



Technical Appendix 6.3: Bat Survey Report

Dalfad Wind Farm

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Basis of Report

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1.0 Introduction

MacArthur Green (now SLR Consulting Ltd) was commissioned by the Applicant to carry out bat surveys at the proposed Dalfad Wind Farm located east of Cumnock, East Ayrshire (hereafter referred to as the 'Proposed Development').

This report presents the findings of the bat survey work carried out between April and September 2025. This report should be read in conjunction with the associated results figures, i.e. **Figures 6.6 – 6.10** of Environmental Impact Assessment Report (EIAR) **Chapter 6: Ecology**, which are referenced throughout.

1.1 Site Context and Description

The Proposed Development ('the Site') is located approximately 4 km north-east of Cumnock and 28 km east of Ayr, within the East Ayrshire Council (EAC) administrative area (central Ordnance Survey [OS] grid reference NS 62781 21809). The Site is situated in a predominantly rural environment, characterised by agricultural land, forestry and former coal mining sites. The northern part of the Site is located on the former Dalfad Opencast Mine, and part of the former Duncanziemere Coal Mine, and the southern part of the Site consisting predominantly of agricultural land. The Dalfad Opencast Mine is a partially restored brownfield site in need of restoration betterment, with the Duncanziemere Opencast Mine in need of further restoration. Both of these former coal mines are EAC priority areas for restoration¹. Most of the opencast areas have been backfilled, with limited ongoing surface restoration being undertaken by the current landowner.

For full details regarding the Site and Proposed Development please refer to **Chapter 2: Project Description** of the EIAR.

1.2 Scope of Study

The aim of this study was to provide baseline information relating to use of the Site by bats and associated levels of activity. This in turn allows for an assessment of the level of potential risk to bat species as a result of the Proposed Development.

Specific study objectives were to:

- assess the suitability of habitats within the Site for supporting commuting, foraging and roosting bats;
- identify the bat species assemblage using the Site;
- assess the level of activity of all bat species recorded at the Site, both spatially and temporally;
- use the baseline information to inform design; and
- assess the potential risk of turbine-related impacts for each bat species recorded within the Site.

¹ East Ayrshire Council, 2013. "Opencast Mining in East Ayrshire –Steps to Recovery, Council". <https://www.east-ayrshire.gov.uk/CouncilAndGovernment/About-the-Council/MinutesAgendasAndReports/OpencastCoalUpdate.aspx>



A full assessment of impacts resulting from the Proposed Development, and establishment of mitigation measures, if required, is beyond the scope of this Technical Appendix and is covered separately within **Chapter 6: Ecology** of the EIA Report.

1.3 Relevant Legislation

All bats in Scotland are classed as European protected species and receive full protection under both national and international legislation (**Annex A**). The overarching aim of this legislation is to protect, restore and maintain populations of protected bat species at favourable conservation status². It is therefore an offence to intentionally or recklessly kill, injure or disturb any bat, or damage or destroy a bat roost.

While bat fatalities associated with wind farms are generally considered to relate to 'incidental' killing³ and are unlikely to class as an offence, once a certain level of fatality impact is reached, such killing may cease to be incidental and become classified as intentional or reckless. It is therefore important to understand what species of bat utilise the Site, and how they use it, so that any potential impacts on populations can be adequately assessed, avoided, and/or mitigated for, to ensure compliance with relevant legislation.

2.0 Methodology

2.1 Desk Study

2.1.1 Online Data Search

A search for statutory designated sites (for which bats are a qualifying feature) within 10 km of the Site, was conducted through the NatureScot Sitelink⁴ website. In addition, a review of aerial imagery (Google Earth⁵) to identify habitats within the Site and surrounding area that bats may utilise for commuting, foraging or roosting purposes was carried out to inform field survey planning.

For information relating to bat records within 10 km of the Site, recorded between years 2010-2025, a search for commercially available data was carried out through the National Biodiversity Network (NBN)⁶ Atlas Scotland website.

2.1.1.1 Existing Ecological Records

Ecological records gathered to inform baseline conditions for the following renewable energy development projects, located within 5 km of the Site, were reviewed to provide further information of relevance to the desk study:

- In planning:
 - OnPath Energy (2026). *Glen Water Wind Farm Environmental Impact Assessment Report, Chapter 5 Ecology*; and
 - GLM Ecology (2022). *Drum Wind Farm Environmental Impact Assessment Report, Technical Appendix 11.3: Bat Surveys 2022*.

² 'Favourable conservation status' describes as situation on which a species is thriving throughout its natural range and is expected to continue to thrive in the future.

³ As described in page 49, paragraph 83 of 'Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC (2007)'. Available at: https://ec.europa.eu/environment/nature/conservation/species/guidance/pdf/guidance_en.pdf

⁴ The NatureScot sitelink website is available online at: <https://sitelink.nature.scot/home>

⁵ Google earth is available online at: <https://earth.google.com/web/>

⁶ NBN Atlas occurrence download at <https://nbnatlas.org>. Accessed February 2026.



- Operational:
 - Banks Renewables (2019). *Lethans Wind Farm Environmental Impact Assessment Report, Chapter 6 Ecology*.

2.2 Field Study

The field survey methodology was designed in accordance with current wind farm specific guidelines developed by NatureScot *et al.* (2021). Full details of each survey type are provided below; in instances where the methodology deviates from current guidelines, a rationale has been provided.

No at-height monitoring or walked transects were carried out as part of the survey work. As identified with the NatureScot *et al.* (2021) guidelines, automated bat surveys at height were excluded on the basis that they are unlikely to detect the presence of any species not already recorded using detectors at ground level. Walked transect surveys for bats were also excluded at this stage; the NatureScot *et al.* (2021) guidelines state that their applicability is discretionary and site-specific.

2.2.1 Survey Area

The survey area for bat surveys is shown on **Figure 6.6**. The survey area in some areas extends beyond the Site boundary where land access permissions were in place; this reflects earlier and larger areas of interest which have been refined down during the iterative design process (see **Chapter 3: Design Evolution and Alternatives** of the EIA Report). However, due to limitations associated with land access (**Section 2.7**), a survey buffer area around the entire Site was not applied.

2.2.2 Daytime Bat Walkover

A daytime bat walkover (DBW) to assess the suitability of habitats to support commuting, foraging, and roosting bats within the survey area was carried out in August 2025.

2.2.2.1 Foraging and commuting

Habitats within the survey area were assessed against specific criteria outlined within Collins (2023) to assign a 'level' of commuting and foraging suitability (i.e. High, Moderate, or Low). Connectivity between habitat parcels and landscape features was included in the assessment.

2.2.2.2 Roosting

Built structures, trees and stands of woodland were evaluated using a combination of aerial photographs and ground truthing to provide an indication of the potential roosting resource available to bats within the survey area.

2.2.3 Preliminary Roost Assessment

A Preliminary Roost Assessment (PRA) was carried out in conjunction with the DBW in instances where built structures were identified as potential roosting resource for bats. Where accessible, the PRA involved a detailed inspection of the exterior of built structures to assess the actual or potential presence of bats and inform the requirement for further survey and/or mitigation. During the survey, each structure was subject to a systematic ground level



assessment by an experienced ecologist to compile information regarding potential or actual bat entry/exit points or roosting locations, and to locate any evidence of use by bats.

Each potential roost feature (PRF) identified was recorded, before classifying the structure into an overall roost suitability category of 'negligible', 'low', 'moderate' or 'high' (Collins, 2023).

During the PRA, the suitability of each structure for supporting hibernating bats was also considered. This involved an evaluation of the following aspects (for which further details are provided in Collins (2023) and Middleton (2019)):

- the suitability of features to support roosting bats (as detailed above);
- the likely temperature and humidity conditions associated with the structure during winter and corresponding suitability for supporting hibernating bats;
- the suitability of surrounding habitat for use by commuting and/or foraging bats out-with the hibernation period; and
- the presence of known roosts within the structure, adjacent structures, or within the surrounding area during the active season.

2.2.4 Ground Level Tree Assessment

Where deemed required, a Ground Level Tree Assessment (GLTA) was conducted for trees within the survey area and followed the assessment methodology as set out in Collins (2023). Any trees with PRFs were categorised as one of the following:

- 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.

2.2.5 Bat Activity Survey

2.2.5.1 Static Detector Survey

NatureScot *et al.* (2021) guidance⁵ states '*at sites where the proposed turbine locations are known, static detectors should be placed to provide a representative sample of bat activity at or close to these points... Where developments have more than ten turbines, detectors should be placed within the developable area at ten potential turbine locations plus a third of additional potential turbine sites⁷...and ... The remaining third should be distributed according to a system of stratified sampling based on the availability of different habitats and topographical features of the site*'.

Based on an indicative 19 turbine layout provided by the Applicant at the time of baseline surveys, a programme of bat activity surveys using full spectrum static bat detector units (Anabat Swift and Express) was carried out at, or close to, 13 of the proposed turbine locations during the 2025 active bat season (extending from April to mid-September in Scotland). Details relating to the location and positioning of each static detector are displayed in **Annex B, Table B-1** and shown in **Figure 6.6**.

Each static detector unit was set to record bat activity for a minimum period of ten consecutive nights per season (in this case, 14 nights per season), with each night of monitoring commencing approximately 30 minutes before sunset and ending 30 minutes after sunrise.

⁷ Up to a maximum of 40 detectors should be applied for the largest development sites.



The dates and timings of each static detector survey period are provided in **Annex B, Table B-1**.

The static detector units were deployed with the following settings:

- sensitivity value of 14;
- minimum frequency of 15 kHz;
- maximum frequency of 250 kHz;
- maximum file length of 15 s;
- minimum event of -2 m/s; and
- sampling rate of 320 kHz.

2.3 Bat Sonogram Analysis

For comparison of results, a quantity called a 'bat pass' has been applied within this report. A bat pass has been defined as a file generated by the bat detector, which contains two or more bat echolocation pulses (likely attributed to the same bat). The detectors are programmed to generate a new file when no bat pass has been detected for at least one second. The number of bat passes may not relate to the number of bats present in one sample location (as one bat may make several passes); yet rather, gives an indication of the level of bat activity in that location over each recording period.

Bat passes recorded during activity surveys were analysed in full spectrum format using Kaleidoscope Pro software. An automatic identification (auto-ID) filter within Kaleidoscope Pro was initially applied to assign calls to likely species, using a 'Bats of Europe' filter. This software is designed to automatically assign recorded echolocation calls with bat species that produce the same echolocation call structure. While the software is efficient, it is not totally infallible. Manual checks were therefore carried out by an experienced member of staff, with reference to guidance outlined in Russ (2021) and Middleton *et al.* (2022), for the following:

- All files recorded as 'no-ID' through the auto-ID system were manually classified;
- All files recorded as species of the genera *Myotis* and *Nyctalus*, or brown long-eared bat *Plecotus auritus* were checked and manually reclassified if incorrect;
- All locally rare/previously unrecorded species classified through auto-identification software, such as Nathusius' pipistrelle *Pipistrellus nathusii* were checked and manually reclassified if incorrect; and
- Spot checks and amendment, where required, of 10% of total noise files recorded through the auto-ID system.

