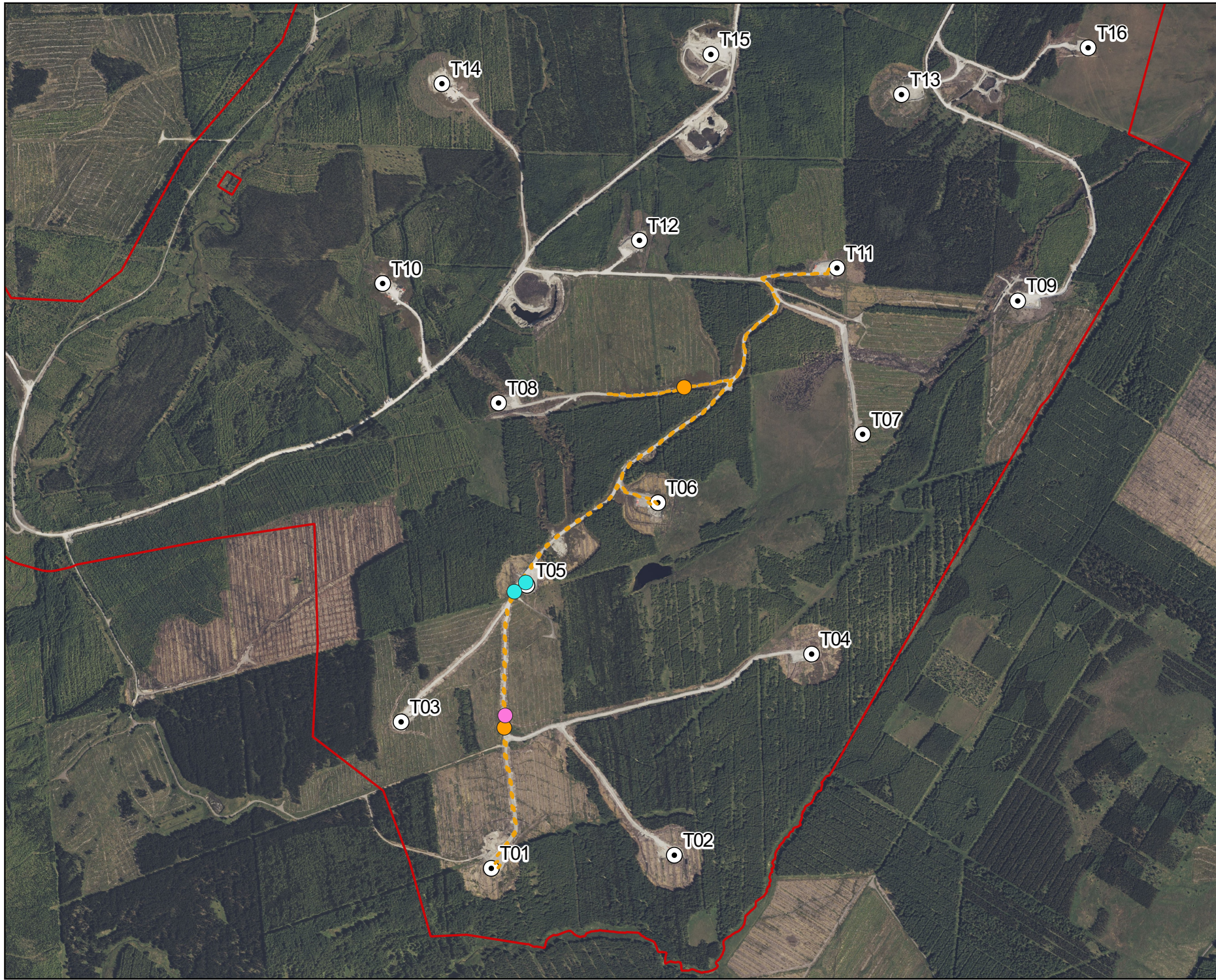
Drawing Title
Spring Manual Transect Results

Project Title
Meenbog WF

Drawn By KL	Checked By CM
Project No. 240352	Drawing No. Figure 4-1
Scale 1:12,500	Date 21.05.2026



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie



Map Legend

 Planning Application Boundary

 Turbine Locations

 Summer Transect Route 22.07.2024

Species

 Leisler's bat

 Common pipistrelle

 Soprano pipistrelle



Drawing Title

Summer Manual Transect Results

Project Title

Meenbog WF

Drawn By

KL

Checked By

CM

Project No.

240352

Drawing No.

