# APPENDIX 6-2a

## *ADDENDUM BAT REPORT*

Planning and Environmental Consultants

# Appendix 6-2a – Bat Survey Report 2024

## Umma More Renewable Energy Development

# DOCUMENT DETAILS

| | |
|---|---|
| Client: | **Enerco Energy Ltd.** |
| Project Title: | **Umma More Renewable Energy Development** |
| Project Number: | **200402-b** |
| Document Title: | **Updated Bat Survey Report 2024** |
| Document File Name: | **200402-b– Appendix 6-2a - BR F– 2025.06.11** |
| Prepared By: | **MKO**<br>**Tuam Road**<br>**Galway**<br>**Ireland**<br>**H91 VW84** |

Planning and Environmental Consultants

| Rev | Status | Date | Author(s) | Approved By |
|---|---|---|---|---|
| 01 | Draft | 10/06/2025 | CMM | AJ |
| 02 | Final | 11/06/2025 | CMM | AJ |
| | | | | |
| | | | | |

# Table of Contents



## TABLE OF TABLES

## TABLE OF PLATES



## TABLE OF FIGURES

# 1. INTRODUCTION

This report provides an addendum to the bat survey report submitted with the original Environmental Impact Assessment Report (EIAR) for the Umma More Renewable Energy Development. It incorporates new survey data collected during the 2024 bat season and considers relevant updates to guidance documents.

This document should be read in conjunction with the original EIAR and accompanying appendices.

# 2. METHODS

## 2.1 Survey Objectives

This report provides an update to the bat survey work submitted as part of the 2022 Environmental Impact Assessment Report (EIAR) for the Proposed Development. The primary purpose of the 2024 bat surveys is to supplement the 2022 baseline dataset with updated seasonal bat data, reassess previously identified Potential Roost Features (PRFs), and incorporate any relevant changes in survey guidance or policy that have occurred since the original assessments.

Previous bat surveys were conducted in 2020 and 2022. In line with current best practice, the Chartered Institute of Ecology and Environmental Management (CIEEM, 2023) advises that ecological data supporting Environmental Impact Assessment should generally be no more than two years old unless the baseline is demonstrably still valid. Given the time elapsed, and the potential for changes in bat activity or habitat use, an updated dataset was considered appropriate to ensure that the ecological assessment remains current, robust, and defensible within the context of the EIAR Addendum.

In line with surveys carried out in 2022, the assessment and mitigation provided in this report has been designed in accordance with NatureScot 2021. Consideration was also given to the Northern Ireland Environment Agency (NIEA) Natural Environment Division (NED) Guidance, which was produced in August 2021 (amended March 2024). The 2024 manual activity surveys were undertaken in accordance with *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, 2023), which supersedes earlier guidance and includes revised standards for survey effort, species identification, and interpretation of bat activity levels. The updated dataset is used to confirm whether the conclusions of the original assessment remain appropriate, to detect any notable changes in bat species presence or behaviour, and to inform any adjustments to mitigation or avoidance measures, where required.

This updated information will inform the revised Biodiversity Chapter of the EIAR Addendum, ensuring that the assessment of potential effects on bats continues to meet current legislative and policy requirements.

## 2.2 Statement of Authority

MKO employs a dedicated bat unit within its Ecology team, who are experienced in scoping, carrying out, and reporting on bat surveys, as well as producing impact assessments in relation to bats. MKO ecologists have relevant academic qualifications and are qualified in undertaking surveys to the levels required. MKO's Ecology team holds a bat derogation licence from NPWS. The licence is intended for professionals carrying out surveys with the potential to disturb roosting bats (i.e. roost inspections).

Survey scoping was prepared by Aoife Joyce (AJ). The daytime walkover survey and inspections were carried out by Laura McEntegart (LM) and Frederick Mosley (FM). Manual activity surveys were carried out by Laura McEntegart, Frederick Mosley, Charlie Meehan (CM). Data manual ID was carried out by Charlie Meehan, Frederick Mosley and Clare Marie Mifsud (CMM). This report was also prepared by

Clare Marie Mifsud and was reviewed and approved by Aoife Joyce. Staff's roles, relevant ecological experience and training is presented in Table 2-1 below.

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

| Staff | | Role | Training |
|---|---|---|---|
| **Aoife Joyce (B.Sc., M.Sc.)** | | Project Director | B.Sc. (Hons) Environmental Science, University of Galway, Ireland.<br>M.Sc. (Hons) Agribioscience, University of Galway, Ireland.<br><br>Advanced Bat Survey Techniques – Trapping, biometrics, handling (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). |
| **Clare Marie Mifsud (PhD)** | | Project Bat Ecologist | B.Sc. (Hons) Biology and Chemistry, University of Malta, Malta<br>M.Sc. Bat Biology and Conservation, University of Malta, Malta<br>Ph.D. Conservation Biology of Bats, University of Malta, Malta<br><br>Bat Habitat Appraisal and Preliminary Roost Assessments (Internal). Bat acoustic surveys, echolocation analysis and species identification (Kaleidoscope, Wildlife Acoustics). Roost survey techniques (Wroclaw University, Poland). Thermal Imaging for bat surveys (internal). Bat capture, tissue sampling and handling techniques (University of Leeds, UK). |
| **Laura McEntegart (B.Sc.)** | | Bat Ecologist | B.Sc. (Hons) Botany and Plant Science, National university of Ireland, Galway<br><br>Bat Handling Training Course (BCI), Bats: Assessing the Impact of Development on Bats, Mitigation & Enhancement - (CIEEM), Kaleidoscope Pro Analysis (Wildlife Acoustics). Endoscope Training (Internal), Emergence and Re-Entry Surveys (Internal) Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal). |
| **Frederick Mosley (B.A., M.Sc.)** | | Bat Ecologist | B.A. (Hons) Biological and Biomedical Science Mod. Zoology, Trinity College, Dublin<br>M.Sc. Marine Biology, University College Cork<br><br>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) |
| **Charlie Meehan (B.A., M.Sc.)** | | Bat Ecologist | B.A. History and Classical Studies, National University of Ireland, Galway<br>M.Sc., Sustainable Environments, National University of Ireland, Galway<br><br>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) |

## 2.3 Dedicated Bat Survey Types and Dates

A full suite of bat surveys including Bat Habitat Suitability Appraisal (BHA), roost inspections, manual and static bat surveys were carried out for the 2024 bat survey period. The type and dates of surveys targeting bats are listed in Table 2-2 below.

*Table 2-2: 2024 and 2025 Survey Dates*

| Bat Survey Type | Date(s) |
|---|---|
| Bat Habitat Suitability Appraisal | [08-05-2024], [20-06-2024] and [09-06-2025] |
| Static Detectors | [08-05-2024] – [20-05-2024] |
| | [20-06-2024] – [17-07-2024] |
| | [28-08-2024] – [11-09-2024] |
| | [12-09-2024] – [30-09-2024] |
| | [22-10-2024] – [11-11-2024] |
| Night Bat Walkover (NBW) | [08-05-2024] |
| | [18-07-2024] |
| | [28-08-2024] |
| Dusk Emergence | [18-07-2024] |
| | [28-08-2024] |

## 2.4 Bat Habitat Suitability Appraisal

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

At the time of the 2022 surveys, assessments were initially carried out using the guidance outlined in Collins (2016). Following the release of Collins (2023) prior to the 2024 surveys, all 2022 survey data were reviewed and reassessed in line with the updated 2023 guidance to ensure consistency across the dataset. Suitability was assessed using the criteria set out in Collins (2023), which provides a grading protocol for roosting habitats and for commuting and foraging areas. Suitability categories are divided into *High*, *Moderate*, *Low*, *Negligible* & *None*.

## 2.5 Roost Surveys

### Daytime roost inspections

In line with the searches undertaken in 2022, a search for roosts was undertaken within 200m plus the rotor radius (i.e. 81m) of the proposed turbine locations (NatureScot, 2021). The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. The Site was visited in May, June, July, September and October 2023 and May, July and September of 2024. The watercourse

crossings associated with the Proposed Grid Connection underground cabling route was assessed in December 2024.

Three structures were identified as potential roost structures within the Wind Farm Site in 2020 and 2022 (IG Ref: N 19815 45271 and N 19727 45358) - A derelict house (Umma More House, as detailed in Chapter 13 of the EIAR) and nearby farm sheds (IG Ref: N 18969 46870). Roost surveys comprised a detailed inspection of the interiors and exteriors to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises.

One additional structure (IG Ref: N 19702 45822) was identified in 2024 and was subject to detailed inspections.

Any potential tree roosts were examined for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other PRFs identified by Andrews (2018).

The Grid Connection underground electrical cabling route, including watercourse, drain and culvert crossing infrastructure, was also assessed for any suitability to host roosting bats on the 9th of June 2025.

## 2.6 Manual Activity Surveys

Manual activity surveys during 2024 consisted of Night Bat Walkover (NBW) surveys and dusk emergence surveys, following the same general methodological approach as the 2022 surveys to ensure consistency in data collection. The equipment and survey techniques used in 2024 largely mirrored those used previously, with one notable enhancement: dusk emergence surveys in 2024 incorporated the use of night vision aids (NVAs), specifically a thermal imaging scope, which were not employed during the 2022 surveys.

The integration of thermal imaging technology aligns with the recommendations of *Collins (2023) Bat Surveys for Professional Ecologists*, which advocates the use of night vision or thermal devices during emergence surveys to improve detection rates and accuracy under low-light conditions. This technological improvement facilitates more reliable observations of bat emergence behaviour.

The 2024 survey effort varied in terms of survey dates, personnel, and transect routes compared to 2022. However, all surveys were carried out during the appropriate time of year and achieved a good spatial spread of the site. A detailed summary of the manual survey effort, including survey dates, weather conditions, and transect lengths, is presented in Table 2-3 below and Figure 2-1. Weather conditions were suitable for carrying out bat activity surveys.

