Eire Ecology

Environmental Consultants

Bat Survey Report

Garrane Green Energy Project,

Co. Limerick.

DOCUMENT DETAILS

Client:	Greensource
Project Title:	Garrane Green Energy Project
Document Title:	Bat Survey Report
Prepared By:	John Curtin – Consultant Ecologist
Date:	June 2025

Abstract: The following report details the results of the 2022 to 2024 bat surveys undertaken within the proposed Garrane Green Energy Project, Co. Limerick. This bat report is required to assess the impacts of the proposed development on bat species within and surrounding the proposed wind farm site. The proposed Garrane Wind farm consists of 9 no. wind turbines.

EXECUTIVE SUMMARY

This document reports on the findings of bat surveys conducted in 2022 to 2024 at the site of a proposed windfarm located to the north of Charleville, in Co. Limerick within the townlands of Garrane, Ballynagoul and Creggane, Surveys included pre-construction bat surveys focusing on proposed turbine locations, surrounding habitats and connectivity with the wider landscape.

Static detectors (SNH 2021) were placed within the site for 10 nights in each of: spring (April-May), summer (June-mid-August) and autumn (mid-August-October) in 2022 and 2023 with additional surveys conducted in August and October 2022. In addition, dusk and dawn bat detector surveys were conducted examining habitats onsite alongside potential roost features of structures in the wider landscape. Finally, a preliminary tree roost survey was conducted for all trees within 275m of the proposed turbines and along access routes where trees may be affected.

During static surveys, a total of eight species of bats were recorded: Common Pipistrelle, Soprano Pipistrelle, Nathusius Pipistrelle, Leisler's bat, Natterer's bat, Daubenton's bat, Lesser Horseshoe bat and Brown long-eared bat. Unidentified Myotis species were also recorded; several of which were likely whiskered bats.

The most frequently recorded species was Soprano Pipistrelle followed by Leisler's bat and Common Pipistrelle with lower levels of Myotis species and Brown long-eared bat detected. A single Lesser Horseshoe bat was recorded in October 2022. Overall activity based on median levels show that Soprano Pipistrelle and Leisler's bat was moderate to high, Common Pipistrelle was moderate, and Nathusius Pipistrelle activity was low.

Results show that without mitigation there will be a high level of impact at all of the nine turbine locations for either Leisler, Common or Soprano Pipistrelle (the main species affected by wind turbine collision). Impacts on Nathusius's Pipistrelle will be low.

All bats recorded during surveys are classified as 'Least Concern' on the Irish Red List No. 12 and protected under the EU Habitats Directive Annex IV and Wildlife Acts. The site is situated outside the main geographical range for the EU Habitats Directive Annex II listed species: Lesser Horseshoe bat. The single recording of Lesser Horseshoe bat represents 0.0007% of all calls recorded during static surveys within the site and was likely from a vagrant bat recorded in October; the period where this species moves between summer and winter roosts.

Robust mitigation is proposed to negate impacts on bats including feathering of turbine blades in low wind conditions, curtailment of cut-in speeds, creating buffers surrounding the turbines and a post construction monitoring program designed to examine the effectiveness of these mitigation measures.

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This report provides the location of several bat roosts. Locations of roosts should be redacted from the general public.

1 INTRODUCTION

This document reports on the findings of bat surveys conducted from 2022 to 2024 at the site of a proposed windfarm located some 8km to the north-west of Mallow, Co. Cork. This report aims to;

- Identify species of bats using the site.
- Examine trees and buildings within and surrounding the site for roosting potential.
- Examine feeding and commuting routes.
- Assess potential impacts of bats by the proposed development.

To assess the presence and activity of bats within the proposed grounds the following surveys were undertaken within and adjacent to the proposed planning boundary:

- Preliminary roost assessment
- Bat activity (walked, driven transects and emergence surveys); and
- Static detector surveys.

All surveys adhered to SNH (2021) guidelines while also taking on board aspects of (NIEA, 2021) and (Collins, 2023) guidance.

Emergence & transect surveys were conducted from July to September 2022 and August to September 2023. Wintertime assessment of structures and trees were conducted in April 2023 and March 2024. Static detector surveys were carried out between April and September 2022 in four rounds with an additional three rounds conducted in 2023. The survey types were determined most appropriate to establish a baseline species assemblage, along with spatial and temporal distribution of species activity within the proposed planning boundary.