Figure 4-2

Scale

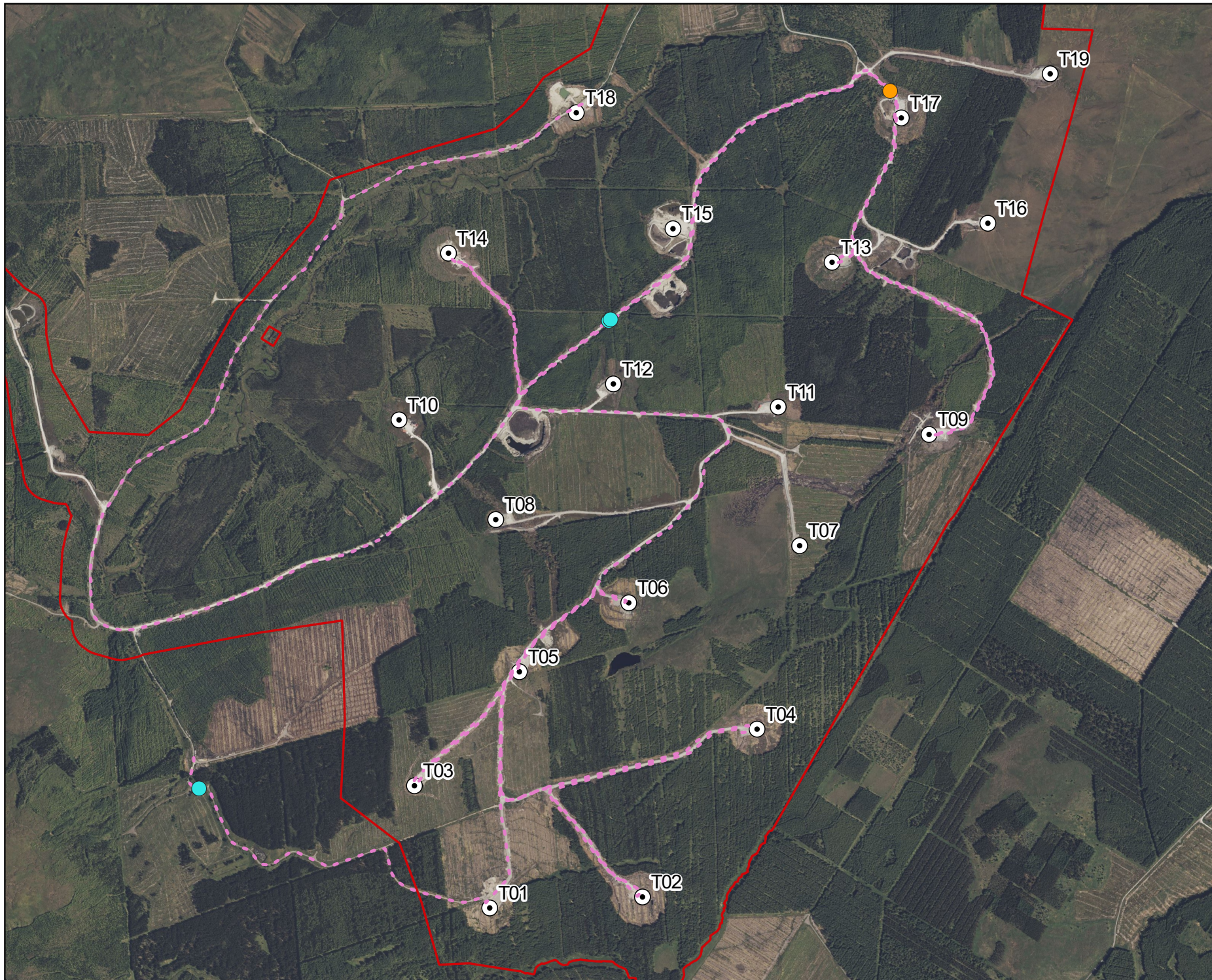
1:15,000

Date

21.05.2026



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie



Map Legend

 Planning Application Boundary

 Turbine Locations

 Autumn Transect Route 12.09.2024

Species

 Leisler's bat

 Soprano pipistrelle



Drawing Title

Autumn Manual Transect Results

Project Title

Meenbog WF

Drawn By

KL

Checked By

CM

Project No.

240352

Drawing No.

Figure 4-3

Scale

1:18,000

Date

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MKO
Planning and
Environmental
Consultants

Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

4.3.4

Ground-level Static Surveys (2024)

In total, 16,216 bat passes were recorded across all ground-level static detector deployments undertaken in 2024, resulting in an overall value of 3.33 bat passes per hour. Overall, soprano pipistrelle was the most frequently recorded species (n = 4,283), followed by common pipistrelle (n = 3,826), *Myotis* spp. (n = 3,749), Leisler's bat (n = 2,378) and brown long-eared bat (n = 1,955). Nathusius' pipistrelle was recorded infrequently (n = 25). The same bat species were recorded during the 2014 to 2017 bat surveys. Species composition across all deployments in 2024 is presented in Plate 4-16.