*Table 2-3: 2024 Survey Effort - Manual Activity Surveys*

| Date | Surveyors | Sunset | Type | Weather | Transect (km) |
|---|---|---|---|---|---|
| 8 May 2024 | LM and FM | 21:20 | Night Bat Walkover (NBW) | 12-18˚C, dry, calm | 3.14 |
| 18 July 2024 | LM and CM | 21:48 | Dusk Emergence and Night Bat Walkover (NBW) | 16-19˚C, dry, calm | 3.77 |
| 28 August 2024 | LM | 20:25 | Dusk Emergence and Night Bat Walkover (NBW) | 12-16˚C, dry, calm | 2.30 |
| **Total 2024 Survey Effort** | | | | | **9.21** |

## 2.7 Ground-level Static Surveys

Ground-level static detector surveys were undertaken during spring, summer, and autumn 2024 to record baseline bat activity over multiple seasons. The methodology followed that undertaken in 2022, as outlined in *NatureScot (2021)*, including recommendations for deployment locations and minimum numbers of survey nights per season under appropriate weather conditions. Detector locations, equipment types, and placement methods remained consistent with those used during the 2022 survey effort to ensure comparability of data.

While survey methods and locations remained unchanged, the survey effort in 2024 differed from 2022 in terms of calendar dates and detector redeployment due to technical issues.

The total survey effort across all detectors is summarised in Table 2-4 below.

*Table 2-4: 2024 Survey Effort - Ground-level Static Surveys excluding redeployments*

| Season | Survey Period | Total Survey Nights per Detector Location | Nights with Appropriate Weather |
|---|---|---|---|
| Spring | 8 May – 20 May 2024 | 13 | 13 |
| Summer* | 20 June – 17 July 2024 | 28 | 27 |
| Autumn* | 28 August - 11 September 2024 | 15 | 15 |
| **Total Survey Effort** | | **56** | **55** |

*In the 2024 Sumer period, D05 detector had technical issues and no data was recorded. In Autumn D06 and D07 were redeployed for 19 and 21 additional nights with suitable weather, respectively.


## Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Detector Locations 2024
- Spring Transect 08.05.2024
- Summer Transect 18.07.2024
- Autumn Transect 28.08.2024



N

Drawing Title
2024 Survey Effort

Project Title
Umma More Renewable Energy Development

| Drawn By | Checked By |
|---|---|
| CM | AJ |
| Project No. | Drawing No. |
| 200402-b | Figure 2-1 |
| Scale | Date |
| 1:20,000 | 10/06/2024 |

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

## 2.8 Assessment of Bat Activity Levels

Static detector monitoring results from the 2024 surveys were uploaded to the updated EcoBat platform (now hosted at ecobat.mammal.org.uk). EcoBat, originally launched in 2016 (Lintott *et al.,* 2018), underwent a major relaunch in 2024 with significant improvements to its functionality, transparency, and the robustness of its reference dataset.

Since its use in the 2022 assessment, EcoBat has expanded its underlying dataset substantially, resulting in a more geographically and seasonally representative comparison pool for percentile scoring. The platform now automatically issues warnings when the reference dataset for a given comparison falls below the recommended minimum of 200 site-nights, helping users interpret percentile outputs with appropriate caution.

One of the most notable enhancements in the 2024 relaunch is the inclusion of detailed visualisation tools, including nightly activity histograms that depict the temporal distribution of bat passes during each recording session. These histograms allow surveyors to identify clear patterns in activity, such as concentrated peaks shortly after sunset—potentially indicative of nearby roost emergence or key commuting behaviour. These features were not available in the 2022 version of the platform.

Additionally, user controls have been refined to allow for more targeted stratification of comparative datasets by season, detector type, and geographic region. This facilitates more tailored, context-sensitive assessments of local activity levels.

These updates enhance the ecological interpretation of 2024 data by strengthening the statistical basis for assessing whether bat activity at the site is low, moderate, or high relative to regional baselines. For example, a succession of nights with high-percentile scores, especially when correlated with dusk emergence peaks, may now be more confidently linked to localised roosting activity or important habitat features. Conversely, isolated or low-intensity records can be interpreted with reduced risk of overestimation.

Overall, the 2024 EcoBat platform offers improved precision and confidence in assessing the relative importance of bat activity recorded on-site, providing a more refined and evidence-based tool than was available during the 2022 assessment.

## 2.9 Limitations

A comprehensive programme of bat surveys was undertaken in 2020, 2022 and updated again in 2024 to inform the Environmental Impact Assessment for the Proposed Development. The 2024 surveys were conducted in accordance with current best practice guidance, including NatureScot (2021) and Collins (2023), and aimed to supplement the existing baseline dataset, reassess roosting potential, and align with updated survey standards.

The survey approach in 2024 broadly followed the same methodologies used in previous years, including static detector deployment and manual activity surveys. The information provided in this report, in conjunction with the survey effort undertaken in 2020 and 2022, accurately and comprehensively describes the baseline environment; provides an accurate prediction of the likely potential effects of the Proposed Development; prescribes mitigation as necessary; and describes the predicted residual impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines.

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

# 3. RESULTS

## 3.1 Bat Habitat Suitability Appraisal

### Wind Farm Site

The 2024 bat habitat appraisal confirmed that the habitat composition and suitability assessments within the Wind Farm Site remain consistent with previous survey findings. The same eleven habitat types were identified, and the evaluation of habitat suitability for foraging, commuting, and roosting bats was carried out following the updated guidance in Collins (2023). This latest guidance reaffirms the previous classification of habitats on site, with improved agricultural grassland (GA1) dominating, wet grassland and conifer plantations present in smaller areas, and linear features such as hedgerows and treelines retaining moderate to high suitability for bats. Roost potential within mature broadleaf trees adjacent to turbines remains unchanged, continuing to offer moderate to high suitability for roosting bats. No significant changes to habitat or suitability assessments were identified during the 2024 update.

### Grid Connection

The 2024 bat habitat appraisal for the Grid Connection temporary construction compound, onsite 110kV substation, and underground electrical cabling route found the habitat composition and suitability assessments unchanged from the 2022 surveys. Habitats along the cabling route continue to be dominated by improved agricultural grassland (GA1), with stonewalls (BL1), hedgerows (WL1), and buildings (ED3) also present. Using the updated Collins (2023) guidance, features along the underground cabling route were reassessed as having Low to Moderate suitability for commuting and foraging bats, consistent with the 2022 assessment. Wet grassland and scrub along the route retain their Negligible suitability for roosting bats, with no new potential roost features identified. Overall, no significant changes in habitat or bat suitability have been recorded in 2024 for the Grid Connection area.

## 3.2 Roost Surveys

Roost inspections and activity surveys conducted in 2020, 2022, 2024 and 2025 identified four structures within the Wind Farm Site with suitable potential bat roost features. These included a derelict building (Umma House), its associated outbuildings, a farm storage shed, and a small shed within cattle holding pen, near Turbine 5. Details of these structures and associated surveys are given in Tables 3-1 and 3-2 below.

All structures were subject to internal and external inspections for evidence of roosting bats, such as droppings, feeding remains, staining, or audible calls. Where roosting potential was confirmed or remained uncertain, dusk emergence surveys with NVAs were undertaken in line with Collins (2023) best practice guidance.

### Derelict Property (Umma House)

The two-storey stone derelict property known as Umma House continues to be confirmed as a bat roost, with multiple emergence and re-entry events recorded in 2020 and 2022. Species confirmed included both Soprano pipistrelle and Common pipistrelle, with activity patterns suggesting transitional or satellite roost use. No new emergence surveys were required in 2024 due to the strong evidence base from prior years and the absence of development impacts at this location.

### Derelict Outbuildings

Located adjacent to Umma House, these stables and sheds were identified as having *Moderate* roosting potential in 2020. However, no bats were observed roosting during emergence surveys in 2020 or 2022. With the introduction of NVAs for the 2024 survey, one Common pipistrelle bat was seen emerging from under the lip of the corrugated iron roof of the main shed.

### Storage Shed (Farm Building)

This concrete block shed near Turbine 3 was assessed in 2022 as having Low roosting potential. No evidence of roosting bats was identified during emergence surveys. However, high levels of foraging and commuting activity were observed along the adjacent treeline, dominated by Common pipistrelle, Leisler's bat, and occasional passes by Brown long-eared bat and Soprano pipistrelle. No additional emergence surveys were required in 2024 due to the absence of development impacts at this location.

### Small Shed within cattle holding pen, near T5

In 2024, an emergence survey was carried out at this small structure (Plates 3-1 and 3-2). The structure is proposed for removal to facilitate turbine infrastructure. The structure was assessed as having a *Negligible* roosting potential and during the emergence survey no bats were seen emerging from the structure.

*Plate 3-1: The north-west aspect of the small shed.*

*Plate 3-2: The interior of the small shed*

No confirmed roost structures will be directly impacted by the Proposed Development. Notwithstanding this, targeted mitigation measures are detailed in full within the Mitigation and Post-Construction Monitoring sections of this report.

*Table 3-1: Roost Survey Results (2020 – 2024)*

| Structure | Roost Survey | Date | Species | Roosting Numbers |
|---|---|---|---|---|
| Derelict Property (Umma House) | Dusk Emergence | 7th May 2020 | Soprano pipistrelle | Single bat emerged. |
| | Dusk Emergence | 9th July 2020 | Soprano pipistrelle | One emerged; additional unconfirmed bats observed. |
| | Dawn Re-entry | 10th July 2020 | Common & Soprano pipistrelle | One Common, one Soprano re-entered. |

| | | | | |
|---|---|---|---|---|
| | Dusk Emergence | 17th Sept 2020 | Common & Soprano pipistrelle | Three Common, two Soprano; multiple entry/exit points used. |
| | Dawn Re-entry | 18th Sept 2020 | Soprano pipistrelle | Two observed entering structure. |
| Derelict Outbuildings | Dusk Emergence | 7th May 2020 | No bats | No bats observed emerging. |
| | Dusk Emergence | 21st July 2022 | No bats | No bats observed emerging. |
| | Dusk Emergence | 18th July 2024 | Common pipistrelle | One bat emerged from under the lip of the corrugated iron roof. |
| Storage Shed (Farm Building) | Dusk Emergence | 27th May 2022 | No bats | No bats observed emerging. |
| Small shed within cattle holding pen near T5 | Dusk Emergence | 28th Aug 2024 | No bats | No bats observed emerging. |

*Table 3-2: Summary of Inspected Structures and Roost Status*

| Structure | IG Ref | Closest Turbine | Approx. Distance | Status |
|---|---|---|---|---|
| Derelict Property (Umma House) | N 19813 45275 | T8 | 300 m | Previously confirmed roost |
| Derelict Outbuildings | N 19735 45355 | T8 | 375 m | Confirmed roost in 2024 |
| Storage Shed (Farm Building) | N 18969 46870 | T3 | 260 m | No roosting evidence |
| Small Shed near T5 | N 19703 45822 | T5 | 65 m | No roosting evidence |

A 2024 update confirmed that no changes had occurred along the Grid Connection route and water crossings and the 2022 assessments remain valid.