Garrane Site Location

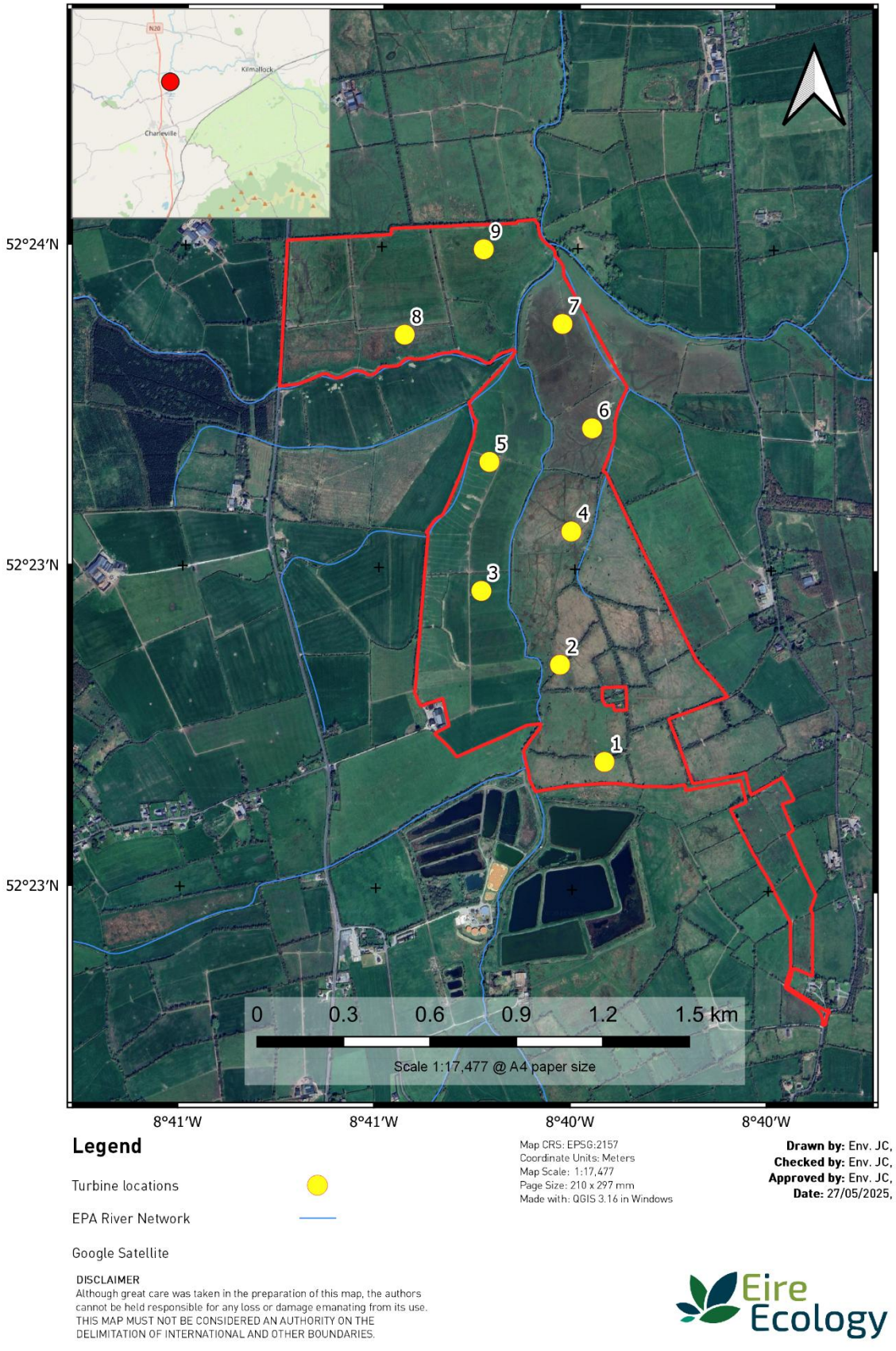


Figure 1-1: Site Location

1.1.1 Surveyor Information

Bat surveys were designed by John Curtin BSc. John qualified in Environmental Science at NUI Galway in 2010 and has been working as an ecologist ever since. John has been conducting bat surveys at windfarm sites since 2012. He has also completed the Bat Conservation Ireland, Bat Detector Workshop and Bat Handling Workshop which are the standard training for the carrying out of bat surveys in Ireland. In addition, John is an active member of BCI, which monitors Ireland's bat population, and facilitate the education of bat communities to the public.

John holds the following licences.

Description	Licence No
Licence to capture protected wild animals for educational, scientific or other purposes (bats)	C014/2025
Roost disturbance (bats)	Der/Bat 2025-177
Licence to photograph / film wild animals (bats)	032/2025

In addition, night-time detector surveys were supported by Rory O' Reilly, Ciara Morrin and Karolina Illien. Rory holds a B.Sc. in Freshwater and Marine Biology (GMIT) and an M.Sc. in Animal Behaviour from Anglia Ruskin University. Rory has worked as an intern at the National Biodiversity Data Centre, is the National Coordinator Seasearch Ireland and has volunteered for Bat Conservation Ireland monitoring programs such as the Daubenton's waterways survey. Ciara has a degree in Wildlife Biology and has completed CPD courses on Fundamentals of Biodiversity Considerations for Engineering Projects, Bat License Training & Bat Sound Analysis. Karolina has a Masters in Environmental Leadership and has worked as an ecologist since 2022.