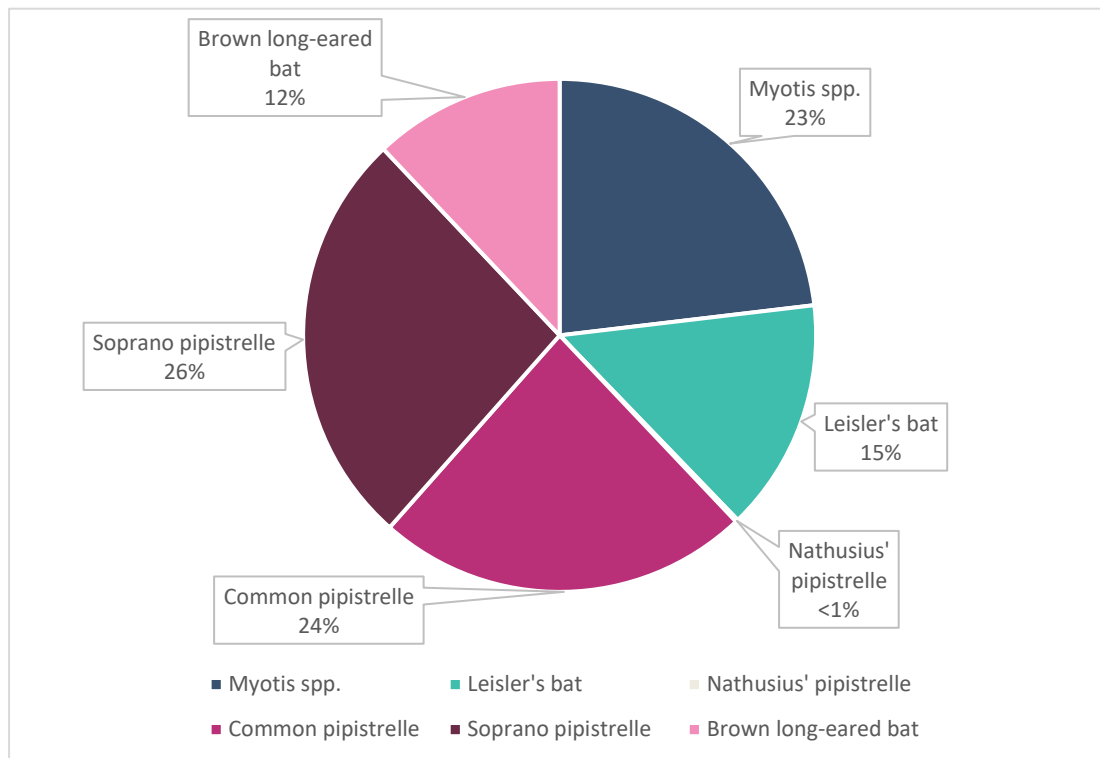


Plate 4-16 Static detector surveys 2024: Species composition across all deployments (total bat passes)

Bat activity was standardised and expressed as bat passes per hour (bp/h) for each survey period to account for differences in survey effort and night length between seasons. Plate 4-17 and Table 4-4 present seasonal activity rates for each species.

Overall bat activity was highest during the autumn survey period, followed by spring and summer, which exhibited broadly comparable activity levels. Activity levels for all recorded species were higher in autumn, with the exception of brown long-eared bat, which exhibited slightly higher activity during the spring survey period. Activity levels for Leisler's bat remained relatively consistent across the three survey periods.

Median bat activity recorded at each detector location for each survey period is presented in Plate 4-18. The results demonstrate distinct seasonal and spatial variation in bat activity across the Wind Farm Site.

During the spring survey period, median bat activity was highest at detector D02, with recordings predominantly comprising brown long-eared bat passes. Across the Wind Farm Site, spring activity was generally characterised by brown long-eared bat. No bat activity was recorded at two detector locations during the spring survey period.

During the summer survey period, median bat activity levels were lower across all detector locations. Recordings during summer were dominated by *Myotis* spp., with the highest activity recorded at

detector D08. No bat activity was recorded at four detector locations during the summer survey period.

During the autumn survey period, detector D01 recorded the highest median bat activity across all survey periods, with recordings dominated by soprano pipistrelle. Activity levels at other detector locations were comparatively lower in autumn. Bat species diversity recorded across detector locations was higher during the autumn survey period compared to spring and summer.

The median nightly bat pass rate (total bat passes per hour per night) was used to characterise typical bat activity at the Wind Farm Site and to reduce the influence of occasional high activity nights (Plate 4-19), in line with recommendations by Lintott & Mathews (2018). Results indicate high nightly variability in activity levels, with peak activity recorded during late autumn.