## 3.3 Manual Transect Surveys

Manual activity surveys were undertaken during Spring, Summer, and Autumn 2024. Bat activity was recorded during all manual surveys, encompassing both roost emergence and transect surveys. In 2024, Common pipistrelle (*Pipistrellus pipistrellus*) was the most frequently recorded species, with a total of 729 passes, followed by Leisler's bat (*Nyctalus leisleri*) with 243 passes. Myotis species (*Myotis* spp.) were less frequent, with 31 passes recorded, while Soprano pipistrelle (*Pipistrellus pygmaeus*) accounted for 174 passes. Nathusius' pipistrelle (*Pipistrellus nathusii*) and Brown long-eared bat (*Plecotus auritus*) were rare, with 6 and 15 passes recorded respectively. The species composition across all manual surveys in 2024 is presented in Plate 3-3.

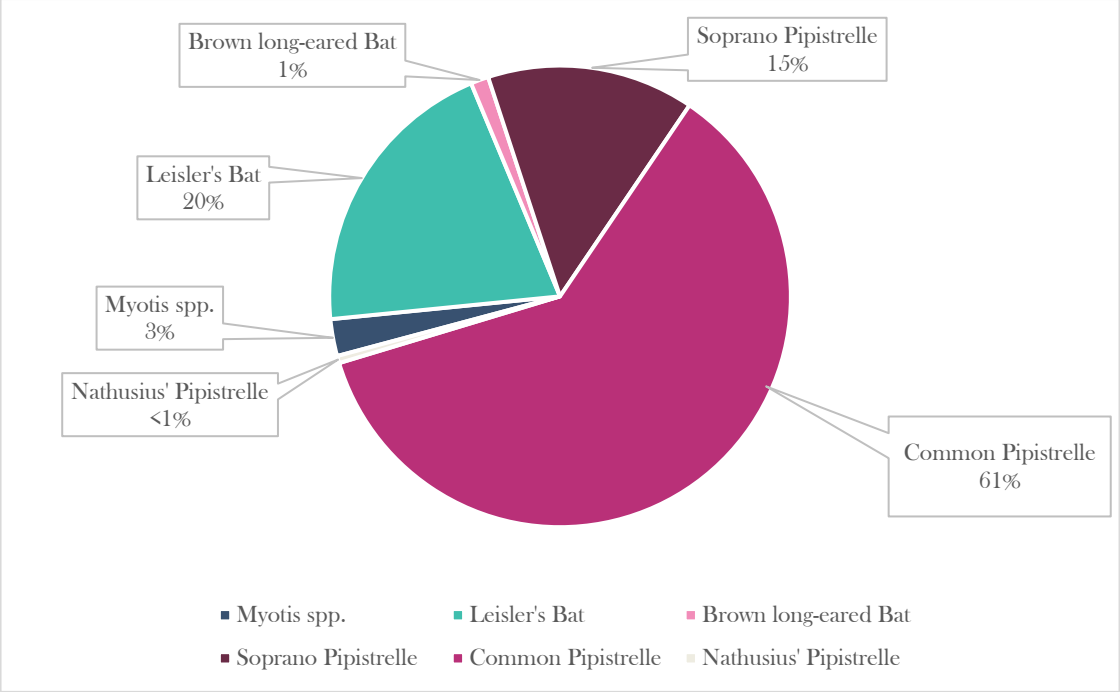


*Plate 3-3: Species composition of the site observed during manual surveys in 2024*

The 2024 manual surveys recorded a similar composition of bat species to 2022, with Common pipistrelle and Leisler's bat remaining the most frequently detected. Soprano pipistrelle and *Myotis* spp. showed higher activity in 2024, while Brown long-eared bat detections increased slightly but remained rare. Nathusius' pipistrelle (n=6) was recorded in 2024 but not in 2022, likely reflecting changes in detection or local presence. While differences in survey effort limit direct comparison of activity levels between years, the overall species composition remained broadly consistent.

Transect surveys in 2024 were carried out at dusk, with a standalone transect in spring and dusk emergence surveys followed by transects in summer and autumn. Survey results were calculated as bat passes per kilometre surveyed to account for differences in effort. Common pipistrelle remained the most frequently recorded species, with activity increasing notably in summer and continuing to rise into autumn, unlike the pattern observed in 2022. Leisler's bat and *Myotis* spp. also showed peak activity in summer. Nathusius' pipistrelle and Brown long-eared bat (*Plecotus auritus*) were both recorded during the 2024 transects but were absent from the 2022 manual transect results.

Foraging and commuting activity was concentrated along treelines, particularly around T1, T3, T4, and T5, with multiple species observed foraging near the Umma House derelict stables and mature treelines west of T9. Plate 3-4 presents species-specific results per survey period, while Figures 3-1 to 3-3 illustrate the spatial distribution of bat activity across each season.

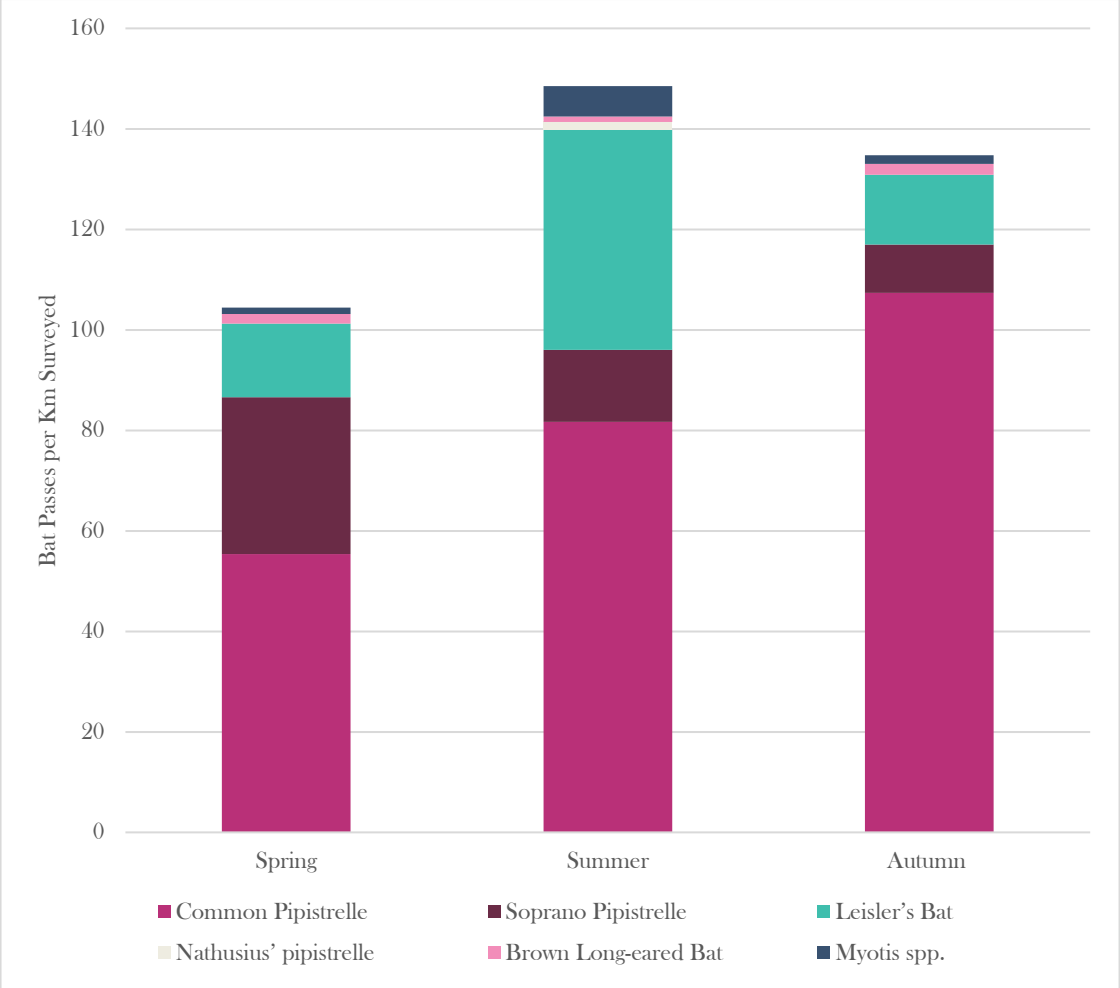


*Plate 3-4: Species composition per survey period during manual activity surveys in 2024, with bat passes standardised by kilometres of transect surveyed.*


## Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Spring Transect 08.05.2024

Spring Manual Results

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



| | |
|---|---|
| Drawing Title | Spring Manual Results |
| Project Title | Umma More Renewable Energy Development |
| Drawn By: CMM | Checked By: AJ |
| Project No.: 200402-b | Drawing No.: Figure 3-1 |
| Scale: 1:6,409 | Date: 11/06/2025 |

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


## Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- PRF Inspected
- Summer Transect 18.07.2024

### Summer Manual Results

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

N



Drawing Title

Summer Manual Results

Project Title

Umma More Renewable Energy Development

| Drawn By | Checked By |
|---|---|
| CM | AJ |
| Project No. | Drawing No. |
| 200402-b | Figure 3-2 |
| Scale | Date |
| 1:4,799 | 11/06/2025 |

MKO

Planning and Environmental Consultants

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


## Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- PRF Inspected
- Autumn Transect 28.08.2024

### Autumn Manual Results

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



N

Drawing Title

Autumn Manual Results

| Project Title | |
|---|---|
| Umma More Renewable Energy Development | |
| Drawn By: CM | Checked By: AJ |
| Project No.: 200402-b | Drawing No.: Figure 3-3 |
| Scale: 1:6,125 | Date: 11/06/2025 |

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

## 3.4 Ground-level Static Surveys

### Bat Activity - Total Bat Passes

In total, 178,525 bat passes were recorded across the 2024 ground-level static detector surveys. Common pipistrelle (*Pipistrellus pipistrellus*) remained the dominant species, accounting for 125,213 passes. Soprano pipistrelle (*Pipistrellus pygmaeus*) was the second most frequently recorded species (n = 39,035), followed by Leisler's bat (*Nyctalus leisleri*) with 11,470 passes. *Myotis* spp. were recorded less frequently (n = 1,784), with Brown long-eared bat (*Plecotus auritus*) contributing 517 passes and Nathusius' pipistrelle (*Pipistrellus nathusii*) with 506 bat passes. Plate 3-5 presents the relative species composition across all 2024 ground-level static detector surveys.