2 DESKTOP STUDY

2.1 BATS IN IRELAND – LEGISLATIVE PROTECTION

There are two main pieces of legislation which cover wildlife protection in Ireland – the Wildlife Act and the Habitats Regulations. These are outlined below, with particular reference to the protection afforded to bat species in Ireland.

The Wildlife Acts 1976–2012 (as amended)

The primary pieces of national legislation for the protection of wildlife in Ireland are the Wildlife Act (1976) and the Wildlife [Amendment] Act (2000). All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

- Intentionally kill, injure or take a bat
- Possess or control any live or dead specimen or anything derived from a bat
- Wilfully interfere with any structure or place used for breeding or resting by a bat
- Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose

European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94/1997) (with subsequent amendments up to 2024). The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) seeks to protect rare and vulnerable species and the habitats in which they are commonly found and requires that appropriate monitoring of populations be undertaken. All bat species found in Ireland are listed under Annex IV of the Directive, while the lesser horseshoe bat is afforded further protection under Annex II. The Habitats Directive has been transposed into Irish law by the European Communities (Natural Habitats) Regulations 1997. All bat species are listed on the First Schedule and Section 23 of the regulations makes it an offence to:

- Deliberately capture or kill a bat
- Deliberately disturb a bat
- Damage or destroy a breeding site or resting place of a bat

Provision is made in the Regulations for the Minister for Housing, Local Government and Heritage to grant, in strictly specified circumstances set out in that Regulation, a derogation license permitting any of the above activities “where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range”.

The Planning and Development Act 2000 (as amended):This Act integrates biodiversity considerations into the planning process and requires ecological assessments, including for bats, as part of Environmental Impact Assessments (EIAs).

2.2 BAT SPECIES IN IRELAND AND ROOST TYPES.

There are nine species have been confirmed resident in Ireland. These belong to two families; eight species are in the family Vespertilionidae, and one is in the Rhinolophidae family (BCIreland, 2022). The bat species resident in Ireland are:

Family Vespertilionidae

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Nathusius' pipistrelle (*Pipistrellus nathusii*)
- Leisler's bat (*Nyctalus leisleri*)
- Brown long-eared bat (*Plecotus auritus*)
- Daubenton's bat (*Myotis daubentonii*)
- Whiskered bat (*Myotis mystacinus*)
- Natterer's bat (*Myotis nattereri*)

Family Rhinolophidae

- Lesser horseshoe bat (*Rhinolophus hipposideros*)

For more details on each of these species please see Bat Conservation Ireland (https://www.batconservationireland.org). In addition to the aforementioned bats two other species may be considered vagrant or possible residents.

- Brandt's bat (*Myotis brandti*). A single dead Brandt's bat was found by Enda Mullin (NPWS) in Wicklow in 2003. No other confirmed records of this species have been found in Ireland since.
- Greater Horseshoe bat (*Rhinolophus ferrumequinum*). A single bat was recorded in Wexford by Paul Scott roosting in a disused cellar. In 2020 Nick Marchant identified several greater horseshoe recordings in Glendalough, Wicklow.

The Bat Mitigation Guidelines for Ireland (Marnell, 2022) describe bat roosts in the following broad categories;

- Maternity site, where pups are born and raised to independence;
- Hibernation site, where bats may be found during the winter;
- Mating site, where males and females gather during the autumn;
- Feeding site (night roost), where bats rest between feeding bouts during the night but are rarely present by day;
- Transitional (or swarming) site, where bats may be present during the spring or autumn;
- Satellite roost, used by males and non-breeding females.

2.3 Historical Review of Bat Data to Establish Initial Risk Assessment of Site

NIEA guidance states a desktop assessment is required to assign a risk level to the site and design future survey work. The appropriate level of survey effort for a site depends on the quality of habitat present and the scale and likely impact of the development. Consideration should be given to the presence of suitable commuting and foraging habitat and the likely presence of bat roosts near proposed turbines. An assessment was conducted for Garrane by examining the BCI database, NBDC records, BCI landscape model for bat suitability, Ordinance survey, aerial photos and google street view.

A data search was conducted in April 2023, February 2024 and in May 2025 to revise existing information from the surrounds of the proposed planning boundary. The following information sources were examined:

- Known bat records within a 10 km radius of the proposed sites from the Bat Conservation Ireland database

- Ad hoc and observational bat records from the National Bat Database held by the National Biodiversity Data Centre (www.biodiversityireland.ie)
- Review of Ordnance Survey mapping and aerial photography of the proposed wind farm boundaries and their environs (i.e. 200 m plus rotor radius of the boundary of the proposed development)
- Records of designated sites within a 15 km radius of the proposed sites where bats form part or all the reason for designation (https://www.npws.ie/protected-sites)
- Collation of data on known caves within a 4 km radius of the proposed sites from the Cave Database for the Republic of Ireland, compiled by Trinity College (http://www.ubss.org.uk/search_irishcaves.php)
- Review of bat survey data from Ecological Impact Assessments from proposed and permitted developments within the wider environs of the site.