Due to close similarities in the echolocation call structure of certain species, some passes were identified to genus level only. When interpreting the data, the following premise was used:

- Due to the difficulties of separating *Myotis* species from sonograms alone, it was not always possible to assign *Myotis* echolocation files to species level. In such instances, *Myotis* echolocation files were manually identified to genus level only; and
- *Pipistrellus* species – For the purpose of differentiating pipistrelle bat species, characteristic peak frequencies for each of the species has been used as an initial indicator (for soprano pipistrelle – 52 kHz and above; common pipistrelle - between



41 kHz and 49 kHz; and Nathusius' pipistrelle - below 39 kHz). For echolocation calls falling within or at close proximity to 39-41 kHz or, at or in near proximity to 49-52 kHz, a classification has been made based on several factors, including the broader dataset, inferred knowledge of the bats' surroundings and the effect this has on the call structure and other measured parameters. Pipistrelle registrations may however remain ambiguous and such registrations were instead assigned to "pipistrelle species".

2.4 Assessment of Bat Activity Levels

Following analysis of echolocation recordings, data were processed using the Ecobat online tool⁸, initially designed by the University of Exeter and now hosted and developed by the Mammal Society. Ecobat compares activity data recorded on Site (entered by the user) with bat data collected within a defined search area at the same time of year and, where possible, in comparable weather conditions. The tool generates a percentile rank for each night of activity and provides a numerical way of interpreting the relative levels of bat activity recorded at a site with other sites across the same regions or across Britain as a whole.

Relative levels of bat activity within the Site were determined through comparison with the following reference range data set:

- Time filter: +/- one month; and
- Geographical filter: Region.

For each night of bat activity⁹, Ecobat generates a percentile rank (with associated confidence limits) for activity recorded on Site in comparison with reference range data. The percentiles provide a numerical indicator of the relative level of a night's bat activity, which are then categorised into the activity 'levels', as displayed in **Table 2-1**.

Table 2-1: Bat Activity Percentile Scores

Percentile	Activity level
80 - 100	High
61 - 80	Moderate to High
41 - 60	Moderate
21 to 40	Low to Moderate
0 to 20	Low

⁸ <http://www.mammal.org.uk/science-research/ecostat/ecobat/>

⁹ Note that only bat presence data is captured by Ecobat. The tool does not capture nights or sample points where no bat activity is recorded, such that the output statistics and percentiles relate only to those nights in which bats were active.



2.5 Collision Risk Assessment

The vulnerability of bat related injury or mortality associated with collision with wind turbines or barotrauma¹⁰ is largely dependent on the positioning of wind turbines in relation to bat activity levels (NatureScot *et al.*, 2021).

Bat species data and associated activity levels recorded within the Site can therefore be assessed to establish their vulnerability to collision as a result of the Proposed Development. This assessment is based on three main factors:

- relative abundance;
- collision risk; and
- bat activity recorded within the Site.

Table 2-2 sets out relative abundance and potential collision risk of each species known to be present in Scotland and indicates potential vulnerability of such species populations (taken from NatureScot *et al.*, 2021).

Table 2-2: Potential Collision Risk and Population Vulnerability of Bat Species Known to be Present in Scotland

Type of Species	Low Collision Risk	Medium Collision Risk	High Collision Risk
Common species	N/A	N/A	Common pipistrelle Soprano pipistrelle
	Low vulnerability	Low vulnerability	Medium vulnerability
Rarer species	Brown long-eared Daubenton's Natterers	N/A	N/A
	Low vulnerability	Medium vulnerability	High vulnerability
Rarest species	Whiskered Brandt's	N/A	Nathusius' pipistrelle Noctule Leisler's
	Medium vulnerability	High vulnerability	High vulnerability

The assessment of the potential risk to bats as a result of a proposed development is conducted through a two-stage process, as summarised below.

2.5.1 Stage 1 – Initial Site Risk Assessment

The initial Site risk assessment considers an assessment of habitat risk (based on results of the habitat suitability appraisal for the Site) and the size of the Proposed Development. The full method for assessing potential Site risk is outlined in **Annex C**.

¹⁰ Barotrauma describes injuries that occur when a bat encounters sudden and extreme changes in atmospheric pressure as a result of rotating turbine blades. This rapid change in pressure can rupture air containing tissues in bats (e.g. the lungs), resulting in fatal internal bleeding.



2.5.2 Stage 2 – Overall Risk Assessment

In accordance with current NatureScot *et al.* (2021) guidance, the overall risk to populations of bat species was calculated by multiplying the initial Site risk with the level of bat activity generated through Ecobat, as illustrated in **Table 2-3**. Ecobat is designed to compare activity data recorded on Site with bat data collected within a defined search area at the same time of year.

Table 2-3: Overall Risk Assessment

Site Risk Level (from Stage 1)	Ecobat 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	15	18
Highest (5)	0	5	10	15	20	25

Table key for overall risk assessment:
 Low = 0-4, Medium = 5 – 12, High = 15 - 25

2.6 Survey and Data Analysis Personnel

Details of staff who carried out bat survey and reporting related work involved in this study are provided in **Table 2-4**.

Table 2-4: Bat Survey and Reporting Personnel

Name and Position	Professional Memberships and Bat licence details	Years of Experience	Task(s) conducted
Lewis Williams, Field Ecologist	Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).	3	Daytime Bat Walkover, static detector deployment and collection; and bat sonogram analysis.
Caitlin Murray, Field Ecologist	Associate member of CIEEM (ACIEEM).	2	Daytime Bat Walkover and bat sonogram analysis.
Flora Veitch, Associate Ecologist	Associate member of CIEEM (ACIEEM).	5	Static detector deployment and collection; bat sonogram analysis; and technical reporting
Hannah Rowding, Associate Ecologist	ACIEEM. NatureScot bat licence 224935. BatAbility Certificate of Bat Acoustics Analysis: Technician Level (Grade B).	10	Technical reporting and Quality Assurance review



2.7 Limitations

2.7.1 Bat Activity Survey

2.7.1.1 General

As noted in **Section 2.2.1**, a survey buffer could not be applied around the entire Site boundary. However, this is not a limitation with respect to bat activity surveys, as static detectors were deployed within the Site around proposed turbine locations, as per NatureScot *et al.* (2021) guidance. Whilst a buffer could not be surveyed around the Site during other types of bat surveys (e.g. the DBW) the Proposed Development infrastructure is set back from the Site boundary and therefore this is not considered to significantly limit the baseline characterisation of the area.

This study provides a 'snapshot' of bat activity prevailing at the time of the survey. Lack of evidence of any one protected bat species does not necessarily preclude them from being present on-site at a later date. Whilst it is considered unlikely that evidence of other bat species has been overlooked, due to the nature of the survey, it is feasible that some species may not have been recorded in flight by virtue of random chance.

2.7.1.2 Survey Timing and Weather

Automated activity surveys should capture a sufficient number of nights of active monitoring (minimum of 10 nights) per season, during appropriate weather conditions for bat activity (i.e., temperatures of on or above 8 °C in Scotland at dusk, maximum ground level wind speed of 5 m/s and no, or only very light, rainfall) (NatureScot *et al.*, 2021). To account for the potential limitations of weather, surveys were carried out over longer deployment periods, with a minimum of 14 nights recorded.

2.7.1.3 Equipment

Due to technical errors associated with equipment, it was not possible to achieve a minimum of 10 consecutive nights of monitoring at the following locations and survey periods (further details of which are provided in **Annex B**):

- Location 2 in spring: Zero out of 14 nights of active monitoring achieved.
- Location 10 in spring: Nine out of 14 nights of active monitoring achieved.
- Location 13 in spring: One out of 14 nights of active monitoring achieved.
- Location 7a in summer: Eight out of 14 nights of active monitoring achieved.
- Location 13 in summer: Eight out of 14 nights of active monitoring achieved.

Whilst unfortunate, malfunctions are relatively common when using static detectors at such sites. Despite this limitation, it is considered that data recorded from the other sample locations within the Site provides a suitable representation of bat activity during the affected survey periods. For instance, the majority of locations recorded for more than 10 nights, with a total of 477 complete nights recorded across the Site and over the survey season (see **Annex B**). This is significantly greater than the minimum number of nights required by NatureScot *et al.* (2021) guidance for the Proposed Development which now comprises 14 wind turbines (i.e., 11 Anabats * 10 nights * 3 seasonable deployments = 330 nights of data required). The small loss of data is not considered to have materially altered the overall assessment of risk, given 477 nights' worth of data were recorded compared to the requirement for 330.



Land Access (for Equipment)

In addition to the above, it was not possible to collect a full set of bat activity data for the active bat season at monitoring locations 4, 6 and 7 (spring data only) due to issues associated with land access after the initial deployment period. Each of these detector units were moved to monitoring locations 4a, 6a and 7a for summer and autumn deployment periods.

3.0 Results

3.1 Desk Study

3.1.1 Designated Sites

There are no statutory designated sites within 10 km of the Site boundary for which bats are a qualifying or notified interest feature.

3.1.2 Other Sites of Nature Conservation Interest

Within the Site, there are four parcels of woodland that are listed within the Scottish Ancient Woodland Inventory (AWI)¹¹ as 'long established woodland of plantation origin'¹². Two further parcels of woodland listed on the AWI are positioned immediately adjacent to the southern Site boundary, one of which is classified as 'long-established' and the other as 'ancient'¹³. Several other parcels of woodland listed within the AWI were also identified within 5 km of the Site boundary. These areas of ancient woodland could be of value to bats due to their long-standing presence within the Site and surrounding area.

3.1.3 Online Data Search

Based on a review of ecological data held within NBN Atlas⁶, the following bat species have been recorded within 10 km of the Site boundary between years 2010 - 2025:

- Common pipistrelle *Pipistrellus pipistrellus*;
- Daubenton's bat *Myotis daubentonii*;
- Leisler's bat *Nyctalus leisleri*; and
- Soprano pipistrelle *Pipistrellus pygmeus*.

Details regarding licences and data providers for these records are included in **Table 3-1**.

¹¹ The Ancient Woodland Inventory is available online at: <https://opendata.nature.scot/datasets/ancient-woodland-inventory/explore>

¹² 'Long-established woodland of plantation origin' refers to woodland plantations that are visible on maps dating back to 1750 or 1860, for which have been continuously wooded up to present day. Many of these sites have developed semi-natural characteristics, especially the oldest ones, which may be as rich as Ancient Woodland.

¹³ In Scotland, ancient woodland is defined as land that is currently wooded and has been continually wooded since at least 1750.



Table 3-1: Data Providers for NBN Atlas Scotland Records Used

Species	Data Provider	Licence
Common pipistrelle	NatureScot (Southern Scotland Bat Survey, Garry Nixon)	OGL ¹⁴
Daubenton's	NatureScot (Southern Scotland Bat Survey)	OGL ¹⁴
Leisler's	NatureScot (Southern Scotland Bat Survey)	OGL ¹⁴
Soprano pipistrelle	NatureScot (Southern Scotland Bat Survey, Tom Hastings)	OGL ¹⁴

3.1.4 Existing Ecological Information

Details of existing desk-based records relating to bats, obtained through previous baseline studies within the local area, are summarised in **Table 3-2**.