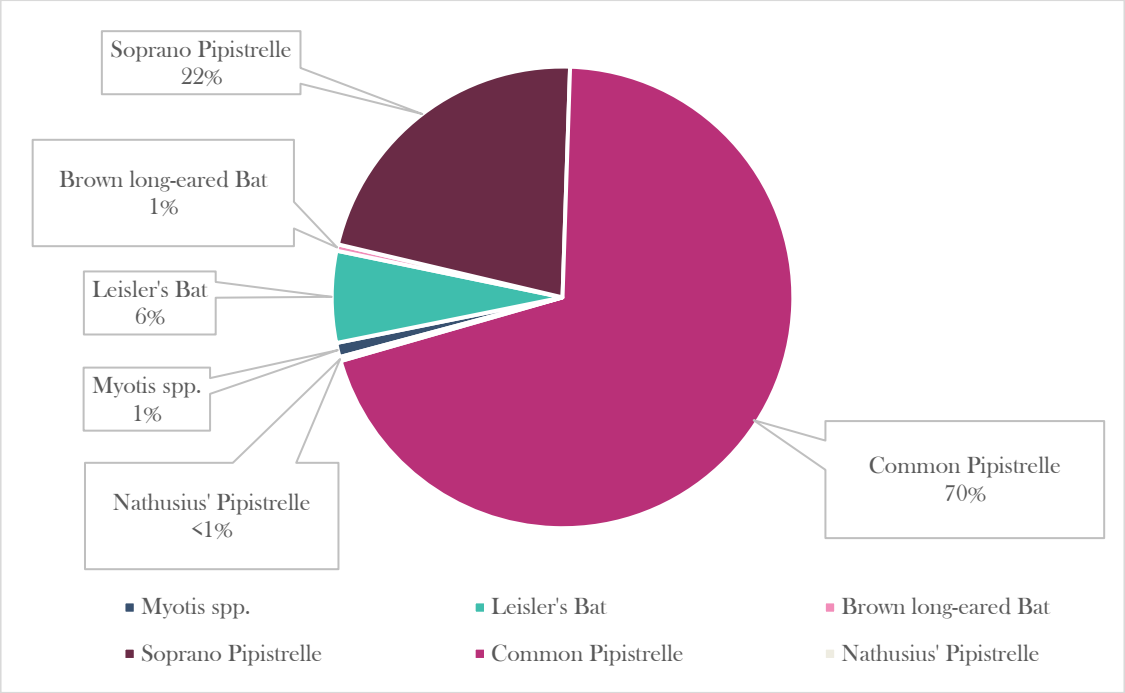


*Plate 3-5:Species composition at the proposed turbine locations from static detector data collected in 2024*

Compared with 2022, the 2024 ground-level static detector surveys recorded an increase in total bat passes, rising from 131,359 to 178,525. Common pipistrelle remained the most frequently recorded species, with detections increasing markedly. Soprano pipistrelle activity also rose significantly, while Leisler's bat remained consistent between years. In contrast, detections of *Myotis* spp. and Brown long-eared bat were lower in 2024. Nathusius' pipistrelle was again infrequently recorded but showed an increase in detections from 109 to 506. These changes may reflect genuine variations in bat activity, although differences in survey effort, including longer deployment periods in 2024, may also influence the results. Standardised analyses is undertaken below to account for these differences.

### Bat Activity – Standardised Bat Passes per Hour (bpph)

Bat activity in 2024 was calculated as bat passes per hour (bpph) per season to standardise for variation in survey effort and night length. Results are presented in Plate 3-6 and Table 3-3. Common pipistrelle remained the most frequently recorded species, with highest activity in spring (34.07 bpph), declining through summer (29.18) and autumn (25.53). Soprano pipistrelle followed a similar seasonal pattern, with peak activity in spring (12.22 bpph). Leisler's bat activity remained low across all seasons, highest in summer (4.17 bpph). *Myotis* spp. and Brown long-eared bat were recorded infrequently, with activity below 1 bpph in all seasons. Nathusius' pipistrelle was rarely detected, with trace activity in spring (0.17) and summer (0.20), and negligible detections in autumn (0.01).

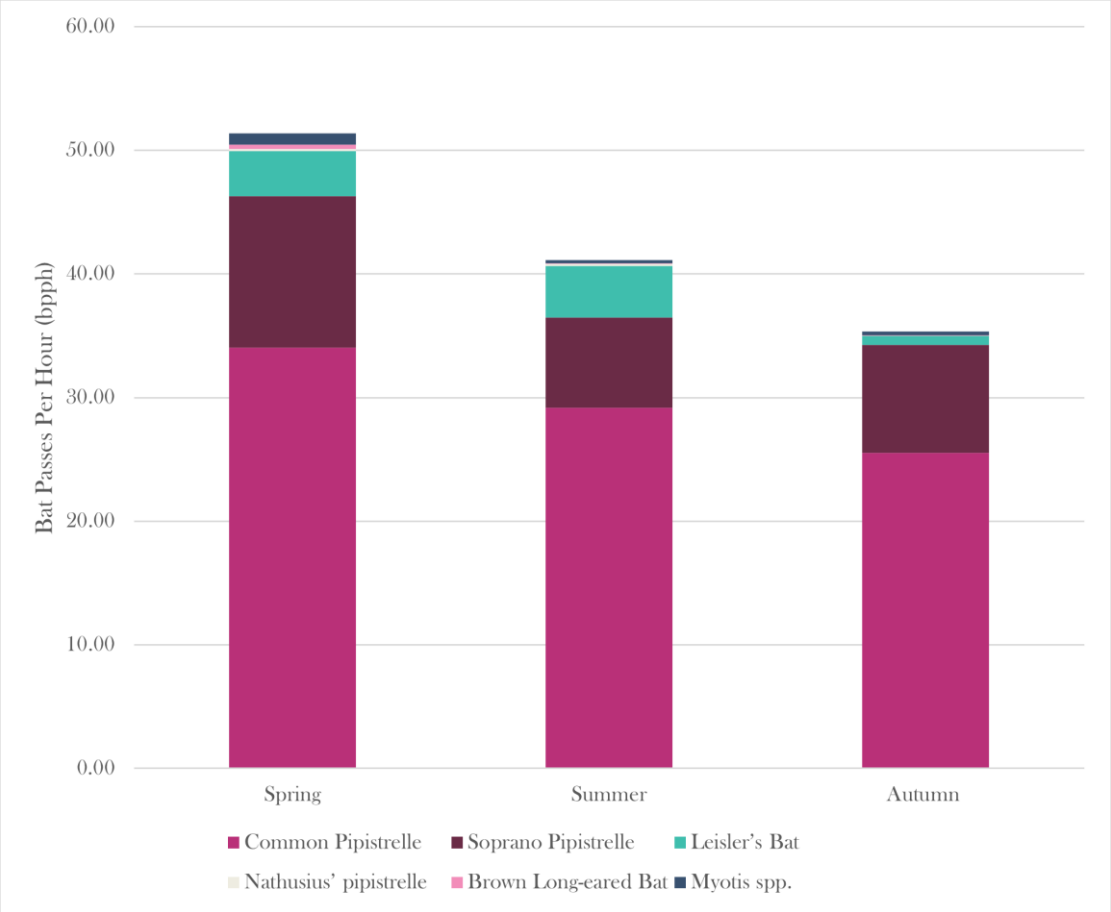


*Plate 3-6: Seasonal species composition at the site recorded through ground-level static detector surveys in 2024*

When compared with 2022, the overall total bat passes in 2024 were higher, however, when the data is standardised per survey effort, as bat passes per hour (bpph), the overall bat activity levels in 2024 were considerably lower across all species. In 2022, Common pipistrelle activity peaked in summer (202.12 bpph) and autumn (217.74), while in 2024 it was relatively stable and significantly reduced (max 34.07 in spring). Similarly, Soprano pipistrelle activity in 2022 was highest in summer (58.27 bpph), contrasting with a spring peak (12.22) in 2024 and lower activity overall. Leisler's bat was notably more active in 2022, especially in summer (35.8 bpph), compared to a maximum of 4.17 in 2024. *Myotis* spp. and Brown long-eared bat activity also declined markedly from 2022 to 2024, particularly in autumn. Nathusius' pipistrelle remained infrequently recorded in both years but was slightly more consistent across seasons in 2024. These differences likely reflect a combination of factors, including ecological variation between years and differences in total survey effort or weather conditions.