2.3.1 Designated Sites (SAC, NHA and pNHA's)

Table 2-1: Designated sites within 15km of site

Site	site code	Distance (km)	Reference to bats in Site Synopsis?
Blackwater River SAC	02170	6.28	No
Ballyhours Mountain SAC	02036	8.72	No
Tory Hill SAC	00439	14.34	No
Glen Bog SAC	01430	14.85	No
Heathfield wood pNHA	01434	13.36	No
Mountrussell wood pNHA	02088	6.97	No
Ballyhoura mountain pNHA	02036	9.22	No
Ballyroe Hill & Mortlestown Hill pNHA	02089	11.33	No
Castleoliver woods pNHA	02090	11.92	No
Balllinvonear pond pNHA	00012	12.06	No
Ballintlea wood pNHA	02086	12.83	No
Tory Hill pNHA	000439	14.34	No
Glen Bog pNHA	001430	14.85	No

No record of caves could be found within the locality of the site.

2.3.2 Bat Landscape

(Lundy, 2011) produced a landscape model by analysing data contained in the Irish National Bat Database, maintained by Bat Conservation Ireland and the National Lesser Horseshoe Bat database maintained by National Parks and Wildlife Service. The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats.

Table 2-2 shows the BCI bat landscape model. Brown Long-eared, Leisler's bat, Common and Soprano Pipistrelle were ranked high.

Table 2-2: Landscape model for areas of the site (green is low suitability for bats, red is high)

Fort East proposed turbine locations		Suitability
Overall Suitability; BCI		27.33
Pipistrellus pygmaeus	Soprano Pipistrelle	47

Plecotus auritus	Brown Long-eared bats	37
Pipistrellus pipistrellus	Common Pipistrelle	43
Rhinolophus hipposideros	Lesser Horseshoe	4
Nyctalus leisleri	Leisler's Bat	41
Myotis mystacinus	Whiskered Bat	10
Myotis daubentonii	Daubenton's Bat	33
Pipistrellus nathusii	Nathusius Pipistrelle	5
Myotis nattereri	Natterer's Pipistrelle	26

2.3.3 Historical Bat Records from the vicinity of the site

The NBDC and Bat Conservation Ireland database was consulted for details on bat records held for the site and the surroundings. The database was consulted on the 08/04/2022, 23/02/2024 and 28/05/2025 for details on historical records from the site, the surrounding 10km.

The closest historical roost is located 560m to the south-west of the site where Daubenton's bat roost was noted at a bridge along the N20. Further Daubenton's roosts have been recorded to the north; over 6.5km (single bat) and 8.5km (3 bats) from the site.

Regarding the roost located 560m from the site. While this record is dated from 2019, the record has only been uploaded to the BCI database after March 2024. The recorder; Caroline Shiels was contacted for further information. The bridge consists of a single masonry arch. Caroline has found up to 5 Daubenton's using crevices (singly). She feels the bridge is not used as a maternity roost.

(BCT, 2020) states the CSZ for this species is 3km thus impacts are not expected on this roost by the proposed development. (BCT, 2020) refers to CSZ for a bat roost; *a core sustenance zone (CSZ), as applied to bats, refers to the area 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.* For Daubenton's bats it states the CSZ for this species is 2km. An impact assessment for this roost is provided in section 6.1

Baring the Daubenton's roost record, all other records within 6km of the site are adhoc; the majority from Bat Conservation Irelands Batlas and records from Bat Eco Services. Species recorded include, *Myotis Daubentonii, Myotis mystacinus, Myotis nattereri, Nyctalus Leisleri, Pipistrellus pipistrellus, Pipistrellus pygmaeus, Pipistrellus sp, Plecotus auritus* as well as *unidentified Myotis* and an unidentified bat. Full details can be found in Appendix 1.

3 SURVEY METHODOLOGY

3.1 BAT TRANSECT AND EMERGENCE SURVEYS

The bat detectors used during the walked and driven surveys were Wildlife Acoustics Inc. (Massachusetts, USA) Echo Meter Touch Pro 2 which are triggered to record when a bat call is emitted louder than 18dB for 1sec. This detector uses full spectrum sampling; detecting all frequencies simultaneously, meaning that multiple bat calls can be recorded at the same time.

Night-time surveys combined emergence surveys towards dusk and dawn and a combination of walked and driven transects of bat favourable habitats within and surrounding the site. These were conducted between July and September 2022 and August to September 2023.

Transects targeted a range of foraging and commuting habitats present within and surrounding the study area, those associated with linear features such as roadside margins, hedgerows, treelines and waterbodies.

A contact describes a bat observed by the surveyor. This contact can range from a commuter passing quickly to a foraging bat circling a feature lasting for several minutes. Some observations contain multiple bats. When several bats of the same species are encountered together, they are recorded under the one contact with an effort to note how many bats are visible. A separate contact is recorded for each species. A contact finishes when the recorder assumes the bat is no longer present. It is likely that the same bat is recorded in several contacts throughout the night. This survey type cannot estimate abundance of bats, rather activity; *the amount of use bats make of an area / feature.*[1]

Where possible, a positive identification to species level was made. Information on the behaviour was also recorded where available.