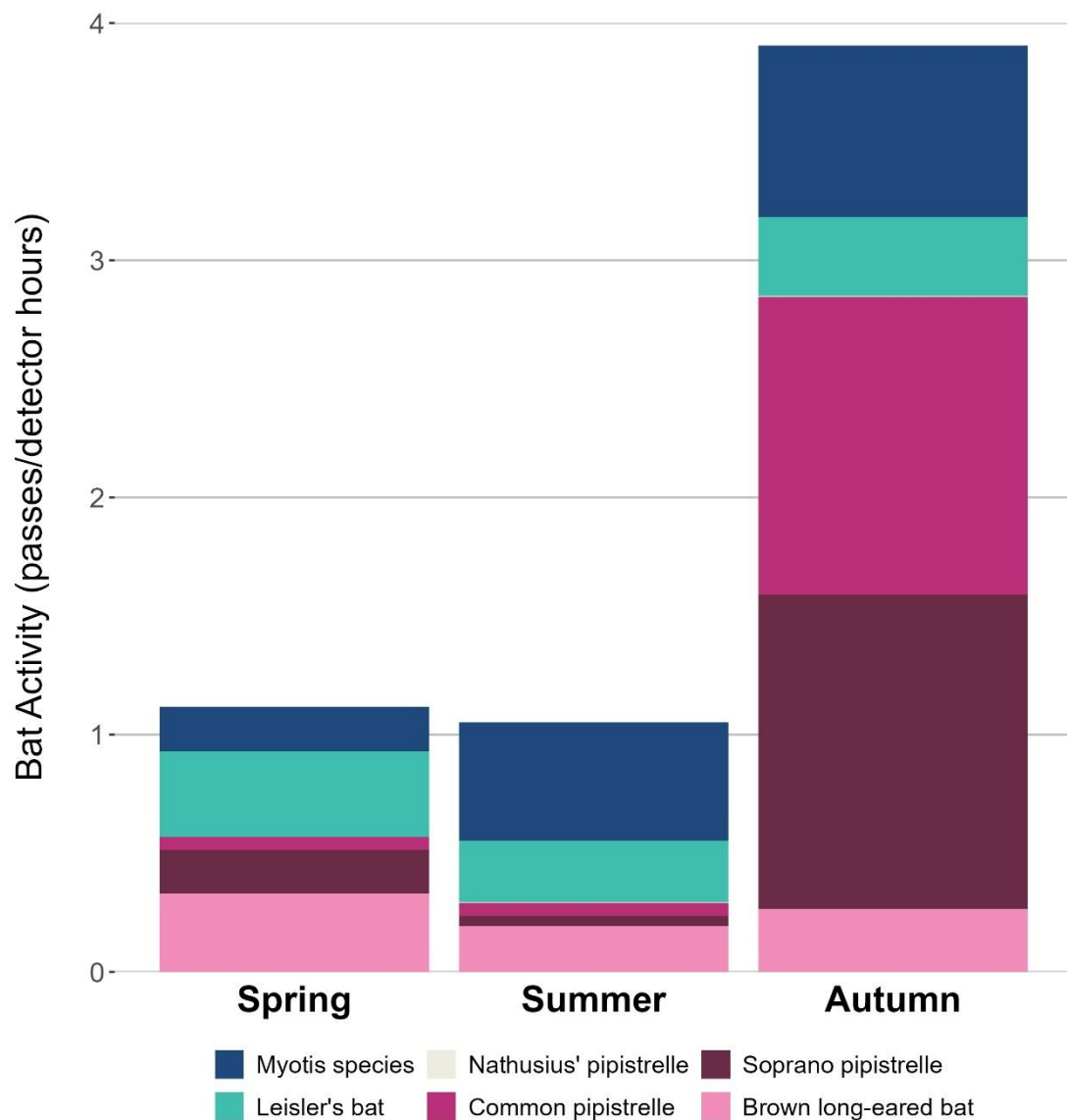


Plate 4-17 Static detector surveys 2024: Seasonal bat activity across all deployments, expressed as bat passes per hour (bp/h)

Table 4-4 Seasonal bat activity expressed as bat passes per hour (bp/h) per species, with total survey hours for each survey period

	Bat Passes Per Hour (bp/h)		
	Spring	Summer	Autumn
Myotis spp.	0.19	0.50	0.72

Brown long-eared bat	0.33	0.19	0.27
Common pipistrelle	0.06	0.05	1.25
Soprano pipistrelle	0.18	0.04	1.33
Leisler's bat	0.36	0.26	0.33
Nathusius' pipistrelle	-	0.01	0.01
Total survey hours	163.82	197.81	235.88