Table 3-2: Records of Bat Species within 5 km of the Site, Drawn from Existing Ecological Reports

Species	Existing Ecological Information
Bats	Glen Water Wind Farm <u>Habitat Suitability</u> <i>Commuting and Foraging</i> No specific information available. <i>Roosting Resource</i> No suitability for maternity bat roosts was confirmed in buildings within the site or associated 200 m buffer. No trees with suitability for maternity colonies of bats were identified within 200 m this zone. A number of trees within the wider area were however recorded as having potential roost features (PRFs). The EIA also noted a historic record of a single soprano pipistrelle bat roosting within a tree located approximately 90 m from the main access track in 2012. <u>Bat Activity</u> Bat activity surveys identified at least five species of bat utilising the site: common pipistrelle, soprano pipistrelle and brown long-eared, and species of the genera <i>Myotis</i> and <i>Nyctalus</i>. Varying levels of activity were recorded for each species depending on location and season (no further specific detail on this was however available online). Patterns of activity were clear across all deployments, with lower levels of activity across open ground, and markedly higher activity at locations in closer proximity to woodland features, main watercourses or waterbodies. Drum Wind Farm <u>Habitat Suitability</u> <i>Commuting and Foraging</i> Woodland edge habitat associated with the peripheries of Glenmuir plantation were considered suitable for commuting and foraging bats. The overall value of habitats within the site for commuting and foraging bats were however classified as 'low'. <i>Roosting Resource</i> No buildings were present within 500 m of any proposed turbine locations. Trees within 500 m of proposed turbines (comprised of commercial plantation) were considered to have negligible suitability for roosting bats. No evidence of roosting bats were identified during surveys and the value of roosting resource within the site overall was assessed as 'low'. <u>Bat Activity</u>

¹⁴ Open Government Licence (OGL) <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Species	Existing Ecological Information
	Bat activity transects identified that the site was used by low numbers of common pipistrelle, soprano pipistrelle and species of the genus <i>Nyctalus</i>. Static detector monitoring identified use of the site by at least three bat species – common and soprano pipistrelle, and species of the genus <i>Myotis</i>. Overall bat activity within the site was assessed as ‘low’. Lethans Wind Farm <u>Habitat Suitability</u> <i>Commuting and Foraging</i> No specific information available. <i>Roosting Resource</i> Several trees with PRFs were recorded within the site boundary. A single tree roost (species unconfirmed) was identified to the east of Mansfield Mains in 2012. Former lime kilns to the north of the access track were also noted to support roost suitability, with gaps present within stonework. An individual roosting Daubentons bat was recorded on each of the three survey visits carried out in 2012. <u>Bat Activity</u> Bat activity transects identified that the site was used by low numbers of common pipistrelle, soprano pipistrelle, Daubentons bat, Natterers bat, Leislers bat, and species of the genus <i>Nyctalus</i>, <i>Myotis</i> and <i>Pipistrellus</i>. Static detector monitoring identified use of the site by common and soprano pipistrelle, Leisler’s bat, and species of the genus <i>Nyctalus</i>, <i>Myotis</i> and <i>Pipistrellus</i>. Swarming surveys carried out at Craigdullyear Mine did not confirm behaviour associated with autumn swarming, however low numbers of <i>Myotis</i> and <i>Pipistrellus</i> species may have been roosting in the mine during the survey period.

3.2 Field Surveys

3.2.1 Daytime Bat Walkover

3.2.1.1 Foraging and Commuting Suitability

Land within the Site is formed largely of open agricultural habitat (improved grassland, semi-improved acid grassland and marshy grassland, with pockets of heath and peatland) and areas of historic opencast mining.

It also supports several habitat types with suitability for use by commuting and foraging bats. These include pockets of ancient and long-established woodland around the peripheries of the Site, coniferous woodland edge habitat, standing water (a series of ponds), and running water (Gass Water, Glenmuir Water and Glenmuir Burn).

Overall, the survey area was classified as having ‘moderate’ suitability to support foraging and commuting bats, with areas of localised high suitability noted around woodland edge habitat positioned towards the edges of the Site, and watercourses that intersect the Site.

3.2.1.2 Roosting Suitability

During the DBW, a stand of woodland and a single built structure within the survey area were identified as having potential to support roosting bats.



The linear stand woodland was located near the western edge of the Site (**Annex D, Figure 6.6**). This woodland is classified as 'long-established' within the AWI. During the DBW a number of bat boxes were observed in trees. As such, this woodland supports moderate-high potential suitability for roosting bats, although it is not known if the bat boxes present are in actual use by bats. The area is classified as PRF-M (as per **Section 2.2.4**).

An abandoned farm building located adjacent to the western boundary of the Site was noted to support several potential roost entry and exit points. For full details, please refer to **Section 3.2.2** below.

3.2.2 Preliminary Roost Assessment

A PRA was carried out on a single built structure identified to provide potential roosting resource. The results are summarised in **Table 3-3** and shown on **Figure 6.6**, with full details provided in **Annex D**.

Table 3-3: PRA Results

Building Number	Description	Roost Suitability (Summer)	Roost Suitability (Hibernation)
1	Abandoned farm building located to the west of the reservoir. Comprised of stone walls with a pitched, slate roof (parts of which are subject to collapse). Several broken windows and doorways, and numerous slipped / missing slates, which may serve as potential entry and exit points for roosting bats. Inside the building, numerous holes in the walls/gaps between wooden beams were noted. No physical evidence of bats identified. This building is located approximately 580 m from the nearest proposed turbine location (Turbine 6).	Moderate	Moderate

A small number of other built structures are present within the Site, as detailed below.

The inhabited farmhouse and active farm buildings located at Whiteholm are located 509 m from the nearest proposed turbine (Turbine 14) and therefore were not assessed further.

The only other built structures within the Site are located at High Glenmuir where there is an inhabited farmhouse and an in-use farm shed located approximately 140 m north-east of the farmhouse. The farmhouse is approximately 271 m from Turbine 11 and 282 m from Turbine 13; given the distance from proposed infrastructure and its residential inhabitation, further detailed assessment was not undertaken at this building. With respect to the active farm shed, this is approximately 146 m from Turbine 11 and 221 m from Turbine 13. This shed was demolished in recent years and has been rebuilt, it is now characterised by a new metal roof with skylights, wide metal doors with large openings, the supporting walls have a concrete bottom section with wooden panels, the building is considered to have negligible roosting potential for bats.



3.3 Bat Activity Survey

Sixteen static detectors were deployed within the Site for a combined total of 546 nights (477 nights of which static detector units recorded successfully) during the 2025 active bat season (**Annex B**).

The data gathered during the static detector monitoring amounts to a large dataset, which has been retained electronically. The data has been used to answer the following questions:

- 1 What species are present at each location?
- 2 What is the spatial and temporal distribution of bat activity across the Site?

3.3.1 Species Occurring within the Site

Data analysis identified at least eight bat species utilising the Site during the survey period:

- Species of the genus *Myotis*;
- Daubentons bat;
- Whiskered bat *Myotis mystacinus*;
- Natterers bat *Myotis nattereri*;
- Species of the genus *Nyctalus*;
- Nathusius' pipistrelle *Pipistrellus nathusii*;
- Common pipistrelle;
- Soprano pipistrelle; and
- Brown long-eared bat *Plecotus auritus*.

The total number of passes attributed to each bat species recorded across the Site as a whole, with the corresponding proportion of total passes attributed to each bat species, are illustrated in **Table 3-4**. The data presented in the table provides a high-level overview of species presence within the Site. Due to differences in the range and occurrence of species (e.g. common versus rarer), and the volume of echolocation calls produced by each species (e.g. brown-long eared bats tend to produce quieter calls and are therefore more difficult to detect) the data in **Table 3-4** serves as a broad indication only of species presence and activity.

Table 3-4: Total number of Bat Passes per Species Recorded within the Site

Species/Species Group	No of Passes	Percentage of total (%)
<i>Myotis</i> spp.	240	1.8
Daubenton's bat	432	3.2
Whiskered bat	5	<0.01
Natterer's bat	230	1.7
<i>Nyctalus</i> spp.	2127	15.6
Nathusius' pipistrelle	53	0.4
Common pipistrelle	5081	37.2
Soprano pipistrelle	5452	39.9



Species/Species Group	No of Passes	Percentage of total (%)
Brown long-eared bat	50	0.4
Total	13,670	100.2¹⁵

3.3.2 Ecobat

3.3.2.1 Assessment of Bat Activity Levels

Site Activity

A summary of bat activity levels across the Site as a whole, derived from Ecobat data, are provided in **Table 3-5**.

Both the median (i.e. the most frequent) activity percentile and the maximum (i.e. the highest) activity percentile have been displayed within **Table 3-5** in order to show both typical and unusually high levels of bat activity within the Site, so that potentially important peaks in activity are not overlooked.

Table 3-5: Typical and Peak Activity Levels Associated with Each Species Recorded

Species/Group	Median Percentile	Typical Activity Category	95% CIs*	Maximum Percentile	Peak Activity Category	Reference Range ¹⁶
<i>Myotis</i> spp.	12	Low	8 - 14	53	Moderate	1975
Daubenton's	10	Low	74.5 - 85.5	88	High	1118
Whiskered bat	100	High	60 - 60	100	High	5
Natterer's bat	25	Low – Moderate	46 - 46	79	Moderate – High	424
<i>Nyctalus</i> spp.	5	Low	7 - 25.5	92	High	5828
Nathusius' pipistrelle	30	Low – Moderate	30 - 85.5	100	High	53
Common pipistrelle	1	Low	7.5 - 14.5	34	Low – Moderate	42651
Soprano pipistrelle	1	Low	7 - 20.5	35	Low – Moderate	45911
Brown long-eared	61	Moderate – High	61 - 80	100	High	165

*CIs: confidence intervals.

¹⁵ The 'Total' percentage may not be exactly 100% due to rounding of the percentages per species.

¹⁶ The reference range is the number of nights for each species that the data was compared to (a reference range of 200+ is recommended to be confident in the relative activity level).