Bat activity is governed by the activity of their insect prey and insect abundance is in turn governed by weather conditions and climate. Insects, and therefore bats, are unlikely to be present at temperatures below 7°C or during periods of strong winds or heavy rainfall so surveying in such conditions is not optimal. All field surveys were undertaken within the active bat season and during good weather conditions (dry conditions and temperature at 8°C and greater).

Bats were identified by their ultrasonic calls coupled with behavioural and flight observations and on computer by sound analysis of recorded echolocation and social calls with dedicated software (Wildlife Acoustic's Kaleidoscope Pro; version 2.1.0)[2].

3.2 STATIC BAT DETECTOR SURVEYS

Full spectrum bat recorders Song Meter Mini and SM4BAT were deployed within the study area at the site of the proposed turbines for ten nights in the spring, summer and autumn periods. Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some species such as

[1] This methodology is based on professional experience and judgment. Activity level assessment for each turbine is derived from static detector data discussed in section 3.2 below.
[2] Although there are later editions to this software the surveyor manually verified all calls rather than depending on auto identification. It is the surveyor's opinion that auto-id features frequently misidentify bat species

the pipistrelles will continuously fly around a habitat and therefore it is likely that a series of bat passes within a similar time frame is one individual bat. On the other hand, Leisler's bats tend to travel through an area quickly and therefore an individual sequence or bat pass is more likely to be indicative of individual bats.

Per SNH (2019) guidance, static units were programmed to commence half an hour before sunset and finish half an hour after sunrise to ensure that bat species that emerge early in the evening and return to roosts late are recorded.

SNH (2021) guidance states that "Detectors should be placed at all known turbine locations at wind farms containing less than ten proposed turbines. 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 sites up to a maximum of 40 detectors for the largest developments".

The proposed development has undergone several changes since conception including number and location of turbines. The 2022 surveys were undertaken on the understanding of a twelve-turbine development thus 12 detectors were set out. In 2023 this had reduced to a maximum of nine. Two different layouts however were proposed so the ecologist had to position detectors in locations close to but not always exactly where turbines are proposed. Table 4-1 below provides details on turbine and detector locations, alongside habitat considerations. In 2022 detectors were set out on 5 occasions; Spring, summer, August, Autumn and October while 2023 surveys were set for three survey periods: spring (April - May), summer (July - early August) and autumn (September - October). This represents a very high level of data collection for a windfarm.

The data was analysed with Wildlife Acoustic's Kaleidoscope Pro; version 2.1.0)[3]. This software identifies many of the calls made by Irish bats. All calls were manually verified. In addition, 20% of noise files were also checked. Results presented below show some Myotis calls the surveyor is confident the bat is a Natterer's bat and Daubenton's bat. Distinguishing between Myotis species recordings is difficult (unless distinctive social calls are recorded thus several calls are recorded to genus level only. These could be either Whiskered, Daubenton's or Natterer's bat. Similarly, several Pipistrelle calls were recorded with a peak frequency of around 40kHz. These calls are lower than expected for Common Pipistrelle but higher than typical for Nathusius. Following the precautionary approach these calls have been included in ECOBAT type analysis as Nathusius Pipistrelle although it is likely many were Common Pipistrelle.

Where detectors were set in open habitats, a timber structure was erected ensuring microphone height was set at 2.5m

3.2.1 Static Survey and Analysis Limitations

- It is not always possible to identify a bat call to species level due to the recorded call not being clear. Recorded files from automated detectors may contain only fragments of a call, or the bat may be calling from a distance (from the detector) in which case it may not be clear enough to assign the call to a specific species. In these cases, the call has been assigned to genus level;
- Some caution must be taken when comparing activity levels between species, as bias can be shown towards those species with 'louder' or 'lower frequency' echolocation calls. For

[3] There have been several updates to Kaleidoscope and the auto ID; Bats of UK 2.0.7. The author however feels auto-ID software regularly misidentifies bat calls that are not ID'ed as Common or Soprano Pipistrelle. As such all calls not identified as Common or Soprano Pipistrelle were manually verified. The software version used is adequate for organising data.

example, Nyctalus species have louder, and low frequency echolocation calls which carry further than the quieter and more broad-band brown long-eared bat echolocation calls;

- A bat contact (for static surveys) is defined as a single detector file which contains at least one bat call. Multiple contacts at any given detector location do not necessarily indicate the presence of more than one bat and should therefore be interpreted as a level of activity rather than the number of bats recorded;
- Following the conservative approach, 40kHz Pipistrelle recordings were included with Nathusius Pipistrelle when conducting ECOBAT type analysis.
- During the spring survey of 2022 Detector 9, (located at 52.3903, -8.67537) positioned along a fence in the centre of a field by a track was moved by the farmer as his cows would not pass the 3m high post. He relocated the detector to 52.3898, -8.67758 150m to the east adjacent to a treeline / hedgerow, a much-improved habitat for bats. Consequently, the detector recorded elevated levels of bats (9751 registrations or 82 bat passes per hour), particularly Soprano Pipistrelle (5286 recordings). This rate would have been substantially reduced if left in the original location.