*Table 3-3: Static Detector Surveys 2024: Species Composition Across All Deployments (Total Bat Passes Per Hour, All Nights)*

| Species | Spring | Summer | Autumn |
|---|---|---|---|
| *Myotis spp.* | 0.88 | 0.25 | 0.30 |
| Leisler's bat | 3.65 | 4.17 | 0.72 |
| Nathusius' pipistrelle | 0.17 | 0.20 | 0.01 |
| Common pipistrelle | 34.07 | 29.18 | 25.53 |
| Soprano pipistrelle | 12.22 | 7.29 | 8.74 |
| Brown long-eared bat | 0.38 | 0.02 | 0.07 |
| ***Total Survey Hours*** | **951.4** | **1609.2** | **1795.6** |

As in 2022, the Nightly Pass Rate (bat passes per hour, per night) was used to assess bat activity levels across the Wind Farm Site in 2024. To account for variability between nights, the Median Nightly Pass Rate was also calculated, with zero values (i.e. nights with no detections) retained in the analysis (Lintott & Mathews, 2018). Plate 3-7 presents the 2024 results per detector and species for each season.

Activity in 2024 was highest during spring, particularly for Common pipistrelle (*Pipistrellus pipistrellus*), with peak median values of 79.5 bpph at D09 and 57.4 bpph at D06. Summer activity was more evenly distributed, although D08 showed elevated summer activity for Common pipistrelle (36.9 bpph). Soprano pipistrelle (*Pipistrellus pygmaeus*) was also widely recorded, especially in spring, with 27.2 bpph at D05 and 18.4 bpph at D06. Leisler's bat (*Nyctalus leisleri*) was most active in spring and summer, notably at D01 (6 bpph in spring) and D08 (6.7 bpph in summer).

*Myotis* spp. activity remained low across all detectors, with the highest spring values at D01 (3.1 bpph), and lower detections elsewhere. Brown long-eared bat (*Plecotus auritus*) was detected sporadically, with low spring activity at D01 (0.9 bpph) and D05 (0.5 bpph). Nathusius' pipistrelle (*P. nathusii*) continued to be rarely recorded, with low activity at D01 (0.4 bpph in summer) and D02 (0.4 bpph in spring). Detector D07 recorded the lowest overall activity across all seasons.


*Plate 3-7:Median Nightly Pass Rate per detector and season in 2024*

Compared to 2022, bat activity in 2024 followed a broadly similar seasonal pattern, with Common pipistrelle remaining the most widespread and frequently recorded species across all detectors. However, while summer and autumn 2022 showed the highest overall levels of activity — including peak median nightly rates exceeding 200 bpph — spring 2024 emerged as the most active period, albeit with generally lower median nightly values overall a pattern similar to the 2020 seasonal trends.

Leisler's bat continued to show seasonal variation across both years but had notably lower median nightly pass rates in 2024, with no detectors reaching the 2022 highs of 35.8 bpph recorded during summer at some locations. Similarly, Soprano pipistrelle activity was lower in 2024, particularly in summer, whereas 2022 showed frequent detections across all seasons and detectors.

In contrast, *Myotis* spp. activity remained generally low in both years but was somewhat more evenly distributed across detectors in 2024. Notably, detector D01 recorded higher spring *Myotis* activity in 2024 (3.1 bpph), whereas in 2022, activity was more concentrated at D06. Brown long-eared bat and Nathusius' pipistrelle remained infrequently recorded in both years, with only minor increases in median pass rates observed at a few detectors in 2024 (e.g., D01 and D02).

Overall, the 2024 data indicate a slight shift in seasonal peak activity and reduced nightly bat pass rates, which may reflect differences in detector deployment conditions or environmental factors.

## Bat Activity – EcoBat Results

Bat activity levels in 2024 were objectively assessed using the EcoBat tool, benchmarking nightly activity against a national reference dataset. Table 3-4 presents site-level EcoBat results for each species by season, with detector-level percentiles provided in Appendix 1. Compared to 2022, the 2024 data show a substantial increase in both median and maximum Ecobat percentiles across the site, particularly for the most frequently encountered species. The 2024 Ecobat median and maximum percentiles largely aligned with the 2020 Ecobat analysis.

Common pipistrelle activity was consistently High across all seasons in 2024, with median percentiles ranging from 86 to 89 and maximum values reaching the 100th percentile in each season. This represents a marked contrast with 2022, when median percentiles ranged from just 7 to 13. High nightly peaks in 2024 were observed at D09 (Spring and Autumn), D06 (Spring and Summer), and D08 (Summer), indicating widespread and frequent use of the site.

Leisler's bat recorded High activity in Spring (85th percentile) and Summer (88th), with peak detections at D06 and D08. Autumn activity declined to the 16th percentile, reflecting a seasonal dip also observed in 2022. Soprano pipistrelle showed improved activity levels in 2024, with Moderate–High median activity in Spring (69th percentile) and Moderate values in Summer and Autumn (52 and 46), an increase over 2022's consistently Low medians (8–18). High peaks were observed at D06 in Autumn and D01 in Summer.

Nathusius' pipistrelle was detected more frequently in 2024, with Moderate median percentiles in Spring (53) and Summer (46), and Low in Autumn (11), compared to near absence during the 2022 summer period. *Myotis* spp. recorded Moderate–High Spring activity (73rd percentile), particularly at D01 and D06, but activity declined in Summer (13) and Autumn (27), in contrast to 2022 where higher percentiles were observed despite lower overall detections.

Brown long-eared bats were most active in Spring (70th percentile), notably at detectors near mature woodland and treelines (e.g. D03 and D06). Summer and Autumn activity declined to Low levels (3 and 20), consistent with 2022 trends, though with a stronger Spring presence in 2024.

While detectors D06, D09, D08, and D01 consistently recorded Moderate to High median activity across both years, significant interannual and seasonal variation was observed throughout the detector network. This indicates that while certain detectors may reflect recurring hotspots, bat activity patterns are dynamic and influenced by broader environmental and behavioural factors.

All detectors in 2024 were positioned in proximity to proposed turbine locations adjacent to linear features assessed as having Moderate or High suitability for foraging and commuting bats, mirroring the 2022 methodology. With the implementation of the bat buffers, the turbines will be located within open habitats which are known to provide lower foraging and commuting suitability for bats.

*Table 3-4: Static Detector Surveys: Site-level EcoBat Analysis 2024*

| Survey Period | Median Percentile | Median Bat Activity | Max Percentile | Max Bat Activity | Nights Recorded | Ref Range |
|---|---|---|---|---|---|---|
| **Common pipistrelle** | | | | | | |
| Spring | 86 | High | 100 | High | 112 | 89147 |
| Summer | 89 | High | 100 | High | 229 | 206297 |
| Autumn | 88 | High | 100 | High | 152 | 187504 |
| **Soprano pipistrelle** | | | | | | |
| Spring | 69 | Moderate - High | 100 | High | 110 | 35385 |
| Summer | 52 | Moderate | 85 | High | 227 | 67295 |
| Autumn | 46 | Moderate | 100 | High | 153 | 75943 |
| **Leisler's bat** | | | | | | |
| Spring | 85 | High | 100 | High | 111 | 11824 |
| Summer | 88 | High | 100 | High | 227 | 31596 |
| Autumn | 16 | Low | 100 | High | 122 | 23963 |
| **Nathusius' pipistrelle** | | | | | | |
| Spring | 53 | Moderate | 97 | High | 49 | 208 |
| Summer | 46 | Moderate | 86 | High | 100 | 750 |
| Autumn | 11 | Low | 28 | Low - Moderate | 17 | 356 |
| ***Myotis* spp.** | | | | | | |
| Spring | 73 | Moderate - High | 81 | High | 102 | 4106 |
| Summer | 13 | Low | 46 | Moderate | 150 | 8260 |
| Autumn | 27 | Low - Moderate | 58 | Moderate | 119 | 8801 |
| **Brown long-eared bat** | | | | | | |
| Spring | 70 | Moderate - High | 93 | High | 80 | 759 |
| Summer | 3 | Low | 7 | Low | 25 | 2100 |
| Autumn | 20 | Low | 42 | Moderate | 66 | 2994 |

While absolute bat activity (i.e. bat passes per hour) recorded in 2022 was higher than in 2024, the EcoBat percentile rankings in 2022 were lower. This is due to the relative nature of EcoBat's reference database, which compares nightly bat activity at the site to a broad dataset of similar surveys from across Ireland. The 2022 survey season may have coincided with elevated bat activity nationally, resulting in lower percentile rankings despite higher raw counts. Conversely, the 2024 survey season appears to have been characterised by lower national bat activity, meaning that even modest bat activity at the site yielded high percentile rankings. As such, the higher EcoBat outputs in 2024 do not appear to reflect an increase in local bat activity but rather a relative difference in national trends, reinforcing the importance of interpreting percentile data in ecological context.

## 3.5 Importance of Bat Population Recorded at the Site

Ecological evaluation follows the methodology outlined in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009).

The bat population recorded at the Wind Farm Site remains of **Local Importance (Higher Value)**, consistent with the 2022 assessment. This is based on the continued regular use of the site by multiple bat species for foraging, commuting, and roosting.

Survey results from 2024 confirmed the presence of two active roosts within the wider site, including a previously identified transitional roost at Umma House and a smaller roost at the nearby stables. In addition, the 2024 EcoBat analysis demonstrated a notable increase in relative bat activity compared to 2022, particularly for Common pipistrelle, Leisler's bat, and Soprano pipistrelle, with multiple detectors recording high or moderate-high percentile values across seasons.

The increase in site-wide bat activity observed in 2024—alongside the confirmation of a potential roost site—reinforces the continued ecological value of the site for bats. However, the importance level remains appropriately categorised as Local Importance (Higher Value), as no roosts of National or Regional Importance were identified, and the site does not support exceptional population numbers or rare species.

# 4. RISK AND IMPACT ASSESSMENT

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

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

The assessment below draws on comprehensive bat survey data collected in 2020, 2022, and 2024, including updated roost survey results and 2024 EcoBat analysis, to predict the likely potential effects of the Proposed Development on bats.