The data presented in **Table 3-5** shows that:

- *Myotis spp.*: Data indicates an overall 'low' level of activity across the Site (median percentile of 12), with occasions of 'moderate' activity also recorded during the survey period (maximum percentile of 53). The reference range was 1,975, indicating high confidence in the accuracy of relative activity level generated through the Ecobat tool.
- Daubenton's: Data indicates an overall 'low' level of activity across the Site (median percentile of 10), with occasions of 'high' activity also recorded during the survey period (maximum percentile of 88). The reference range was 1,118, indicating high confidence in the accuracy of relative activity level generated.
- Whiskered: Data indicates an overall 'high' level of activity across the Site (median and maximum percentile of 100). However, the reference range for whiskered bat is five. Given that a reference range of at least 200 is required to provide confidence in accuracy of results, the relative levels of activity provided are likely the result of a very small dataset for comparison, thereby producing a 'high' activity output, as opposed to being a true reflection of activity across the Site.
- Natterer's: Data indicates an overall 'low-moderate' level of activity across the Site (median percentile of 25), with occasions of 'moderate - high' activity also recorded during the survey period (maximum percentile of 79). The reference range was 424, indicating confidence in the accuracy of relative activity level generated.
- *Nyctalus spp.*: Data indicates an overall 'low' level of activity across the Site (median percentile of 5), increasing to 'high' during peak recorded during the survey period (maximum percentile of 92). The reference range was 5,828, indicating high confidence in the accuracy of relative activity level generated.
- Nathusius' pipistrelle: Data indicates an overall 'low - moderate' level of activity across the Site (median percentile of 30), increasing to 'high' during peak recorded during the survey period (maximum percentile of 100). The reference range was 53. Given that a reference range of at least 200 is required to provide confidence in accuracy of results, the relative levels of activity provided may be slightly elevated as result of a very small dataset for comparison, thereby producing a 'high' activity output, as opposed to being a true reflection of activity across the Site.
- Common pipistrelle: Data indicates an overall 'low' level of activity across the Site (median percentile of 1), with occasions of 'moderate' activity also recorded during the survey period (maximum percentile of 34). The reference range was 42,651, indicating high confidence in the accuracy of relative activity level generated through the Ecobat tool.
- Soprano pipistrelle: Data indicates an overall 'low' level of activity across the Site (median percentile of 1), with occasions of 'moderate' activity also recorded during the survey period (maximum percentile of 35). The reference range was 45,911, indicating high confidence in the accuracy of relative activity level generated.
- Brown long-eared bat: Data indicates an overall 'moderate - high' level of activity across the Site (median percentile of 61), increasing to 'high' during peak levels of activity (maximum percentile of 100). Due to a lack of data pertaining to this species within the region held in the Ecobat system, (reference range of 165), there is a low degree of confidence in this result.



Temporal and Location Specific Activity

A detailed breakdown of the level of activity associated with each bat species, at each static detector location, per month is provided in **Annex E** and **Annex F**. To summarise:

- *Myotis spp.* (**Table E-1, Annex E**): Results indicate that a 'low' level of typical activity was recorded at almost all monitoring locations, during each season for which monitoring took place, with the exception of monitoring locations 7A and 9 in autumn. At these locations, activity levels were classified as 'moderate' and 'low-moderate' respectively. During periods of peak activity, levels generally remained 'low' at each monitoring location, with a slight increase to 'low – moderate' activity levels at location 4a in summer and autumn, and location 10 in autumn.
- Daubenton's bat (**Table E-2**): Typical activity levels were either 'low' or 'low-moderate' for all monitoring locations during each season, with the exception of Location 7 during spring (April and May)¹⁷, where activity levels were 'high'. During peak activity, levels remained 'low' or 'low - moderate' at most monitoring locations, with the exception of: location 2 in autumn (increase to 'moderate'), location 4 in spring ('moderate'), location 4a in summer ('moderate – high'), location 6 in spring (moderate), location 7 in spring ('high'), and location 7a summer ('high') and autumn ('moderate to high').
- Whiskered bat (**Table E-3**): Recorded at two monitoring locations (3 and 4) during spring only. Typical activity levels were high and moderate respectively. However, due to the very limited number of passes (five) and reference range (total of 5), as per **Table 3-4**, the actual level of activity was very low, and the relative levels of activity provided are likely the result of a very small dataset for comparison, thereby producing a higher activity output, as opposed to being a true reflection of activity at these locations.
- Natterer's (**Table E-4**): For locations at which this species was recorded, typical activity generally ranged from 'low – moderate' to 'moderate' across monitoring locations. Exceptions to this were location 4a and 13 in autumn, where 'moderate – high' levels of activity were recorded. Peak levels of activity ranged from 'low – moderate' to 'moderate – high'.
- Brown long-eared bat (**Table E-5**): For locations at which this species was recorded, typical and peak activity levels both ranged between 'moderate-high' to 'high'. However, as the reference range for data was only 61, the relative levels of activity provided may be slightly elevated as result of a small dataset for comparison, thereby producing a higher activity output, as opposed to being a true reflection of activity across each location and season for which the species was recorded.
- Common pipistrelle (**Table F-1, Annex F**): Data indicates 'low' levels of typical activity across the Site for all monitoring locations, during each period for which monitoring took place. During periods of peak activity, levels do not exceed 'low-moderate' at any location, during each period of that monitoring took place.
- Soprano pipistrelle (**Table F-2**): Results indicate 'low' or 'low – moderate' levels of typical activity across the Site at all monitoring locations, during each period for which monitoring took place. During periods of peak activity, levels do not exceed 'low-moderate' at any location, during each period of monitoring.

¹⁷ Note that no further data was collected at location 7 after the spring deployment, as such no data for summer and autumn monitoring periods is available.



- **Nathusius pipistrelle (Table F-3):** This species was recorded at seven monitoring locations during summer or autumn. Data indicates an activity range of 'low- moderate' to 'moderate - high' during typical levels of activity in summer or autumn. Peak activity levels range from 'low – moderate' to 'high' in summer and autumn. However, as the reference range for data was only 53, the relative levels of activity provided may be slightly elevated as result of a small dataset for comparison, thereby producing a higher activity output, as opposed to being a true reflection of activity across each location for which the species was recorded.
- **Nyctalus spp. (Table F-4):** Results indicate 'low' or 'low-moderate' levels of typical activity across the Site for across each monitoring location, during each period for which monitoring took place. An exception to this is location 10 in summer, for which 'high' levels of activity were recorded. During periods of peak activity, these levels generally remain 'low', with the exception of monitoring locations 4 in spring (increase to 'moderate'), 4a during summer ('moderate') location 7a during summer and autumn ('moderate') and location 10 during summer (activity remains 'high').

3.3.3 Collision Risk Assessment

3.3.3.1 Stage 1 - Initial Site Risk Assessment

The Site is comprised primarily of open grassland and peatland habitat, however watercourses, stands of long-established woodland, and coniferous forest edge habitat also intersect the Site. Based on the criteria provided in NatureScot *et al.* (2021) guidance (see **Annex C**), the following applies:

- Built structures and trees (including long-established woodland) with moderate-high potential as roost sites on or near the Site;
- Habitat could be used extensively by foraging bats; and.
- Site is connected to the wider landscape by linear features such as scrub, tree lines and watercourses.

Based on the above, habitat risk is considered to be 'moderate'.

The Proposed Development comprises nine turbines with a blade tip height of 200 m and five with a blade tip of 149.9 m, with one operational wind farm development within 5 km. This falls into the category of both 'medium' risk (between 10 and 40 turbines) and high risk (turbines are greater than 100 m in height, with other wind energy developments present within 5 km). Considering the number of turbines proposed (far less than 40), the project has been assigned a scale of 'medium' risk.

Through combining results of habitat risk and project size, the results of the initial Site risk assessment indicate that the Proposed Development presents a '**medium**' initial risk level to populations of high collision risk bat species (score of 3).

3.3.3.2 Stage 2 – Overall Risk Assessment

Based on data presented in **Table 2-2**, the following bat species / species groups recorded within the Site are classified as high risk for collision with wind turbines:

- Common pipistrelle;
- Soprano pipistrelle;



- Nathusius' pipistrelle; and
- *Nyctalus* spp.

Site Overall Risk Assessment

Table 3-6 summarises the overall collision risk assessment score for high-risk species, based on the median and maximum activity percentile data for the Site as a whole.

Table 3-6: Site Risk Assessment Score for 'High Collision Risk' Bat Species

Species / Species Group	Median Percentile	Median ('Typical') Activity Category	Max. Percentile	Max. ('Peak') Activity Category	Initial Site Risk Score	Median ('Typical') Activity Risk Score	Max. ('Peak') Activity Risk Score
Common pipistrelle	1	Low	34	Low - Moderate	3	Low (3)	Medium (6)
Soprano pipistrelle	1	Low	35	Low - Moderate	3	Low (3)	Medium (6)
Nathusius pipistrelle	30	Low - Moderate	100	High	3	Medium (6)	High (15)
<i>Nyctalus</i> spp.	5	Low	92	High	3	Low (3)	High (15)

The information presented in **Table 3-6** indicates that:

- Common pipistrelle and soprano pipistrelle – the overall risk assessment score for both common and soprano pipistrelle during 'typical' levels of activity within the Site is 'low' (score of 3). During peak activity levels, collision risk increases to 'medium' (score of 6).
- Nathusius pipistrelle - the overall risk assessment score during 'typical' levels of activity within the Site is 'medium' (score of 6). During peak activity levels, collision risk increases to 'high' (score of 15).
- *Nyctalus* spp. - the overall risk assessment score during 'typical' levels of activity within the Site is 'low' (score of 3). During peak activity levels, the collision risk for *Nyctalus* spp. increases to 'high' (score of 15).

Temporal and Location-specific Collision Risk Assessment

A detailed breakdown of the level of activity and collision risk score associated with each high collision risk bat species, at each static detector location, per month is provided in **Annex F** and shown on **Figures 6.7 – 6.10**. A summary of findings associated with each high-collision risk species recorded within the Site is provided below.

Common Pipistrelle

The results presented in **Table F-1** of **Annex F** and **Figure 6.7** indicate that during periods of typical activity, the risk of collision for common pipistrelle is 'low' at all monitoring locations and during each season for which data was obtained.

Data relating to 'peak' activity indicates that the risk of collision remains low at most monitoring locations, with the exception of monitoring locations 4a in summer (June) and autumn



(September)¹⁸, 7a in summer¹⁹, and 10 in summer, during which, the collision risk score increases to 'medium'.

Monitoring location 4a was positioned adjacent to the Glenmuir Burn and woodland edge habitat, approximately 190 m from the nearest turbine (Turbine 9). The woodland edge habitat and watercourse themselves are located approximately 84 m east and 170 m south of Turbine 9 respectively.

Location 7a was also positioned within woodland edge habitat within the east of the Site, located approximately 145 m south of the nearest turbine (Turbine 7).

Monitoring location 10 was situated within open grassland habitat towards the north of the Site, approximately 355 m north-west of nearest proposed turbine (Turbine 3) (**Annex B**).

Soprano Pipistrelle

The results presented in **Table F-2 of Annex F** and **Figure 6.8** indicate that during periods of typical activity, the risk of collision for soprano pipistrelle is 'low' at almost all monitoring locations, during each season. Exceptions to this include monitoring locations 4a and 7a in summer, for which the collision risk score associated with 'typical' levels of activity was 'medium'.

Data relating to 'peak' activity indicates that the risk of collision remains low at most monitoring locations, with the exception of monitoring locations 4a and 7a in summer during which the collision risk score was 'medium'. Monitoring location 9 was positioned within open grassland habitat towards the north of the Site, approximately 170 m north-west nearest proposed turbine (Turbine 6).

Nathusius' pipistrelle

Nathusius' pipistrelle was recorded at monitoring locations 2, 5, 6a, 7a, 9, 10 and 11 during summer and/or autumn survey periods (**Annex F** and **Figure 6.9**). The results presented in **Table F-3** indicate that during periods of typical activity, the risk of collision for Nathusius' pipistrelle is 'medium' at all monitoring locations for which this species was recorded.

Data relating to 'peak' activity indicates that the risk of collision remains as 'medium' at most monitoring locations for which the species was recorded, with the exception of monitoring locations 10 in summer which the collision risk score increases to 'high'.