4 SURVEY FINDINGS

4.1.1 Habitats on site

The subject site is situated in a variety of habitats consisting of grassland, primarily improved but also sections of wet, with associated hedgerows and treelines. The Maigue and Loobagh rivers join to the north of the site. Elevation on site is uniform at 70m. The surrounding area is serviced by a variety of roads from primary to tertiary. Table 4-1 details habitats within 200m of each proposed turbine.

Table 4-1: Habitats surrounding proposed turbines with comments on static locations and landscape features suitable for bats

Turbine No	Detectors used for assessing impact	Approx. Distance between detector and turbine	Within 275m of proposed turbine						Comments on static locations and landscape features suitable for bats	Number of nights static deployed
			Habitat 1	%	Habitat 2	%	Habitat 3	%		
1	2023 D1	18m	GA1 / GS4	90	WL1 / WL2	5	FW	5	Turbine proposed close to hedge. Derelict dwelling and sheds located just within 200m buffer to NE. Pond found 165m to south.	41 nights
	2022 D12	112m SE							Detector set within same field close to hedge. Activity likely to be very similar.	44 nights
2	2023 D2	52m NW	GA1 / GS4	90	WL1 / WL2	10	FW	+	Turbine proposed within wet grassland close to hedgerow / treeline. Detector was placed further NW by lone hawthorn. Turbine location is somewhat better for bats thus results from D2 will be adjusted at risk assessment stage. Charleville stream with treeline located 60m to W.	41 nights
	2022 D10	205m NE							Detector set along same fence line to the NE	44 nights
	2022 D11	185m SE							Detector set to SE along treeline thus will have higher activity. Impact assessment takes this into account	44 nights
3	2023 D3	At turbine location	GA1	95	WL1 / WL2	5	FW	+	Turbine set within improved grassland with little landscape features surrounding. Closest hedge lies 55m to north. Charleville stream is located 95m to E.	35 nights
	2022 D9	120m N							Detector set far side of hedge in very similar habitats. Activity will be similar. During the spring survey the detector was placed to the west in by a treeline. This resulted in a peak of activity that would not be expected at the turbine location. This is considered in the risk assessment.	44 nights
4	2023 D4	At turbine location	GA1 / GS4	95	WL1 / WL2	5	FW	+	Turbine set within wet grassland with little landscape features surrounding. Closest hedge lies 65m to east. Stream found 185m to W and 70m to E	41 nights
	2022 D8	165m N							Detector was set to N close to hedge thus will have higher activity. Impact assessment takes this into account	36 nights
5	2023 D5	52m	GA1	95	WL1 / WL2	5	FW	+	Turbine set within improved grassland with short hedge located 15m to north. Stream found 75m to W and 170m to E.	45 nights
	2022 D6									44 nights

Turbine No	Detectors used for assessing impact	Approx. Distance between detector and turbine	Within 275m of proposed turbine						Comments on static locations and landscape features suitable for bats	Number of nights static deployed
			Habitat 1	%	Habitat 2	%	Habitat 3	%		
6	2023 D6	At turbine location	GA1 / GS4	95	WL1 / WL2	5	FW	+	Turbine set within wet grassland with little landscape features surrounding. Closest hedge lies 75m to east by small stream.	50 nights
	2022 D7	126m N							Detector set on intersection between hedgerow and treeline to north. Will have substantially higher bat activity given turbine is proposed for centre of field. This is considered at the risk assessment stage.	44 nights
7	2023 D7	55m	GA1 / GS4	95	WL1 / WL2	5	FW	+	Both detectors were set within the middle of a field with little landscape features closeby. The 2022 detector was placed at the turbine location while the 2023 detector was slightly to the south. The closest hedge lies 85m to east by small stream. Activity will not be impacted by distance at these points.	29 nights
	2022 D4	At turbine location								44 nights
8	D8	22m	GA1 / GS4	95	WL1 / WL2	5	FW	+	Proposed turbine is situated in grassland with a hedge located 15m to north providing some landscape features suitable for bats. Maigue River is located 85m to south. Along this section only sporadic willow shrubs can be found (as opposed to a riparian woodland)	22 nights
	D1	165m W							The 2022 detector was placed in the same field just to the west, set back a similar distance from the Maigue River (85m). Activity will be similar.	42 nights
9	2023 D9	46m	GA1	95	WL1 / WL2	5	-	-	Set within improved grassland. Closest landscape feature is a hedge 75m to the north.	31 nights
	2022 D2	205m SW							Set at edge of hedgerow / treeline. Will have substantially higher bat activity given turbine is proposed for centre of field. This is considered at the risk assessment stage.	44 nights
	2022 D3	144m NE							Set at edge of hedgerow / treeline and close to river. Will have substantially higher bat activity given turbine is proposed for centre of field.	43 nights