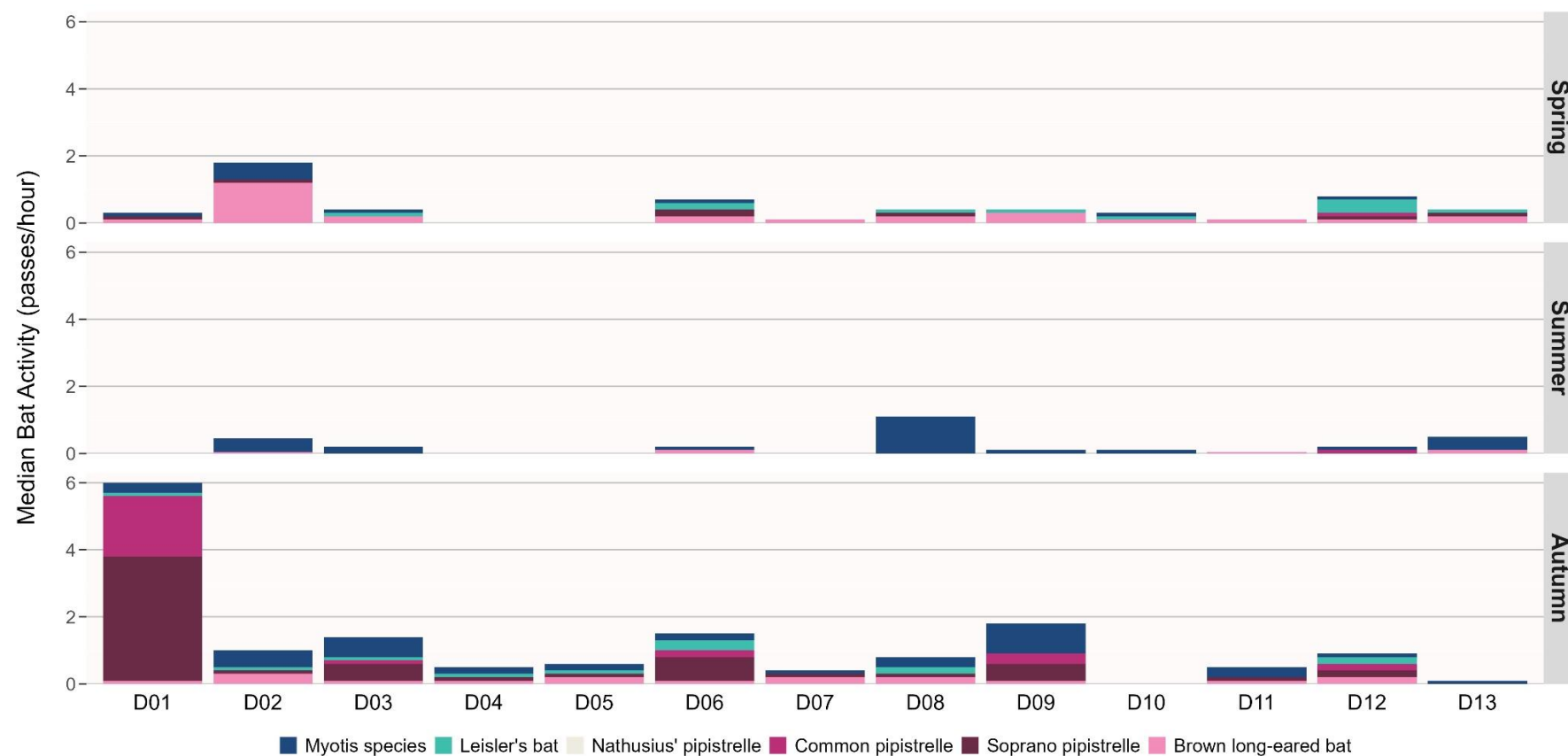


Plate 4-18 Static detector surveys 2024: Median bat pass rate (bp/h) including absences, per detector location and survey period