As noted in **Section 3.3.2.1**, the reference range for Nathusius' pipistrelle within the Ecobat software was 53. Given that a reference range of at least 200 is required to provide confidence in accuracy of results, the relative levels of activity, and corresponding collision risk score generated, may be slightly elevated as result of a small dataset for comparison. It is also noted that the actual number of Nathusius' pipistrelle bat passes for the entire Site across the survey season was 53 (**Table 3-4**), thereby indicating that the bat activity data recorded for this Site for Nathusius' pipistrelle represents the only records within the Ecobat system at the time of input. As such, it is likely that Nathusius pipistrelle files recorded on Site represents an overall very low level of actual activity across 477 complete recording nights at the Site.

¹⁸ Note that monitoring location 4a was not deployed in Spring, therefore no data is available for this time period.

¹⁹ Note that monitoring location 7a was not deployed in Spring, therefore no data is available for this time period



Nyctalus spp.

The results presented in **Table F-4** of **Annex F** and **Figure 6.10** indicate that during periods of typical activity, the risk of collision for *Nyctalus* spp. is 'low' at most monitoring locations, during each season for which data was obtained. Exceptions to this include monitoring locations 4a and 7a in summer, for which the collision risk score associated with typical levels of activity was 'medium'. In addition, high levels of activity were recorded, and a resulting 'high' collision risk score generated, at monitoring location 10 in summer.

Data relating to 'peak' activity indicates that the risk of collision remains low at several monitoring locations, with the exception of monitoring locations 4 in spring, 4a in summer, 7a in summer and autumn, and 11 and 12 in summer, during which time the collision risk is 'medium'. In addition, the collision risk score for location 10 in summer remains high.

3.3.4 Proximity of Roost Sites Based on Activity Data

The Ecobat output includes an analysis of bat activity data at each monitoring location, referenced against the known roost emergence time range for each high-collision risk bat species recorded on Site. The data indicates whether a roost site may be present in close proximity to each monitoring location. A summary of results is outlined below, with charts showing each monitoring location, and associated first pass times for each species, displayed in **Annex G**.

Common pipistrelle

- Spring²⁰: Early pass times were recorded at monitoring locations 3 and 10 across four nights in April and May.
- Summer: Early pass times were recorded at monitoring locations 6a, 7a and 10 across three nights in June 2025. Of note were six early passes recorded at location 7a on 15 June 2025.
- Autumn: Several early pass times were recorded at monitoring locations 2, 3 4a, 5, 6a and 10 in September.

Common pipistrelle has a core sustenance zone (CSZ²¹) of 2 km (BCT, 2016). It is therefore possible that roosting common pipistrelle are present within the Site or nearby area.

Soprano pipistrelle

- Spring²⁰: Early pass times were recorded at monitoring locations 3 and 10 on two separate nights in April and May.
- Summer: Early pass times were recorded at monitoring locations 4a and 7a on two nights in June.
- Autumn: Several early pass times were recorded at monitoring locations 2, 3, 4a, 5, 6a, 7a, 8, 10, and 12 in September. Of particular note was several early passes (maximum count of 10 in one evening) recorded between 22 and 28 September 2025 at location 4a.

²⁰ Note static detectors 4a, 6 and 7a were not deployed in spring, and therefore no data for spring at these locations is available.

²¹ A CSZ refers to the areas surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost.



Soprano pipistrelle has a CSZ of 3 km. It is therefore possible that roosting soprano pipistrelle are present within the Site or nearby area.

Nathusius' pipistrelle

No early passes recorded during the survey period. It is therefore unlikely that Nathusius' pipistrelle are roosting within, or in close proximity to, the Site.

***Nyctalus* spp.**

- Spring²⁰: Two early pass times were recorded at monitoring location 10 on 21 April 2025.
- Summer: No early pass times were recorded during the month of June.
- Autumn: Early pass times were recorded at monitoring location 2 and 4a during the month of September.

Leislers bat *Nyctalus leisleri* and Noctule bat *Nyctalus noctula* have a CSZ of 3 km and 4 km respectively. Given the early pass times recorded above, it is possible that roosting *Nyctalus* bats are present within the Site or surrounding area.

4.0 Summary

A summary of key findings associated with the suite of bat activity surveys carried out to establish baseline conditions of the Site is presented below.

4.1 Habitats

4.1.1 Commuting and Foraging

Habitats within the Site are formed largely of open agricultural habitat (improved grassland, semi-improved acid grassland and marshy grassland, with pockets of heath and peatland) and areas of historic opencast mining. Several habitat types with suitability for use by commuting and foraging bats were also identified, including pockets of long-established woodland around the peripheries of the Site, coniferous woodland edge habitat, standing water (a series of ponds resulting from historical mining activity), and running water. Overall, the Site was classified as having 'moderate' suitability to support foraging and commuting bats, with localised areas of higher suitability noted along watercourses and around woodland edge habitat positioned towards the edges of the Site.

4.1.2 Roosting

Suitable roosting habitat (PRF-M) was identified within a stand of long-established woodland near the western boundary of the Site. As this woodland's nearest edge is located 495 m from the nearest turbine location (Turbine 12) and thus significantly greater than 281 m (i.e. 200 m plus rotor radius), no further assessment of trees for roosting bats were carried out at this location.

Suitable (moderate) roosting habitat in the form of an abandoned farm building was also identified next to the western boundary of the Site. As this built structure is located 580 m from the nearest turbine location (Turbine 6) and thus significantly greater than 281 m, no further survey for roosting bats was carried out at this location.



4.2 Bat Activity

4.2.1 Species Assemblage

Data recorded during bat activity surveys confirmed that at least eight bat species utilise the Site for commuting and foraging purposes: common pipistrelle; soprano pipistrelle; Nathusius pipistrelle; *Myotis* species (Daubenton's, Natterers and Whiskered bat), *Nyctalus* species; and brown long eared bat.

4.2.2 Activity and Collision Risk Data

Detailed activity and collision risk results are provided in **Section 3.3.3.2**. As a high-level overview summary:

- *Myotis* spp. (Daubenton's, Natterers and Whiskered bats) and brown long-eared bat are classified as being at low risk of collision with wind turbines (**Table 2-2**) and therefore do not pose a constraint to the Proposed Development.
- Collision risk for common pipistrelle based on typical activity recorded, is generally low.
- The collision risk for soprano pipistrelle recorded during typical levels of activity, is generally low.
- The collision risk for Nathusius' pipistrelle recorded during typical levels of activity, is 'medium'. A lack of reference range data for the region may however have resulted in elevated activity output for this species, as actual activity levels and number of bat passes is very low.
- The risk of collision for *Nyctalus* spp. is generally low across the Site. An exception to this is location 10 during summer, during which collision risk is 'high'.

4.2.3 Proximity of Potential Roost Sites

Bat passes recorded within the emergence period for each high collision risk species indicates the potential presence of roosting common pipistrelle, soprano pipistrelle and *Nyctalus* spp. within close proximity of the Site (within 2 km for common pipistrelle, 3 km for soprano pipistrelle and 3 - 4 km radius or *Nyctalus* spp., based on documented CSZ for each species).



5.0 References

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Annex A Bats' Legal Status

Information contained in this Annex is a summarised version of the legislation and should be read in conjunction with the appropriate legislation.

All bat species receive protection under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)²².

For any wild bat species, it is an offence to deliberately or recklessly:

- capture, injure or kill a bat;
- harass a bat or group of bats;
- disturb a bat in a roost (any structure or place it uses for shelter or protection);
- disturb a bat while it is rearing or otherwise caring for its young;
- obstruct access to a bat roost or otherwise deny an animal use of a roost;
- disturb a bat in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- disturb a bat in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; and
- disturb a bat while it is migrating or hibernating.

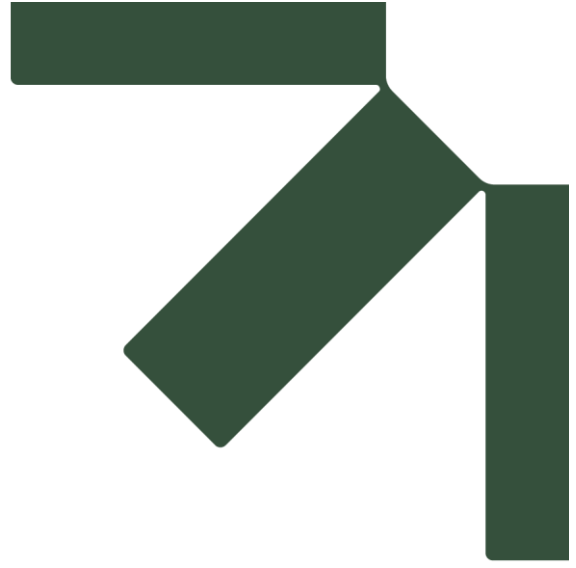
It is also an offence to:

- damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly); and
- keep, transport, sell or exchange, or offer for sale or exchange any wild bat (or any part or derivative of one) obtained after 10 June 1994²³.

²² Sections 39(1) – (3)

²³ Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-species/protected-species-z-guide/protected-species-bats> (Accessed: 16 February 2026).





Annex B Static Detector Locations and Survey Timing

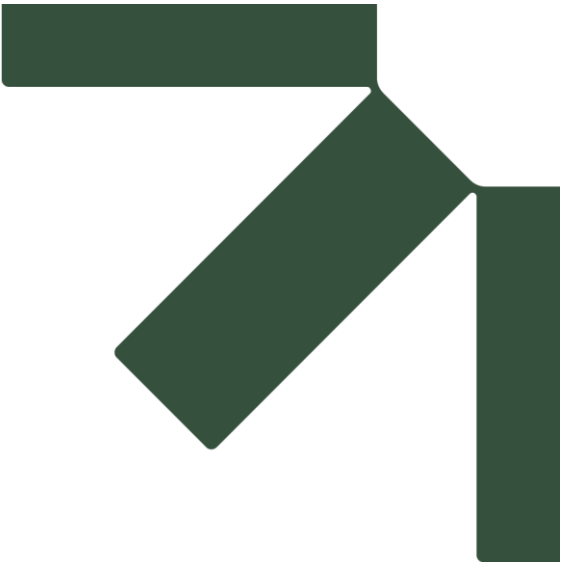
Table B-1: Static Detector Locations and Bat Activity Survey Timing

Location	Easting	Northing	Bearing	Habitat	Total Number of Complete Recording Nights		
					Visit 1 (Spring) 21/04/2025 – 05/05/2025	Visit 2 (Summer) 11/06/2025 – 25/06/2025	Visit 3 (Autumn) 16/09/2025 – 30/09/2025
1	262592	620375	200	Open grassland	14	14	14
2	263185	620488	340	Open grassland, within 20 m from tributary to Small Burn	0 ²⁴	14	14
3	262668	620994	25	Open grassland, within 33 m from tributary to Glenmuir Burn	14	14	13 ²⁵
4	261773	621092	240	Open ground	14	Not deployed	Not deployed
4a	263234	621565	40	Open grassland, within 8 m to Glenmuir Burn	Not deployed	12 ²⁵	14
5	262846	621566	310	Open grassland, within 100 m of plantation edge	14	14	14
6	262320	621603	185	Open moorland, within 93 m of plantation edge	14	Not deployed	Not deployed
6a	262420	621067	320	Open moorland, adjacent to plantation	Not deployed	14	14
7	261955	621952	0	Open grassland, within 77 m to plantation edge	14	Not deployed	Not deployed
7a	262985	621966	45	Adjacent to plantation	Not deployed	8 ²⁵	14
8	263195	622621	0	Open moorland	14	14	13 ²⁵
9	262129	622719	270	Open grassland	14	14	14
10	262434	623256	30	Open grassland	9 ²⁵	14	14
11	263441	623553	0	Open grassland	14	14	14
12	263023	623712	295	Open grassland, within 250 m of Bellow Water	14	14	14
13	263783	624184	290	Open grassland, within 86 m of Boghead Burn	1 ²⁵	0 ²⁴	14
Number of Complete Recording Nights Per Season					150	160	167
Total Number of Complete Recording Nights					477		

²⁴ Detector failed to record during deployment period.