GA1; Improved grassland. GS4; Wet grassland. WL1; Hedgerow. WL2; Treeline. FW; Freshwater (stream, ditch or pond)

Turbine & Static Locations

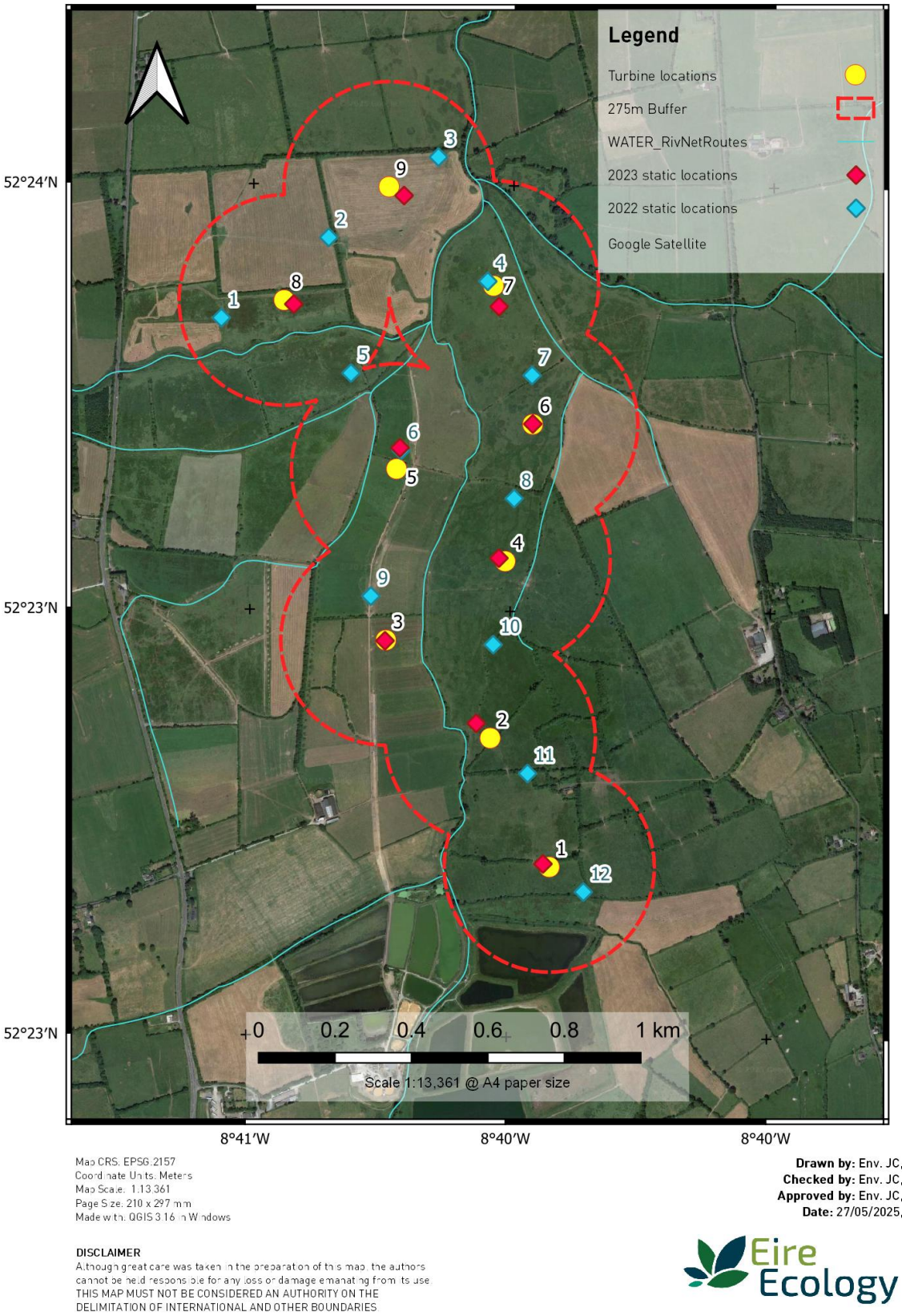


Figure 4-1: Turbine and static locations

4.2 Assessment of Potential Roost Habitats

4.2.1 Potential tree roosts

A Ground Level Tree Assessment (GLTA) was conducted for all trees within 275m of each turbine, along access routes (where the potential exists for felling) and within the proposed substation on the 05th of April 2023 and the 07th of March 2024 following guidelines set out in BCT Guidelines for professional ecologists 4th ed.

All trees were assessed from ground level using binoculars

Examples of crevice features include:

- Natural holes;
- Cracks/splits in major limbs;
- Loose bark; and
- Hollows/cavities.