## 4.1 Collision Mortality

### 4.1.1 Assessment of Site-Risk

The potential collision risk to bats at wind energy developments is strongly influenced by site-specific habitat suitability and local bat activity. In 2024, relative bat activity across the site increased compared to 2022, with Common pipistrelle and Leisler's bat in particular showing widespread and frequent high activity. Multiple detectors (notably D06, D08, D09, and D01) recorded High or Moderate–High activity percentiles, especially in spring and summer.

Although activity levels were higher, the bat assemblage remains dominated by widespread, common species, and the site is not located near any known maternity roost of national importance, swarming site, or major migratory corridor.

A site-based risk classification is provided below, updated to reflect 2024 findings.

*Table 4-1: Site-Risk Level Determination for the Proposed Development Site (Adapted from NatureScot, 2021)*

| Criteria | Site-specific Evaluation (2024) | Site Assessment |
|---|---|---|
| Habitat Risk | The site supports suitable foraging and commuting habitat, with linear features (hedgerows and treelines) present throughout. Two confirmed roosts are present: a previously known roost at Umma House and an individual bat roosting at the stables close by. The site is not located near a key roost complex or recognised flyway. The habitat is functionally connected to the wider landscape but does not constitute a high-quality mosaic or key migration corridor. | Moderate |
| Project Size | Small scale development (9 no. turbines).<br><br>No other wind energy development within 5km.<br><br>No other wind energy development within 10km.<br><br>Comprising turbines >100 m in height | Medium |
| **Site Risk Assessment (from criteria in Plate 3-3)** | | **Medium Site Risk (3)** |

The **Medium Site Risk classification remains appropriate** despite increased 2024 relative activity, as the development scale is unchanged and no new high-sensitivity habitat features were identified.

### 4.1.2 Assessment of Collision Risk

An updated assessment of collision risk was undertaken using static detector data collected in 2024 and analysed using the EcoBat tool, in accordance with NatureScot (2021) guidance. As in 2022, the site remains classified as Medium Site Risk, and EcoBat outputs were used to evaluate *Typical Activity* (median percentile) and *Activity Peaks* (maximum percentile) for key high-risk species.

The 2024 results show elevated percentile scores for several high-risk species, including Leisler's bat, Common pipistrelle, and Soprano pipistrelle. However, EcoBat percentiles represent relative activity in comparison to a national reference dataset, and do not directly indicate absolute activity levels or collision risk. In fact, bat passes per hour recorded in 2024 were generally lower than in previous years.

Tables 4-2 to 4-5 present the updated collision risk profiles based on the 2024 dataset. The increase in percentile scores relative to 2022 is likely a reflection of shifts within the reference dataset rather than a true rise in local activity or risk. Accordingly, and in line with the precautionary but proportionate approach adopted in the 2022 EIAR, **no changes to the existing mitigation strategy are required**. Post-construction monitoring will continue as planned, with scope to adjust measures if operational evidence indicates an elevated collision risk.

*Table 4-2: Leisler's bat - Overall Risk Assessment 2024*

| Survey Period | Site Risk | Typical Activity (Median) | Typical Risk Assessment | Activity Peaks (Maximum) | Peak Risk Assessment |
|---|---|---|---|---|---|
| Spring | Medium | High (85th percentile) | High (15) | High (100th percentile) | High (15) |
| Summer | Medium | High (88th percentile) | High (15) | High (100th percentile) | High (15) |
| Autumn | Medium | Low (16th percentile) | Low (3) | High (100th percentile) | High (15) |

*Table 4-3: Soprano pipistrelle - Overall Risk Assessment 2024*

| Survey Period | Site Risk | Typical Activity (Median) | Typical Risk Assessment | Activity Peaks (Maximum) | Peak Risk Assessment |
|---|---|---|---|---|---|
| Spring | Medium | Medium (69th percentile) | Medium (9) | High (100th percentile) | High (15) |
| Summer | Medium | Medium (52nd percentile) | Medium (9) | High (85th percentile) | High (15) |
| Autumn | Medium | Medium (46th percentile) | Medium (9) | High (100th percentile) | High (15) |

*Table 4-4: Common pipistrelle - Overall Risk Assessment 2024*

| Survey Period | Site Risk | Typical Activity (Median) | Typical Risk Assessment | Activity Peaks (Maximum) | Peak Risk Assessment |
|---|---|---|---|---|---|
| Spring | Medium | High (86th percentile) | High (15) | High (100th percentile) | High (15) |
| Summer | Medium | High (89th percentile) | High (15) | High (100th percentile) | High (15) |
| Autumn | Medium | High (88th percentile) | High (15) | High (100th percentile) | High (15) |

*Table 4-5: Nathusius' pipistrelle - Overall Risk Assessment 2024*

| Survey Period | Site Risk | Typical Activity (Median) | Typical Risk Assessment | Activity Peaks (Maximum) | Peak Risk Assessment |
|---|---|---|---|---|---|
| Spring | Medium | Medium (53rd percentile) | Medium (9) | High (97th percentile) | High (15) |
| Summer | Medium | Medium (46th percentile) | Medium (9) | High (86th percentile) | High (15) |
| Autumn | Medium | Low (11th percentile) | Low (3) | Low (28th percentile) | Low (3) |

### 4.1.3 Collision Risk Summary

Site-level collision risk for high collision risk bat species was typically ***Medium*** to ***High***. Overall bat activity levels were typical of the nature of the Wind Farm Site, which is predominantly agricultural grasslands with treelines delineating field boundaries and conifer forestry with varying levels of bat activity recorded during the static detector surveys as well as the walked transects undertaken.

In the 2022 Ecobat analysis some detectors recorded high median activity levels across at least one season and therefore to take a precautionary approach given the potential for high collision risk at high median activity levels, an adaptive monitoring and mitigation strategy has already been devised for the Proposed Development. This was devised in line with the case study example provided in Appendix 5 of the NatureScot 2021 Guidance. This still applies to the 2024 Ecobat analysis and risk assessment and therefore no update is required at this stage.

## 4.2 Loss or Damage to Commuting and Foraging Habitat

The assessment of potential impacts to commuting and foraging habitat for bats remain consistent with the 2022 EIAR. The Proposed Development continues to be situated predominantly within agricultural land with extensive linear features such as treelines, hedgerows, and areas of conifer forestry. The mitigation measures outlined in the original report, including tree felling buffers, road widening, and construction-related habitat management, remain appropriate and sufficient. The replanting plan detailed in Section 6.1.4 of the 2022 EIAR is still considered suitable to mitigate any habitat loss and maintain connectivity, with no anticipated significant effects on bat commuting or foraging habitat.

## 4.3 Loss of, or Damage to, Roosts

The majority of the information and conclusions in the 2022 EIAR regarding roost loss or damage remain valid. The two small common and soprano pipistrelle roosts identified in structures within the site will be retained and avoided as part of the Proposed Development. No other roosts were identified in any other PRFs surveyed; however, on a precautionary basis, a pre-commencement survey is proposed for any structures requiring removal and any trees with PRFs requiring felling. As such, no loss or damage to roosts is anticipated.

Other aspects related to trees and watercourse infrastructure continue to be relevant as presented in the original EIAR. No potential for significant effect with regard to the loss of, or damage to roosting habitat as a result of the Proposed Development is anticipated.

## 4.4 Displacement of Individuals or Populations

The assessment of displacement risk remains consistent with the 2022 EIAR conclusions. Given that no significant net loss of linear landscape features or ecologically important roosting sites is anticipated, and with the continued implementation of mitigation measures, the habitats across the Wind Farm Site will remain suitable for bats. Therefore, no significant displacement of individuals or populations is expected as a result of the Proposed Development.

# 5. BEST PRACTICE AND MITIGATION MEASURES

The mitigation and best practice measures detailed in the 2022 EIAR remain fully applicable and continue to provide a robust framework for the protection of bats and their habitats throughout the Proposed Development. This Addendum Report assumes the continued implementation of all previously recommended measures, except for the specific updates outlined below, which respond to new data and findings from the 2024 surveys, as well as recently published guidelines:

- Institute of Lighting Professionals Guidance Note 08/23: Bats and Artificial Lighting at Night (ILP, 2023)
- Marnell, F., Kelleher, C., & Mullen, E. (2022). Bat Mitigation Guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

The exceptions and updates provided in this section are intended to refine and enhance mitigation.

## 5.1 Updated Lighting Mitigation Measures

In line with ILP Guidance Note 08/23 (2023), lighting design across the Proposed Development will be optimised to reduce potential impacts on bats:

- Lighting spectra will prioritise warm light sources with colour temperatures below 2700K, minimising blue and green wavelengths known to disturb bats.
- The use of adaptive lighting controls, including motion sensors, dimmers, timers, and lighting zones, will reduce unnecessary illumination duration and intensity near bat habitats.
- All lighting will be designed with full shielding and directionality to prevent light spill onto identified commuting routes and foraging areas.
- Post-installation lighting monitoring will be conducted, enabling adaptive management should evidence of bat disturbance or collision risk arise.

## 5.2 Tree Felling and Habitat Management

In accordance with Marnell *et al.* (2022), the following updated best practices will apply to tree works and habitat management:

- A pre-commencement survey will be carried out by a suitably qualified ecologist on trees/structures with PRFs proposed for felling/removal.
- If, following the pre-commencement survey, a bat roost is identified within any of the trees/structures to be removed/pruned, a bat derogation licence will be obtained from the NPWS, prior to removal and the removal activity will be supervised by a qualified ecologist.
- All works affecting potential or confirmed roosts will be undertaken at the appropriate time of year under the necessary derogation licenses and with continuous supervision from a licensed bat ecologist, where required.
- Linear features such as hedgerows and treelines, which provide essential bat commuting routes, will be retained and enhanced wherever possible to maintain habitat connectivity.
- New planting and veteranisation will prioritise native tree and shrub species to improve long-term roosting and foraging habitat quality.