²⁵ Due to technical issues associated with equipment, 14 full nights of monitoring were not achieved during the deployment period listed.





Annex C Initial Site Risk Assessment

Stage1 – Initial Site Risk Assessment

	Project Size			
		Small	Medium	Large
Habitat Risk	Low	1	2	3
	Moderate	2	3	4
	High	3	4	5
Key <i>Site Risk Level (1 – 5), whereby 1-2 = Low site risk, 3 = Medium site risk, 4 – 5= high site risk</i>				

Criteria extracted from NatureScot *et al.*, (2021).

Habitat and Project Size Descriptions for Assessing Initial Site Risk

Habitat Suitability	Habitat 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
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.

Criteria extracted from NatureScot *et al.*, (2021).





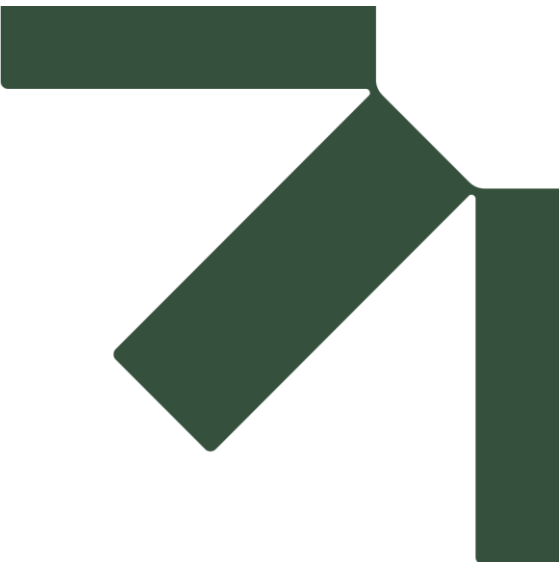
Annex D Daytime Bat Walkover

24 August 2026

Table D-1 Daytime Bat Walkover Target Notes

Target Note ID	Grid Reference	Feature	Notes	Roosting Suitability	Survey Date
PS006	NS 61783 21787	Woodland	Stand of woodland near Duncanziemere, noted to contain several bat boxes.	PRF-M	25/05/2023
PS003	NS 62132 22215	Built Structure	Abandoned farm building/barn located to the west of the reservoir. Formed of stone walls and slate roof. Not near any roads so will have little to no disturbance. Several entry and exit points - multiple broken windows and doorways, gaps between roof tiles / missing tiles also. Inside the building, holes in the walls and gaps between wooden beams noted. Bird nests were found inside but no evidence of bats.	Moderate (for both summer roosting and winter hibernation potential)	13/08/2025





Annex E Temporal and Location Specific Ecobat Activity Data (Low Collision Risk Species)

24 August 2026

Table E-1 Myotis - Temporal and Location Specific Ecobat Activity Data

Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
1	Myotis	Apr	12	Low	20	Low
1	Myotis	May	4	Low	4	Low
1	Myotis	Sep	4	Low	12	Low
2	Myotis	Jun	4	Low	4	Low
2	Myotis	Sep	4	Low	4	Low
3	Myotis	Jun	4	Low	4	Low
3	Myotis	Sep	8	Low	12	Low
4	Myotis	Apr	4	Low	4	Low
4a	Myotis	Jun	20	Low	33	Low - Moderate
4a	Myotis	Sep	12	Low	33	Low - Moderate
5	Myotis	May	4	Low	4	Low
5	Myotis	Jun	4	Low	12	Low
5	Myotis	Sep	4	Low	12	Low
6a	Myotis	Jun	4	Low	12	Low
6a	Myotis	Sep	8	Low	12	Low
7a	Myotis	Jun	12	Low	12	Low
7a	Myotis	Sep	42	Moderate	53	Moderate
9	Myotis	Sep	24	Low-Moderate	24	Low-Moderate
10	Myotis	Jun	4	Low	4	Low
10	Myotis	Sep	12	Low	24	Low-Moderate
11	Myotis	Sep	4	Low	4	Low
12	Myotis	Jun	4	Low	4	Low
12	Myotis	Sep	4	Low	4	Low
13	Myotis	Sep	4	Low	4	Low



Table E-2 Daubenton's Bat - Temporal and Location Specific Ecobat Activity Data

Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
1	Daubenton's	Apr	24	Low - Moderate	33	Low - Moderate
1	Daubenton's	May	10	Low	10	Low
1	Daubenton's	Jun	10	Low	10	Low
1	Daubenton's	Sep	10	Low	10	Low
2	Daubenton's	Jun	10	Low	10	Low
2	Daubenton's	Sep	33	Low - Moderate	52	Moderate
3	Daubenton's	Apr	10	Low	10	Low
3	Daubenton's	May	10	Low	10	Low
3	Daubenton's	Jun	10	Low	24	Low-Moderate
3	Daubenton's	Sep	10	Low	10	Low
4	Daubenton's	Apr	10	Low	44	Moderate
4	Daubenton's	May	10	Low	10	Low
4a	Daubenton's	Jun	34	Low - Moderate	64	Moderate - High
4a	Daubenton's	Sep	24	Low - Moderate	33	Low - Moderate
5	Daubenton's	Apr	10	Low	24	Low-Moderate
5	Daubenton's	May	10	Low	10	Low
5	Daubenton's	Jun	10	Low	10	Low
5	Daubenton's	Sep	10	Low	10	Low
6	Daubenton's	Apr	24	Low-Moderate	33	Low-Moderate
6	Daubenton's	May	34	Low-Moderate	44	Moderate
6a	Daubenton's	Sep	10	Low	24	Low-Moderate
7	Daubenton's	Apr	84	High	88	High
7	Daubenton's	May	82	High	87	High
7a	Daubenton's	Jun	56	Moderate	87	High



Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
7a	Daubenton's	Sep	24	Low-Moderate	64	Moderate-High
8	Daubenton's	Apr	24	Low-Moderate	24	Low-Moderate
8	Daubenton's	May	24	Low-Moderate	24	Low-Moderate
8	Daubenton's	Jun	10	Low	10	Low
8	Daubenton's	Sep	10	Low	10	Low
9	Daubenton's	Sep	10	Low	33	Low-Moderate
10	Daubenton's	Apr	17	Low	24	Low-Moderate
10	Daubenton's	Jun	10	Low	10	Low
10	Daubenton's	Sep	24	Low-Moderate	24	Low-Moderate
11	Daubenton's	Apr	10	Low	10	Low
11	Daubenton's	Jun	10	Low	10	Low
11	Daubenton's	Sep	29	Low-Moderate	33	Low-Moderate
12	Daubenton's	Apr	10	Low	10	Low
12	Daubenton's	May	10	Low	10	Low
12	Daubenton's	Sep	10	Low	10	Low
13	Daubenton's	Sep	10	Low	10	Low

Table E-3 Whiskered Bat - Temporal and Location Specific Ecobat Activity Data

Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
3	Whiskered bat	Apr	100	High	100	High
4	Whiskered bat	Apr	60	Moderate	100	High



Table E-4 Natterers Bat - Temporal and Location Specific Ecobat Activity Data

Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
1	Natterers bat	Apr	54	Moderate	75	Moderate - High
1	Natterers bat	May	25	Low - Moderate	46	Moderate
1	Natterers bat	Sep	25	Low - Moderate	46	Moderate
2	Natterers bat	Jun	25	Low - Moderate	25	Moderate
2	Natterers bat	Sep	46	Moderate	46	Moderate
3	Natterers bat	Apr	25	Low-Moderate	25	Low-Moderate
3	Natterers bat	Jun	25	Low-Moderate	25	Low-Moderate
3	Natterers bat	Sep	25	Low-Moderate	25	Low-Moderate
4	Natterers bat	Apr	25	Low - Moderate	79	Moderate - High
4a	Natterers bat	Jun	46	Moderate	61	Moderate - High
4a	Natterers bat	Sep	61	Moderate - High	71	Moderate - High
5	Natterers bat	Apr	36	Low-Moderate	61	Moderate - High
5	Natterers bat	May	25	Low-Moderate	25	Low-Moderate
5	Natterers bat	Jun	25	Low-Moderate	46	Moderate
6	Natterers bat	Apr	46	Moderate	67	Moderate - High
6	Natterers bat	May	25	Low-Moderate	25	Low-Moderate
7	Natterers bat	Apr	57	Moderate	71	Moderate-High
7	Natterers bat	May	43	Moderate	61	Moderate-High
7a	Natterers bat	Jun	25	Low-Moderate	46	Moderate
7a	Natterers bat	Sep	36	Low-Moderate	61	Moderate-High
8	Natterers bat	Apr	25	Low-Moderate	25	Low-Moderate
8	Natterers bat	May	25	Low-Moderate	25	Low-Moderate
8	Natterers bat	Jun	25	Low-Moderate	25	Low-Moderate
8	Natterers bat	Sep	46	Moderate	67	Moderate - High
9	Natterers bat	Sep	46	Moderate	61	Moderate - High



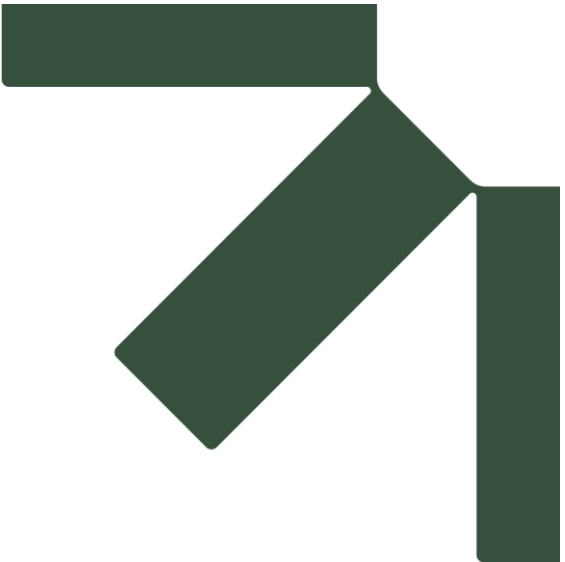
Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
10	Natterers bat	Apr	25	Low-Moderate	25	Low-Moderate
10	Natterers bat	Sep	46	Moderate	67	Moderate - High
11	Natterers bat	Apr	25	Low-Moderate	25	Low-Moderate
11	Natterers bat	Sep	46	Moderate	67	Moderate - High
12	Natterers bat	Apr	25	Low-Moderate	25	Low-Moderate
12	Natterers bat	May	25	Low-Moderate	25	Low-Moderate
12	Natterers bat	Sep	36	Low-Moderate	46	Moderate
13	Natterers bat	Apr	25	Low-Moderate	25	Low-Moderate
13	Natterers bat	Sep	46	Moderate-High	46	Moderate-High