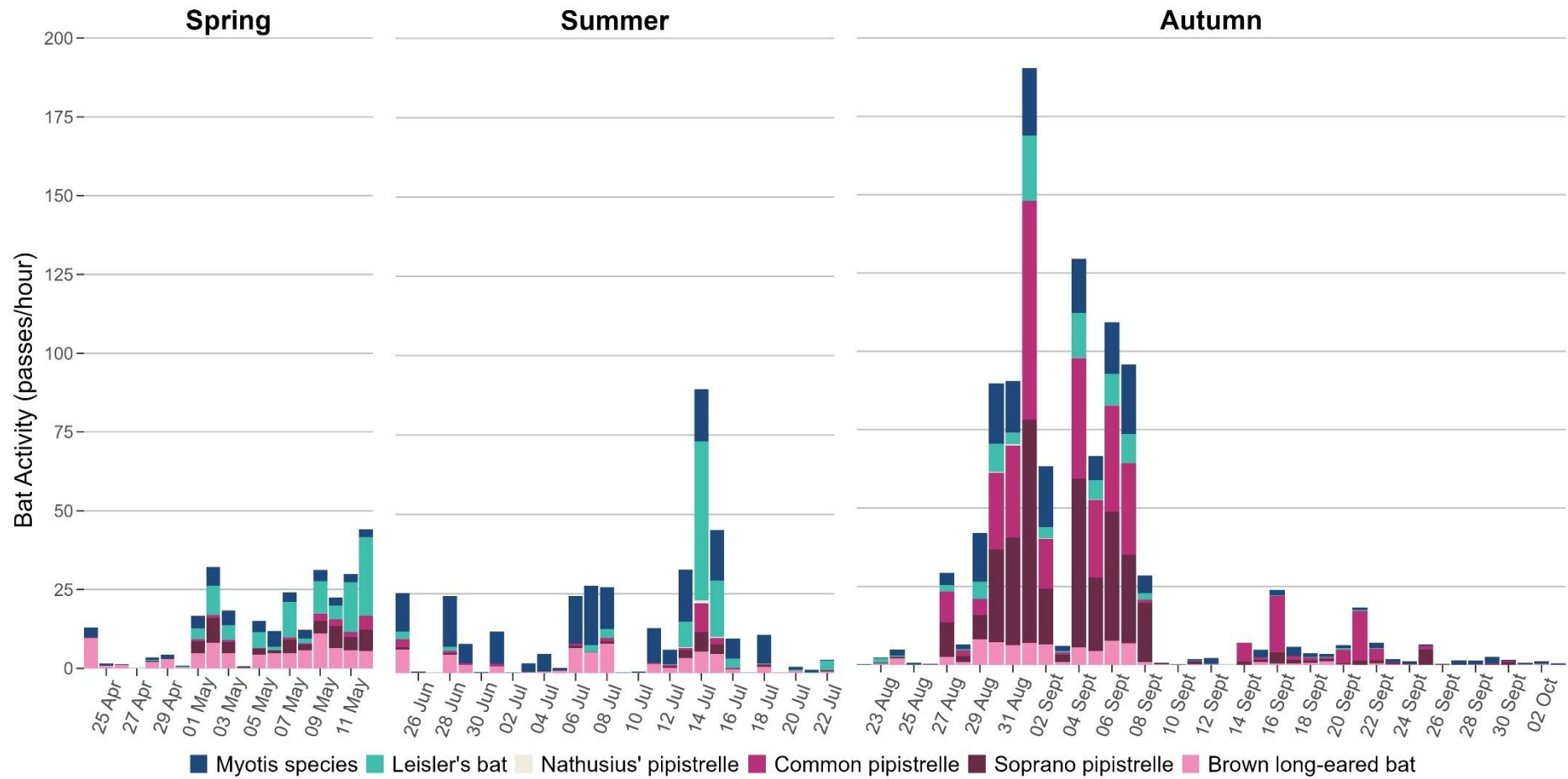


Plate 4-19 Static detector surveys 2024: Median nightly bat pass rate (bp/h)

4.4

Assessment of Bat Activity Levels

4.4.1

Adapted Site-specific Ranges

Low, *Moderate* and *High* bat activity categories were assigned to median and maximum bat pass rates (bpph) recorded during the spring, summer and autumn survey periods at detectors deployed across the Wind Farm Site. Activity level categories presented in this section are based on site-specific thresholds derived from median and maximum nightly bat pass rates (bpph), calculated using quartile-based thresholds and weighted activity scoring in accordance with the methodology described in Section 3.5. The results of this site-level assessment are presented in Table 4-5.

Soprano pipistrelle recorded predominantly *Low* median activity levels across the Wind Farm Site, with notable exceptions during the autumn survey period. *High* median activity was recorded at detector D01 during autumn (3.7 bpph), with *Moderate* median activity recorded at detector D06 during the same period (0.6 bpph). Maximum activity levels for soprano pipistrelle were consistently highest during autumn, with the highest maximum activity recorded at detector D01 during autumn (25.0 bpph).

Common pipistrelle exhibited predominantly *Low* median activity levels across the Wind Farm Site and survey periods, with the exception of detector D01 during the autumn survey period, where *High* median activity was recorded (1.8 bpph). Maximum activity levels for this species were *Low* to *Moderate* during spring and summer and generally *High* during autumn. The highest maximum activity recorded for common pipistrelle occurred at detector D07 during the autumn survey period (27.3 bpph).

Leisler's bat generally exhibited *Low* median activity levels across all detector locations and survey periods. Maximum activity levels were frequently *Moderate* to *High*, with the highest maximum activity recorded at detector D03 during the summer survey period (11.4 bpph).

Myotis spp. recorded *Low* median activity levels across all detector locations and seasons. *High* maximum activity levels for this species were recorded exclusively during the summer survey period, with the highest maximum activity recorded at detector D02 (5.6 bpph).

Brown long-eared bat activity was generally classified as *Low* across the Wind Farm Site. *Moderate* median activity was recorded at a single location, detector D02, during the spring survey period (1.2 bpph). Maximum activity levels for this species ranged from *Low* to *High* across detector locations and survey periods, with the highest maximum activity recorded at detector D02 during spring (7.6 bpph). A further *High* maximum activity level was recorded at detector D13 during the summer survey period (4.4 bpph).

Nathusius' pipistrelle was recorded infrequently across the Wind Farm Site. Median activity levels were *Low* at all locations and seasons where the species was detected. *High* maximum activity levels were recorded during the summer survey period at detector D03 (0.7 bpph) and detector D12 (0.4 bpph), with the highest maximum activity recorded at detector D03 during summer.

Overall, the adapted site-specific activity ranges indicate that bat activity across the Wind Farm Site is predominantly *Low*, with localised and seasonally constrained peaks in activity.

Table 4-5 Median and maximum nightly bat activity (bp/h) per species, season and detector location (2024) – assessment categories *None, Low, Moderate, High*