## 5.3 Monitoring and Adaptive Management

To ensure continued effectiveness of mitigation measures, a comprehensive monitoring programme will be maintained:

- Post-construction bat activity and mortality monitoring will continue for a minimum of three years, following the guidelines of Marnell *et al.* (2022).
- Adaptive mitigation, including potential turbine curtailment or lighting adjustments, will be implemented as necessary if monitoring indicates elevated collision risk or disturbance.

## 5.4 Residual Impacts

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

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

However, a temporary residual effect at the local geographic scale is anticipated in relation to the loss of commuting and foraging habitat, due to the removal of hedgerows required to facilitate construction and bat buffers. While this loss will be offset through a comprehensive hedgerow enhancement and replanting programme, it will take approximately 5–10 years for newly planted hedgerows to establish and restore full habitat functionality. As such, a minor temporary reduction in ecological connectivity may occur during this period.

# 6. CONCLUSION

The 2024 bat surveys and EcoBat analysis reaffirm the Medium Site Risk classification for the Proposed Development, with high seasonal peaks in median activity. Increases in percentile activity metrics are likely attributable to reference dataset shifts rather than local activity escalation.

No substantive changes to impacts on commuting, foraging habitats, or roost availability are anticipated relative to the 2022 EIAR. Continued implementation of established mitigation and a robust monitoring regime will facilitate adaptive management to ensure protection of bat populations.

In summary, the Proposed Development will not result in significant adverse effects on local bat assemblages when mitigation and monitoring measures are applied.

# 7. BIBLIOGRAPHY

Andrews, H. (2018). Bats Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals. Bat Tree Habitat Key. Pelagic Publishing, Exeter, UK. 264 pp.

Chartered Institute of Ecology and Environmental Management (CIEEM). (2023). Advice Note: Use of Ecological Data in Impact Assessment. Winchester, UK. Available at: https://cieem.net/resource/advice-note-use-of-ecological-data-in-impact-assessment/

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

Institute of Lighting Professionals (ILP). (2023). Guidance Note 08/23: Bats and Artificial Lighting at Night. ILP.

Lintott, P.R., Davison, S., van Breda, J., Kubasiewicz, L., Dowse, D., Daisley, J., Haddy, E., & Mathews, F. (2018). Ecobat: An online resource to facilitate transparent, evidence-based interpretation of bat activity data. Ecology and Evolution, 8(2), 935–941. https://doi.org/10.1002/ece3.3692

Marnell, F., Kelleher, C., & Mullen, E. (2022). Bat Mitigation Guidelines for Ireland (Version 2). Irish Wildlife Manuals No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

National Roads Authority (NRA). (2009). Guidelines for Assessment of Ecological Impacts of National Roads Schemes. Dublin, Ireland.

NatureScot. (2021). Guidance on Assessing the Impact of Onshore Wind Turbines on Bats. NatureScot.

# APPENDIX 1

## ECOBAT – 2024 PER-DETECTOR RESULTS

# ECOBAT ANALYSIS – PER DETECTOR RESULTS

## Appendix 1 – Umma More Ecobat Per Detector Results - 2024

# ECOBAT ANALYSIS – PER DETECTOR RESULTS

Summary tables are provided for each species recorded showing key metrics per detector per survey period in 2024.

## BROWN LONG-EARED BAT

| Nights Recorded | Ref Range | Detector ID | Median Percentile | Median Bat Activity Level | 95% Confidence Interval | Max Bat Activity | Max Bat Activity Level |
|---|---|---|---|---|---|---|---|
| **Spring** | | | | | | | |
| 14 | 759 | D01 | 72 | Moderate to High | 55 - 80 | 93 | High |
| 13 | 759 | D02 | 70 | Moderate to High | 54.5 - 77 | 93 | High |
| 11 | 759 | D03 | 74 | Moderate to High | 52.5 - 83.5 | 93 | High |
| 2 | 759 | D04 | 80 | Moderate to High | 79.5 - 79.5 | 93 | High |
| 13 | 759 | D05 | 74 | Moderate to High | 55 - 83 | 93 | High |
| 10 | 759 | D06 | 59 | Moderate | 38 - 86 | 93 | High |
| - | - | D07 | - | - | - | - | - |
| 10 | 759 | D08 | 70 | Moderate to High | 50.5 - 81.5 | 93 | High |
| 7 | 759 | D09 | 44 | Moderate | 32.5 - 89.5 | 93 | High |
| **Summer** | | | | | | | |
| - | - | D01 | - | - | - | - | - |
| 5 | 2100 | D02 | 7 | Low | 7 - 7 | 7 | Low |
| 2 | 2100 | D03 | 2 | Low | 1.5 - 1.5 | 3 | Low |
| 2 | 2100 | D04 | 4 | Low | 3.5 - 3.5 | 7 | Low |
| - | - | D05 | - | - | - | - | - |
| 8 | 2100 | D06 | 0 | Low | 7 - 7 | 7 | Low |
| 2 | 2100 | D07 | 5 | Low | 5 -7 | 7 | Low |
| 4 | 2100 | D08 | 7 | Low | 7 - 7 | 7 | Low |
| 2 | 2100 | D09 | 4 | Low | 3.5 – 3.5 | 7 | Low |
| **Autumn** | | | | | | | |
| - | - | D01 | - | - | - | - | - |
| 11 | 2994 | D02 | 23 | Low to Moderate | 12 – 35 | 42 | Low to Moderate |
| 4 | 2994 | D03 | 24 | Low to Moderate | 11 – 37 | 37 | Low to Moderate |
| 14 | 2994 | D04 | 22 | Low to Moderate | 11 – 31 | 42 | Low to Moderate |
| 3 | 2994 | D05 | 11 | Low | 8 – 42 | 42 | Low to Moderate |
| 15 | 2994 | D06 | 2 | Low | 2 – 17 | 32 | Low to Moderate |
| 2 | 2994 | D07 | 0 | Low | 0 - 0 | 0 | Low |
| 10 | 2994 | D08 | 26 | Low to Moderate | 8 – 35 | 42 | Low to Moderate |
| 6 | 2994 | D09 | 26 | Low to Moderate | 9 – 37 | 42 | Low to Moderate |

Planning and Environmental Consultants

## COMMON PIPISTRELLE

| Nights Recorded | Ref Range | Detector ID | Median Bat Activity | Median Bat Activity Level | 95% Confidence Interval | Max Bat Activity | Max Bat Activity Level |
|---|---|---|---|---|---|---|---|
| Spring | | | | | | | |
| 14 | 89147 | D01 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D02 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D03 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D04 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D05 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D06 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D07 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D08 | 86 | High | 76.5 - 92 | 100 | High |
| 14 | 89147 | D09 | 86 | High | 76.5 - 92 | 100 | High |
| Summer | | | | | | | |
| 28 | 206297 | D01 | 90 | High | 78 - 92 | 100 | High |
| 29 | 206297 | D02 | 89 | High | 76 - 91.5 | 100 | High |
| 28 | 206297 | D03 | 90 | High | 76 - 92 | 100 | High |
| 28 | 206297 | D04 | 89 | High | 76.5 - 91.5 | 100 | High |
| - | - | D05 | - | - | - | - | - |
| 29 | 206297 | D06 | 89 | High | 76 - 91.5 | 100 | High |
| 29 | 206297 | D07 | 89 | High | 76 - 91.5 | 100 | High |
| 29 | 206297 | D08 | 89 | High | 76 - 91.5 | 100 | High |
| 29 | 206297 | D09 | 89 | High | 76 - 91.5 | 100 | High |
| Autumn | | | | | | | |
| 16 | 187504 | D01 | 90 | High | 77.5 - 94 | 100 | High |
| 16 | 187504 | D02 | 90 | High | 77.5 - 94 | 100 | High |
| 16 | 187504 | D03 | 90 | High | 77.5 - 94 | 100 | High |
| 16 | 187504 | D04 | 90 | High | 77.5 - 94 | 100 | High |
| 16 | 187504 | D05 | 90 | High | 77.5 - 94 | 100 | High |
| 19 | 187504 | D06 | 8 | Low | 7 – 15 | 22 | Low to Moderate |
| 21 | 187504 | D07 | 1 | Low | 4.5 - 12 | 16 | Low |
| 16 | 187504 | D08 | 90 | High | 77.5 - 94 | 100 | High |
| 16 | 187504 | D09 | 90 | High | 77.5 - 94 | 100 | High |

## LEISLER'S BAT

| Nights Recorded | Ref Range | Detector ID | Median Bat Activity | Median Bat Activity Level | 95% Confidence Interval | Max Bat Activity | Max Bat Activity Level |
|---|---|---|---|---|---|---|---|
| **Spring** | | | | | | | |
| 14 | 11824 | D01 | 81 | High | 75 - 90.5 | 100 | High |
| 14 | 11824 | D02 | 81 | High | 73.5 - 90.5 | 100 | High |
| 14 | 11824 | D03 | 81 | High | 75 - 90.5 | 100 | High |
| 13 | 11824 | D04 | 85 | High | 75 - 92 | 100 | High |
| 14 | 11824 | D05 | 81 | High | 75 - 90.5 | 100 | High |
| 14 | 11824 | D06 | 81 | High | 75 - 90.5 | 100 | High |
| - | - | D07 | - | - | - | - | - |
| 14 | 11824 | D08 | 81 | High | 75 - 90.5 | 100 | High |
| 14 | 11824 | D09 | 81 | High | 75 - 90.5 | 100 | High |
| **Summer** | | | | | | | |
| 28 | 31596 | D01 | 89 | High | 85 - 92 | 100 | High |
| 29 | 31596 | D02 | 88 | High | 84 - 92 | 100 | High |
| 27 | 31596 | D03 | 89 | High | 85 - 92.5 | 100 | High |
| 28 | 31596 | D04 | 89 | High | 84.5 - 92 | 100 | High |
| - | - | D05 | - | - | - | - | - |
| 29 | 31596 | D06 | 88 | High | 84 - 92 | 100 | High |
| 29 | 31596 | D07 | 88 | High | 84 - 92 | 100 | High |
| 29 | 31596 | D08 | 88 | High | 84 - 92 | 100 | High |
| 28 | 31596 | D09 | 89 | High | 84.5 - 92 | 100 | High |
| **Autumn** | | | | | | | |
| 11 | 23963 | D01 | 54 | Moderate | 14 - 77 | 100 | High |
| 14 | 23963 | D02 | 35 | Low to Moderate | 14 - 66.5 | 100 | High |
| 14 | 23963 | D03 | 35 | Low to Moderate | 13.5 - 66.5 | 100 | High |
| 15 | 23963 | D04 | 54 | Moderate | 14 - 66.5 | 100 | High |
| 16 | 23963 | D05 | 35 | Low to Moderate | 14 - 58 | 100 | High |
| 17 | 23963 | D06 | 0 | Low | 0 - 0 | 1 | Low |
| 5 | 23963 | D07 | 0 | Low | 0 - 0 | 0 | Low |
| 16 | 23963 | D08 | 35 | Low to Moderate | 14 - 58 | 100 | High |
| 14 | 23963 | D09 | 35 | Low to Moderate | 13.5 - 66.5 | 100 | High |