Table E-5 Brown Long-eared Bat - Temporal and Location Specific Ecobat Activity Data

Location ID	Species	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level
2	Brown long-eared bat	Jun	61	Moderate - High	61	Moderate - High
2	Brown long-eared bat	Sep	61	Moderate - High	61	Moderate - High
3	Brown long-eared bat	Jun	100	High	100	High
4	Brown long-eared bat	Apr	61	Moderate - High	61	Moderate - High
4a	Brown long-eared bat	Jun	61	Moderate - High	61	Moderate - High
4a	Brown long-eared bat	Sep	61	Moderate - High	61	Moderate - High
5	Brown long-eared bat	Apr	61	Moderate - High	61	Moderate - High
6a	Brown long-eared bat	Jun	61	Moderate-High	61	Moderate-High
7a	Brown long-eared bat	Jun	61	Moderate-High	61	Moderate-High
7a	Brown long-eared bat	Sep	61	Moderate-High	61	Moderate-High
8	Brown long-eared bat	Apr	61	Moderate - High	61	Moderate - High
8	Brown long-eared bat	Sep	80	High	80	High
9	Brown long-eared bat	Apr	61	Moderate - High	61	Moderate - High
9	Brown long-eared bat	Sep	61	Moderate - High	61	Moderate - High
10	Brown long-eared bat	Jun	61	Moderate-High	61	Moderate-High
10	Brown long-eared bat	Sep	61	Moderate-High	80	High
11	Brown long-eared bat	Sep	61	Moderate-High	61	Moderate-High
12	Brown long-eared bat	Sep	61	Moderate-High	61	Moderate-High
13	Brown long-eared bat	Sep	61	Moderate-High	61	Moderate-High





Annex F Temporal and Location-specific Activity and Collision Risk Scores (High Collision Risk Species)

Table F-1 Common Pipistrelle: Temporal and Location-specific Activity Data and Collision Risk Scores

Location ID	Month	Median Percentile	Typical Activity Level	Max Percentile	Peak Activity Level	Site Risk Score	Median ('Typical') Activity Risk Score	Max ('Peak') Activity Risk Score
1	Apr	0	Low	0	Low	3	Low (3)	Low (3)
1	May	0	Low	0	Low	3	Low (3)	Low (3)
1	Jun	0	Low	1	Low	3	Low (3)	Low (3)
1	Sep	0	Low	4	Low	3	Low (3)	Low (3)
2	Jun	1	Low	1	Low	3	Low (3)	Low (3)
2	Sep	1	Low	18	Low	3	Low (3)	Low (3)
3	Apr	0	Low	11	Low	3	Low (3)	Low (3)
3	May	9	Low	9	Low	3	Low (3)	Low (3)
3	Jun	11	Low	19	Low	3	Low (3)	Low (3)
3	Sep	1	Low	7	Low	3	Low (3)	Low (3)
4	Apr	1	Low	2	Low	3	Low (3)	Low (3)
4	May	0	Low	2	Low	3	Low (3)	Low (3)
4a	Jun	19	Low	34	Low-Moderate	3	Low (3)	Medium (6)
4a	Sep	12	Low	21	Low-Moderate	3	Low (3)	Medium (6)
5	Apr	0	Low	1	Low	3	Low (3)	Low (3)
5	May	0	Low	0	Low	3	Low (3)	Low (3)
5	Jun	2	Low	5	Low	3	Low (3)	Low (3)
5	Sep	0	Low	1	Low	3	Low (3)	Low (3)
6	Apr	1	Low	1	Low	3	Low (3)	Low (3)
6	May	0	Low	2	Low	3	Low (3)	Low (3)
6a	Jun	5	Low	14	Low	3	Low (3)	Low (3)
6a	Sep	0	Low	1	Low	3	Low (3)	Low (3)
7	Apr	3	Low	6	Low	3	Low (3)	Low (3)
7	May	0	Low	1	Low	3	Low (3)	Low (3)



Location ID	Month	Median Percentile	Typical Activity Level	Max Percentile	Peak Activity Level	Site Risk Score	Median ('Typical') Activity Risk Score	Max ('Peak') Activity Risk Score
7a	Jun	19	Low	22	Low-Moderate	3	Low (3)	Medium (6)
7a	Sep	1	Low	2	Low	3	Low (3)	Low (3)
8	Apr	0	Low	0	Low	3	Low (3)	Low (3)
8	Jun	1	Low	1	Low	3	Low (3)	Low (3)
8	Sep	0	Low	0	Low	3	Low (3)	Low (3)
9	Apr	14	Low	18	Low	3	Low (3)	Low (3)
9	May	0	Low	0	Low	3	Low (3)	Low (3)
9	Jun	3	Low	15	Low	3	Low (3)	Low (3)
9	Sep	0	Low	0	Low	3	Low (3)	Low (3)
10	Apr	0	Low	1	Low	3	Low (3)	Low (3)
10	Jun	13	Low	21	Low-Moderate	3	Low (3)	Medium (6)
10	Sep	0	Low	2	Low	3	Low (3)	Low (3)
11	Apr	1	Low	1	Low	3	Low (3)	Low (3)
11	Jun	9	Low	19	Low	3	Low (3)	Low (3)
11	Sep	0	Low	0	Low	3	Low (3)	Low (3)
12	Apr	5	Low	7	Low	3	Low (3)	Low (3)
12	May	0	Low	0	Low	3	Low (3)	Low (3)
12	Jun	1	Low	3	Low	3	Low (3)	Low (3)
12	Sep	0	Low	0	Low	3	Low (3)	Low (3)
13	Sep	0	Low	0	Low	3	Low (3)	Low (3)



Table F-2 Soprano Pipistrelle: Temporal and Location-specific Activity Data and Collision Risk Scores

Location ID	Month	Median Percentile	Typical Activity Level	Max Percentile	Peak Activity Level	Site Risk Score	Median ('Typical') Activity Risk Score	Max ('Peak') Activity Risk Score
1	Apr	0	Low	0	Low	3	Low (3)	Low (3)
1	May	0	Low	0	Low	3	Low (3)	Low (3)
1	Jun	0	Low	1	Low	3	Low (3)	Low (3)
1	Sep	0	Low	14	Low	3	Low (3)	Low (3)
2	Jun	0	Low	1	Low	3	Low (3)	Low (3)
2	Sep	0	Low	8	Low	3	Low (3)	Low (3)
3	Apr	3	Low	9	Low	3	Low (3)	Low (3)
3	May	4	Low	9	Low	3	Low (3)	Low (3)
3	Jun	3	Low	9	Low	3	Low (3)	Low (3)
3	Sep	1	Low	18	Low	3	Low (3)	Low (3)
4	Apr	1	Low	6	Low	3	Low (3)	Low (3)
4	May	0	Low	2	Low	3	Low (3)	Low (3)
4a	Jun	25	Low-Moderate	35	Low-Moderate	3	Medium (6)	Medium (6)
4a	Sep	13	Low	35	Low-Moderate	3	Low (3)	Medium (6)
5	Apr	0	Low	7	Low	3	Low (3)	Low (3)
5	May	0	Low	0	Low	3	Low (3)	Low (3)
5	Jun	0	Low	2	Low	3	Low (3)	Low (3)
5	Sep	0	Low	1	Low	3	Low (3)	Low (3)
6	Apr	0	Low	4	Low	3	Low (3)	Low (3)
6	May	1	Low	1	Low	3	Low (3)	Low (3)
6a	Jun	2	Low	9	Low	3	Low (3)	Low (3)
6a	Sep	1	Low	5	Low	3	Low (3)	Low (3)
7	Apr	1	Low	12	Low	3	Low (3)	Low (3)
7	May	0	Low	3	Low	3	Low (3)	Low (3)



Location ID	Month	Median Percentile	Typical Activity Level	Max Percentile	Peak Activity Level	Site Risk Score	Median ('Typical') Activity Risk Score	Max ('Peak') Activity Risk Score
7a	Jun	22	Low-Moderate	27	Low-Moderate	3	Medium	Medium
7a	Sep	1	Low	7	Low	3	Low (3)	Low (3)
8	Apr	2	Low	2	Low	3	Low (3)	Low (3)
8	May	0	Low	0	Low	3	Low (3)	Low (3)
8	Jun	1	Low	2	Low	3	Low (3)	Low (3)
8	Sep	0	Low	2	Low	3	Low (3)	Low (3)
9	Apr	1	Low	26	Low-Moderate	3	Low (3)	Medium
9	May	1	Low	1	Low	3	Low (3)	Low (3)
9	Jun	2	Low	13	Low	3	Low (3)	Low (3)
9	Sep	0	Low	2	Low	3	Low (3)	Low (3)
10	Apr	0	Low	5	Low	3	Low (3)	Low (3)
10	Jun	10	Low	14	Low	3	Low (3)	Low (3)
10	Sep	0	Low	3	Low	3	Low (3)	Low (3)
11	Apr	2	Low	2	Low	3	Low (3)	Low (3)
11	May	0	Low	0	Low	3	Low (3)	Low (3)
11	Jun	2	Low	9	Low	3	Low (3)	Low (3)
11	Sep	0	Low	2	Low	3	Low (3)	Low (3)
12	Apr	9	Low	9	Low	3	Low (3)	Low (3)
12	May	0	Low	0	Low	3	Low (3)	Low (3)
12	Jun	1	Low	2	Low	3	Low (3)	Low (3)
12	Sep	0	Low	2	Low	3	Low (3)	Low (3)
13	Apr	0	Low	0	Low	3	Low (3)	Low (3)
13	Sep	1	Low	4	Low	3	Low (3)	Low (3)



Table F-3 Nathusius' Pipistrelle: Temporal and Location-specific Activity Data and Collision Risk Scores

Location ID	Month	Median Percentile	Typical Activity Level	Max Percentile	Peak Activity Level	Site Risk Score	Median ('Typical') Activity Risk Score	Max ('Peak') Activity Risk Score
2	Sep	30	Low-Moderate	30	Low-Moderate	3	Medium (6)	Medium (6)
5	Jun	30	Low-Moderate	30	Low-Moderate	3	Medium (6)	Medium (6)
6a	Jun	30	Low-Moderate	71	Moderate-High	3	Medium (6)	Medium (12)
7a	Sep	30	Low-Moderate	79	Moderate-High	3	Medium (6)	Medium (12)
9	Jun	49	Moderate	49	Moderate	3	Medium (9)	Medium (9)
10	Jun	71	Moderate-High	100	High	3	Medium (12)	High (15)
10	Sep	30	Low-Moderate	30	Low-Moderate	3	Medium (6)	Medium (6)
11	Jun	71	Moderate-High	71	Moderate-High	3	Medium (12)	Medium (12)