Species	Season	Bat activity (bp/h)	D01	D02	D03	D04	D05	D06	D07	D08	D09*	D10	D11	D12	D13
<i>Myotis spp.</i>	Spring	Median	0.1	0.5	0.1	0	0	0.1	0	0	0	0.1	0	0.1	0
		Maximum	0.7	2.3	0.7	0.4	0.1	1.1	0.2	0.5	0.5	1.7	0.5	0.6	0.5
	Summer	Median	0	0.4	0.2	0	0	0.1	0	1.1	0.1	0.1	0	0.1	0.4
		Maximum	0.8	5.6	2.7	2.6	1.2	2.2	0.1	5.2	1.7	1.1	1.3	0.6	4.3
	Autumn	Median	0.3	0.5	0.6	0.2	0.2	0.2	0.1	0.3	0.9	0	0.3	0.1	0.1
		Maximum	3.1	2.8	3.7	4.1	2.8	3.3	2	2.1	3	0.2	2.1	2.1	2.4
Leisler's bat	Spring	Median	0	0	0.1	0	0	0.2	0	0.1	0.1	0.1	0	0.4	0.1
		Maximum	2.1	2.6	2.1	1.4	0.7	3.9	1	0.8	1.7	3	1.7	2.9	1.9
	Summer	Median	0	0	0	0	0	0	0	0	0	0	0	0	0
		Maximum	1.8	3.6	11.4	2.1	1.9	6.4	0.8	5.5	4	1.9	2.9	3.3	4.4
	Autumn	Median	0.1	0.1	0.1	0.1	0.1	0.3	0	0.2	0	-	0	0.2	0
		Maximum	3.8	1.1	2	2.6	1.8	1.6	4.2	2	0.6	-	1.9	2.8	1.8
Nathusius' pipistrelle	Spring	Median	-	-	-	-	-	-	-	-	-	-	-	0	-
		Maximum	-	-	-	-	-	-	-	-	-	-	-	0.1	-
	Summer	Median	-	-	0	-	-	-	-	-	-	0	-	0	-
		Maximum	-	-	0.7	-	-	-	-	-	-	0.1	-	0.4	-
	Autumn	Median	0	0	0	-	0	0	-	0	-	-	0	0	0
		Maximum	0.1	0.1	0.1	-	0.1	0.1	-	0.1	-	-	0.1	0.1	0.1
Common pipistrelle	Spring	Median	0	0	0	0	0	0	0	0	0	0	0	0.1	0
		Maximum	0.2	0.4	0.6	0.2	0.1	0.6	0.4	0.1	0.5	0.6	0.1	1.5	0.1
	Summer	Median	-	0	0	0	0	0	0	0	0	0	0	0.1	0
		Maximum	-	0.1	0.3	0.1	0.6	0.7	0.4	0.4	0.7	0.1	0.6	6	0.3
	Autumn	Median	1.8	0	0.1	0	0	0.2	0	0	0.3	-	0	0.2	0
		Maximum	19.6	1.3	1.6	7.8	7.3	1	27.3	3	18	-	2.1	10.6	1.6
Soprano pipistrelle	Spring	Median	0.1	0.1	0	0	0	0.2	0	0.1	0	0	0	0.1	0.1
		Maximum	1.1	0.6	0.7	0.5	0.2	1.3	0.1	1	1.4	1.7	0.4	1.1	0.8
	Summer	Median	0	0	0	0	-	0	0	0	0	0	0	0	0
		Maximum	0.4	0.3	0.3	0.3	-	0.8	0.1	0.4	0.6	1	0.7	2.1	0.4
	Autumn	Median	3.7	0.1	0.5	0.1	0.1	0.7	0.1	0.1	0.5	0	0.1	0.2	0
		Maximum	25	2.3	8.6	4.7	5.6	8.2	7.2	5.5	4.9	0.1	2.3	10.6	2.2
Brown long-eared bat	Spring	Median	0.1	1.2	0.2	0	0	0.2	0.1	0.2	0.3	0.1	0.1	0.1	0.2
		Maximum	0.4	7.6	1.3	0.2	0.6	1.2	0.5	1.5	0.7	1.2	0.2	0.5	2.3
	Summer	Median	0	0.05	0	0	0	0.1	0	0	0	0	0.05	0	0.1
		Maximum	0.1	3.3	2.2	1.5	0.3	1.4	0.4	0.9	0.7	0.4	1.3	0.3	4.4
	Autumn	Median	0.1	0.3	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0	0.1	0.2	0
		Maximum	1.1	0.8	1.3	0.9	0.7	1.5	1.1	1.8	1.1	0.2	0.8	1.1	0.8

4.4.2

Importance of Bat Population Recorded at the Wind Farm Site

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

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

No bat roosts were identified within the Site during the 2024 surveys, and all inspected structures and trees were assessed as offering *Negligible* roosting potential. Consequently, no roosts of Local, County, Regional or National importance were recorded within the Site.

However, results from manual activity surveys and ground-level static detector surveys confirm that bats regularly use the Wind Farm Site for commuting and foraging, particularly along conifer plantation edges and forest tracks. A small assemblage of bat species was recorded, dominated by widespread species typical of upland commercial forestry landscapes.

On this basis, bats are considered an Ecological Receptor of **Local Importance (Higher Value)**, reflecting the regular use of the Wind Farm Site by a locally occurring bat population for foraging and commuting, in combination with the strict legal protection afforded to all bat species, despite the absence of confirmed roosts within the Wind Farm Site.

5.

ASSESSMENT OF SITE RISK

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

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

For each of these four risk pathways, the detailed understanding of bat distribution, activity patterns and habitat use within the Site has been used to inform the site risk. Collision mortality and barotrauma are associated with the operational phase and therefore relate to the Prospective Development only. In contrast, the loss of, or damage to, commuting, foraging and roosting habitats, as well as displacement effects, are considered in relation to both the Existing Development, where habitat removal and disturbance have already occurred, and the Prospective Development, where further works are proposed.