Planning and Environmental Consultants

## MYOTIS SPP

| Nights Recorded | Ref Range | Detector ID | Median Bat Activity | Median Bat Activity Level | 95% Confidence Interval | Max Bat Activity | Max Bat Activity Level |
|---|---|---|---|---|---|---|---|
| **Spring** | | | | | | | |
| 14 | 4106 | D01 | 74 | Moderate to High | 66 - 77 | 81 | High |
| 13 | 4106 | D02 | 73 | Moderate to High | 60.5 - 74.5 | 81 | High |
| 14 | 4106 | D03 | 64 | Moderate to High | 58 - 73 | 81 | High |
| 11 | 4106 | D04 | 73 | Moderate to High | 60.5 - 77.5 | 81 | High |
| 13 | 4106 | D05 | 74 | Moderate to High | 66.5 - 77 | 81 | High |
| 14 | 4106 | D06 | 74 | Moderate to High | 66 - 77 | 81 | High |
| - | - | D07 | - | - | - | - | - |
| 11 | 4106 | D08 | 73 | Moderate to High | 59 - 77 | 81 | High |
| 12 | 4106 | D09 | 74 | Moderate to High | 60.5 - 77 | 81 | High |
| **Summer** | | | | | | | |
| 19 | 8260 | D01 | 19 | Low | 15.5 - 29.5 | 46 | Moderate |
| 20 | 8260 | D02 | 15 | Low | 13 - 28 | 46 | Moderate |
| 13 | 8260 | D03 | 19 | Low | 13 - 33.5 | 46 | Moderate |
| 21 | 8260 | D04 | 19 | Low | 15 - 29.5 | 46 | Moderate |
| 25 | 8260 | D05 | 13 | Low | 13 - 28.5 | 46 | Moderate |
| 23 | 8260 | D06 | 13 | Low | 10.5 - 21 | 46 | Moderate |
| 21 | 8260 | D07 | 13 | Low | 13 - 29.5 | 46 | Moderate |
| 8 | 8260 | D08 | 13 | Low | 7 – 44 | 46 | Moderate |
| 19 | 8260 | D09 | 19 | Low | 15.5 - 29.5 | 46 | Moderate |
| **Autumn** | | | | | | | |
| 13 | 8801 | D01 | 40 | Low to Moderate | 28.5 - 46 | 58 | Moderate |
| 14 | 8801 | D02 | 33 | Low to Moderate | 26.5 - 44 | 58 | Moderate |
| 10 | 8801 | D03 | 23 | Low to Moderate | 18 - 37.5 | 52 | Moderate |
| 16 | 8801 | D04 | 38 | Low to Moderate | 28.5 - 44 | 58 | Moderate |
| 12 | 8801 | D05 | 38 | Low to Moderate | 22.5 - 44 | 58 | Moderate |
| 16 | 8801 | D06 | 4 | Low | 3 - 5.5 | 7 | Low |
| 11 | 8801 | D07 | 0 | Low | 0 – 5 | 5 | Low |
| 15 | 8801 | D08 | 40 | Low to Moderate | 29 - 46 | 58 | Moderate |
| 12 | 8801 | D09 | 33 | Low to Moderate | 25 - 44 | 58 | Moderate |

| NATHUSIUS PIPISTRELLE | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nights Recorded | Ref Range | Detector ID | Median Bat Activity | Median Bat Activity Level | 95% Confidence Interval | Max Bat Activity | Max Bat Activity Level |
| Spring | | | | | | | |
| 9 | 280 | D01 | 45 | Moderate | 25 - 75 | 97 | High |
| 10 | 280 | D02 | 53 | Moderate | 37 - 72.5 | 97 | High |
| 12 | 280 | D03 | 47 | Moderate | 30.5 - 69 | 97 | High |
| 1 | 280 | D04 | 53 | Moderate | 0 | 53 | Moderate |
| 2 | 280 | D05 | 57 | Moderate | 56.5 - 56.5 | 72 | Moderate to High |
| 5 | 280 | D06 | 45 | Moderate | 36 - 58.5 | 72 | Moderate to High |
| - | - | D07 | - | - | - | - | - |
| 4 | 280 | D08 | 47 | Moderate | 41 - 56.5 | 72 | Moderate to High |
| 6 | 280 | D09 | 73 | Moderate to High | 53.5 - 88 | 97 | High |
| Summer | | | | | | | |
| 25 | 750 | D01 | 46 | Moderate | 33.5 - 52.5 | 86 | High |
| 14 | 750 | D02 | 40 | Low to Moderate | 28.5 - 55.5 | 86 | High |
| 11 | 750 | D03 | 44 | Moderate | 29 - 60 | 86 | High |
| 4 | 750 | D04 | 76 | Moderate to High | 51.5 - 78 | 78 | Moderate to High |
| - | - | D05 | - | - | - | - | - |
| 6 | 750 | D06 | 40 | Low to Moderate | 33 - 65 | 86 | High |
| 6 | 750 | D07 | 57 | Moderate | 35 - 74 | 86 | High |
| 16 | 750 | D08 | 50 | Moderate | 33.5 - 60 | 86 | High |
| 18 | 750 | D09 | 48 | Moderate | 40 - 61 | 86 | High |
| Autumn | | | | | | | |
| 1 | 356 | D01 | 28 | Low to Moderate | 0 | 28 | Low to Moderate |
| 2 | 356 | D02 | 15 | Low | 15 - 15 | 24 | Low |
| 4 | 356 | D03 | 18 | Low | 6 – 28 | 28 | Low to Moderate |
| 1 | 356 | D04 | 6 | Low | 0 | 6 | Low |
| - | - | D05 | - | - | - | - | - |
| 3 | 356 | D06 | 11 | Low | 11 – 11 | 11 | Low |
| - | - | D07 | - | - | - | - | - |
| 5 | 356 | D08 | 24 | Low to Moderate | 15 - 24 | 24 | Low |
| 1 | 356 | D09 | 11 | Low | 0 | 11 | Low |

| SOPRANO PIPISTRELLE | | | | | | | |
|---|---|---|---|---|---|---|---|
| Nights Recorded | Ref Range | Detector ID | Median Bat Activity | Median Bat Activity Level | 95% Confidence Interval | Max Bat Activity | Max Bat Activity Level |
| Spring | | | | | | | |
| 14 | 35385 | D01 | 67 | Moderate to High | 48 - 72.5 | 100 | High |
| 13 | 35385 | D02 | 69 | Moderate to High | 53 - 79.5 | 100 | High |
| 14 | 35385 | D03 | 67 | Moderate to High | 48 - 72.5 | 100 | High |
| 13 | 35385 | D04 | 69 | Moderate to High | 52 - 79.5 | 100 | High |
| 14 | 35385 | D05 | 67 | Moderate to High | 48 - 72.5 | 100 | High |
| 14 | 35385 | D06 | 67 | Moderate to High | 48 - 72.5 | 100 | High |
| - | - | D07 | - | - | - | - | - |
| 14 | 35385 | D08 | 67 | Moderate to High | 48 - 72.5 | 100 | High |
| 14 | 35385 | D09 | 64 | Moderate to High | 48 - 72.5 | 100 | High |
| Summer | | | | | | | |
| 28 | 67295 | D01 | 61 | Moderate to High | 52.5 - 67.5 | 85 | High |
| 29 | 67295 | D02 | 52 | Moderate | 50 - 67 | 85 | High |
| 28 | 67295 | D03 | 52 | Moderate | 50.5 - 66.5 | 85 | High |
| 28 | 67295 | D04 | 61 | Moderate to High | 52.5 - 67.5 | 85 | High |
| - | - | D05 | - | - | - | - | - |
| 29 | 67295 | D06 | 52 | Moderate | 51 - 67 | 85 | High |
| 29 | 67295 | D07 | 51 | Moderate | 50 - 66 | 85 | High |
| 28 | 67295 | D08 | 52 | Moderate | 50 - 66.5 | 85 | High |
| 28 | 67295 | D09 | 51 | Moderate | 48 - 66 | 85 | High |
| Autumn | | | | | | | |
| 16 | 75943 | D01 | 65 | Moderate to High | 49.5 - 72 | 100 | High |
| 16 | 75943 | D02 | 65 | Moderate to High | 49.5 - 72 | 100 | High |
| 16 | 75943 | D03 | 65 | Moderate to High | 49.5 - 72 | 100 | High |
| 16 | 75943 | D04 | 65 | Moderate to High | 49.5 - 72 | 100 | High |
| 16 | 75943 | D05 | 65 | Moderate to High | 49.5 - 72 | 100 | High |
| 19 | 75943 | D06 | 23 | Low to Moderate | 17.5 - 57 | 97 | High |
| 22 | 75943 | D07 | 1 | Low | 2 – 15 | 25 | Low to Moderate |
| 16 | 75943 | D08 | 65 | Moderate to High | 49.5 - 72 | 100 | High |
| 16 | 75943 | D09 | 65 | Moderate to High | 49.5 - 72 | 100 | High |