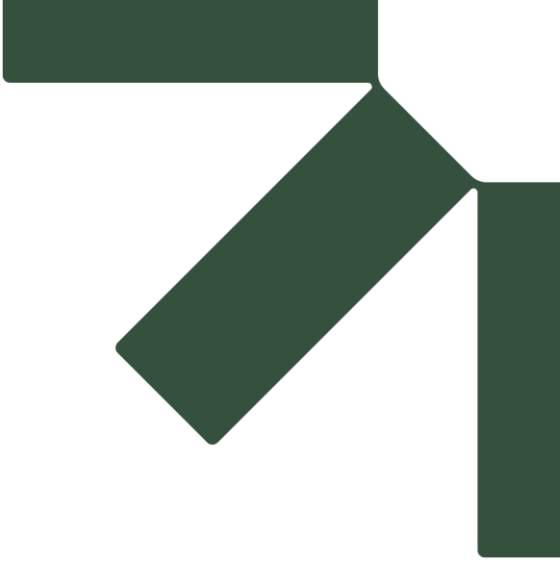
Table F-4 Nyctalus: Temporal and Location-specific Activity Data and Collision Risk Scores

Location ID	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level	Site Risk	Overall Median Category Score	Overall Maximum Category Score
1	May	1	Low	1	Low	3	Low (3)	Low (3)
1	Jun	3	Low	6	Low	3	Low (3)	Low (3)
1	Sep	1	Low	3	Low	3	Low (3)	Low (3)
2	Jun	2	Low	3	Low	3	Low (3)	Low (3)
2	Sep	3	Low	5	Low	3	Low (3)	Low (3)
3	Jun	5	Low	15	Low	3	Low (3)	Low (3)
3	Sep	1	Low	1	Low	3	Low (3)	Low (3)
4	Apr	10	Low	52	Moderate	3	Low (3)	Medium (9)
4	May	8	Low	15	Low	3	Low (3)	Low (3)
4a	Jun	24	Low-Moderate	49	Moderate	3	Medium (6)	Medium (9)
4a	Sep	2	Low	10	Low	3	Low (3)	Low (3)
5	Apr	3	Low	5	Low	3	Low (3)	Low (3)
5	May	3	Low	5	Low	3	Low (3)	Low (3)
5	Jun	3	Low	10	Low	3	Low (3)	Low (3)
5	Sep	1	Low	1	Low	3	Low (3)	Low (3)
6	May	1	Low	1	Low	3	Low (3)	Low (3)
6a	Jun	1	Low	5	Low	3	Low (3)	Low (3)
7	Apr	6	Low	20	Low	3	Low (3)	Low (3)
7	May	5	Low	6	Low	3	Low (3)	Low (3)
7a	Jun	29	Low-Moderate	43	Moderate	3	Medium (6)	Medium (9)
7a	Sep	6	Low	43	Moderate	3	Low (3)	Medium (9)
8	Apr	1	Low	1	Low	3	Low (3)	Low (3)
8	Jun	8	Low	15	Low	3	Low (3)	Low (3)
9	Apr	3	Low	10	Low	3	Low (3)	Low (3)



Location ID	Month	Median Percentile	Typical Activity Level	Maximum Percentile	Peak Activity Level	Site Risk	Overall Median Category Score	Overall Maximum Category Score
9	May	3	Low	3	Low	3	Low (3)	Low (3)
9	Jun	9	Low	20	Low	3	Low (3)	Low (3)
10	Apr	12	Low	20	Low	3	Low (3)	Low (3)
10	Jun	86	High	92	High	3	High (15)	High (15)
10	Sep	1	Low	1	Low	3	Low (3)	Low (3)
11	Jun	6	Low	53	Moderate	3	Low (3)	Medium (9)
12	Apr	3	Low	5	Low	3	Low (3)	Low (3)
12	Jun	8	Low	25	Low-Moderate	3	Low (3)	Medium (6)
12	Sep	3	Low	3	Low	3	Low (3)	Low (3)
13	Sep	1	Low	1	Low	3	Low (3)	Low (3)

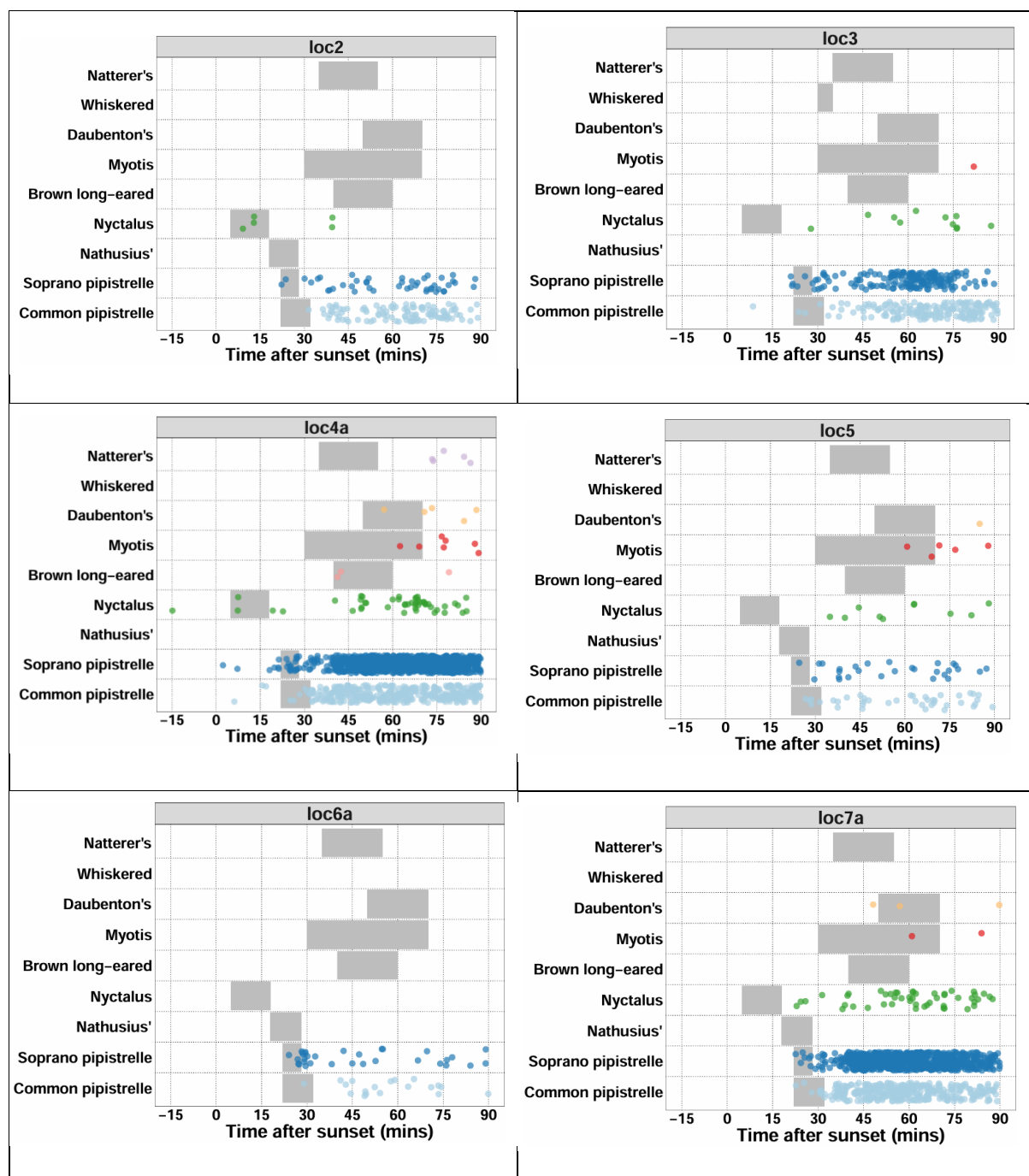


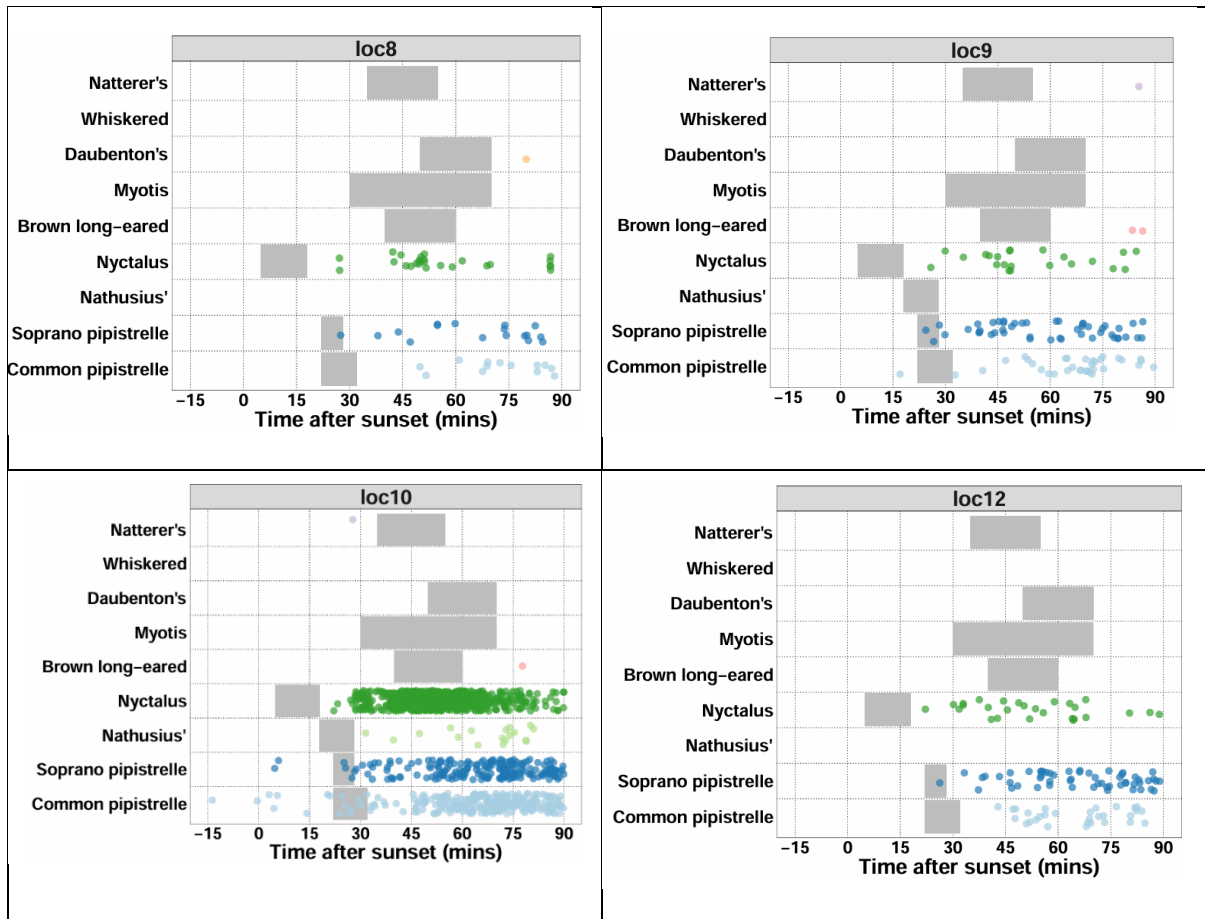


Annex G Proximity of Roost Sites Based on Activity Data

Table G-1 Monitoring Locations for Which Early Pass Times Were Recorded

(note that monitoring locations for which no early pass times were recorded are not presented below)







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