5.1

Collision Mortality

The likely impact on bats as a result of the Subject Development 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 Prospective Development (adapted from NatureScot, 2021)

Criteria	Site-specific Evaluation	Site Assessment
Habitat Risk	The Wind Farm Site does not contain any confirmed bat roosts or potential roost features and no habitats of <i>High</i> suitability for foraging or commuting bats were identified. However, the site includes habitats suitable for bat foraging and commuting, including a well-developed network of forestry edges and watercourses, which provide connectivity across the Wind Farm Site and to the wider landscape.	<i>Moderate</i>
Project Size	The Prospective Development comprises 19 turbines and therefore falls within the <i>Medium</i> project size category (10–40 turbines) as defined by NatureScot (2021). While turbine tip heights exceed 100 m, the overall scale of the development does not exceed the threshold for a <i>Large</i> project. In addition, there are four other wind energy developments within 5 km, and six other wind farms within 10 km.	<i>Medium</i>
Overall Site Risk Assessment	Based on the cross-tabulation of a <i>Medium</i> project size on a <i>Moderate</i> habitat risk site (NatureScot, 2021; Table 3a), the Prospective Development is classified as presenting a <i>Medium</i> site risk.	<i>Medium (3)</i>

5.2

Loss of, or damage to Commuting and Foraging Habitat

In the absence of appropriate design and mitigation, wind farm developments have the potential to result in the loss, fragmentation or degradation of bat commuting and foraging habitat, which may reduce feeding opportunities or lead to displacement of individuals.

The Wind Farm Site is predominantly located within commercial conifer plantation, with smaller areas of blanket bog and associated peatland habitats. As identified through the Bat Habitat Suitability Appraisal, most habitats within the Wind Farm Site are of *Low* to *Moderate* suitability for bat foraging and commuting, with *Moderate* suitability largely confined to conifer plantation edges and associated linear water features.

5.3

Loss of, or Damage to Roosts

The Wind Farm Site is predominantly located within commercial conifer plantation, with smaller areas of blanket bog and associated peatland habitats. Trees within the plantation are of uniform age and species composition and are subject to intensive management, limiting the development of cavities, cracks, loose bark or other features suitable for roosting bats.

In addition, small numbers of scattered, broadleaved trees (primarily willow and birch) occur locally along forestry edges. These trees are generally young or suppressed in form and were visually inspected during walkover surveys and no potential roost features (PRFs) were identified.

A total of twelve structures were identified within the Wind Farm Site and inspected during daytime roost surveys. Most of these structures comprise temporary buildings and infrastructure associated with construction and site operations, including prefabricated units, containers and ancillary facilities. All inspected structures were assessed as having *Negligible* suitability for roosting bats, and no evidence of bat roosting or suitable roosting features was identified.

Temporary structures associated with the construction phase will be removed following completion of works; however, as these structures were assessed as having *Negligible* roosting suitability and no evidence of bat use was recorded, their removal will not result in the loss of bat roosts. Structures intended to remain as part of the operational development will be retained, and no loss or damage to roosting habitat is anticipated during the construction or operational phases.

Within the Grid Connection Site, works associated with the Existing Development were largely confined to existing road corridors. No trees or structures with roosting potential were affected, and water crossing infrastructure along the route comprises standard culverts of *Negligible* suitability and three stone bridges of *Low* suitability that were not subject to disturbance. No habitats within the Grid Connection Site provided suitable features for bat roosting.

Within the BMEP Site, the trees are plantation conifers and do not exhibit features associated with bat roosting. No PRFs were identified.

5.4

Displacement of Individuals or Populations

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

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

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

6. CONCLUSION

The 2024 bat surveys, together with previous baseline data, indicate that the Wind Farm Site supports a small assemblage of widespread bat species typical of upland commercial forestry landscapes. No bat roosts or potential roost features were identified within the Wind Farm Site, Grid Connection Site or BMEP Site, and habitats are predominantly of *Low* to *Moderate* suitability for commuting and foraging bats. Bat activity recorded during manual transects and ground-level static detector surveys was generally *Low*, with localised and seasonally constrained peaks associated primarily with forestry edges and linear water features.

Overall, bats are considered an Ecological Receptor of Local Importance (Higher Value), reflecting the regular use of the Site by locally occurring bat populations for commuting and foraging. While the Prospective Development is classified as presenting a *Medium* site risk in accordance with NatureScot (2021), owing to the combination of *Moderate* habitat risk and the scale of the development, the absence of roosts, predominance of low bat activity levels and lack of habitats of *High* suitability indicate that the Site is of relatively low sensitivity to bats.

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APPENDIX 1

BAT HABITAT SUITABILITY ASSESSMENT

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

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

- a) Negligible is defined as ‘so small or unimportant as to be not worth considering, insignificant’. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).
- b) For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
- c) Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2016 and Jansen et al., 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.

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

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

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

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



APPENDIX 2

SITE RISK ASSESSMENT

Table 3a: Stage 1 - Initial site risk assessment

Site Risk Level (1-5)*	Project Size			
Habitat Risk		Small	Medium	Large
	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.			