Each tree was assessed and ranked as having either a potential roost feature (PRF), further assessment required (FAR) or no potential (none). In total 20 PRF trees were recorded alongside 13 FAR trees, the majority of which were found to the south of the site where the substation is proposed (See Appendix 1.2 GLTA Results for full details). 10 PRF trees were found within 275m of the proposed turbines (see figure 4-2 below).

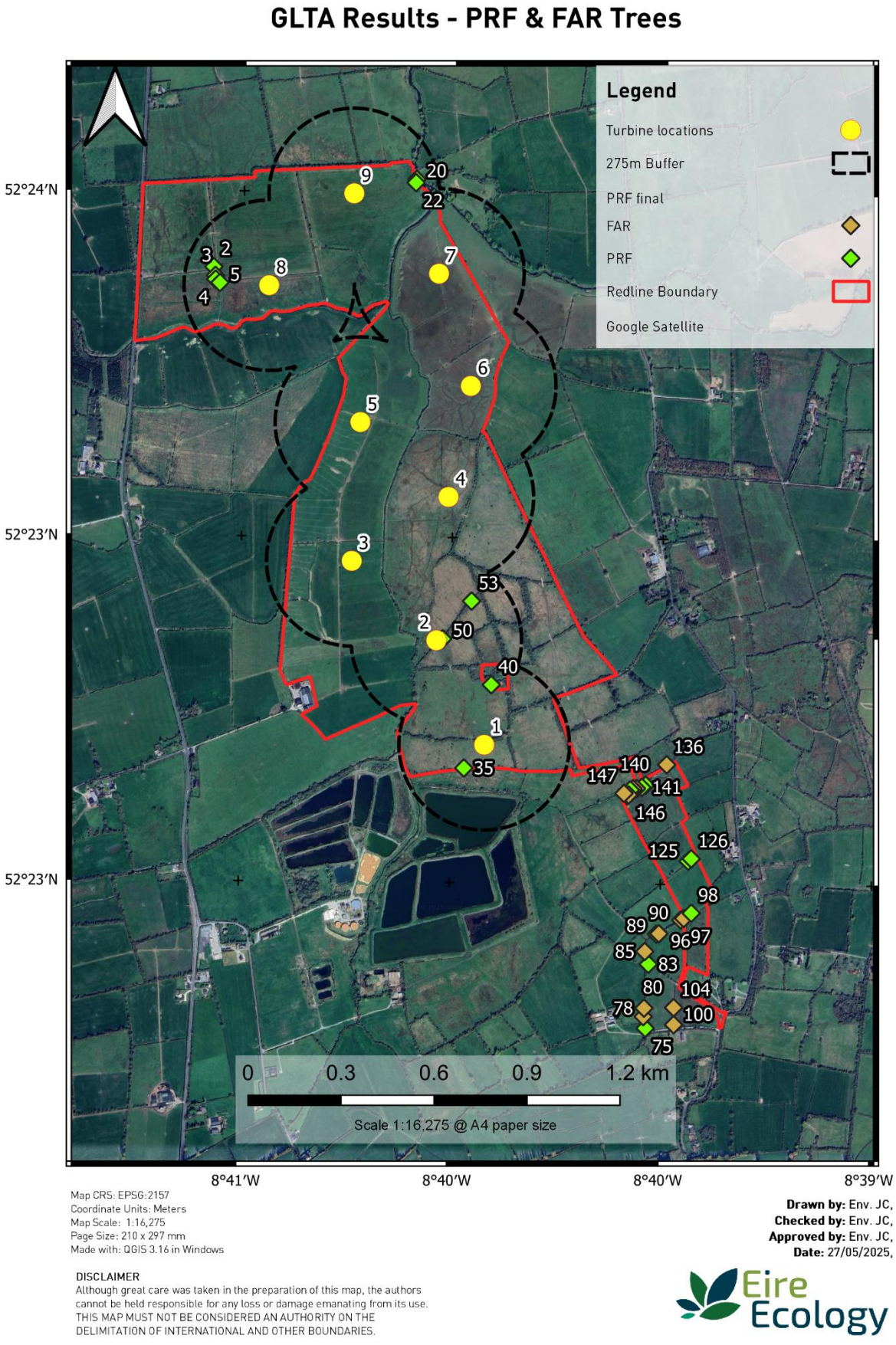


Figure 4-2: GLTA Results

4.2.2 Structures

A single derelict farmstead comprised the only buildings located near to a 275m buffer of any proposed turbine (Structure 2 in table 4-2 and figure 4-3). Potential roost structures outside this zone were also examined. A search was conducted of sheds and derelict dwellings of highest potential that showed connectivity. In situations where access was not possible the surveyor conducted nighttime surveys from the road examining bats and attempting to locate commuting routes and roosts.

Table 4-2 Potential roost structures examined during daylight preliminary searches.

Structure No	Details	Distance from closest turbine	Distance to site boundary
1	Tree – mature, good potential	170m W of T1	Within site
2	Ruin of shed – good potential	210m SE of T2	Within site
3	Sheds to east – good potential	765m E of T2	275m
4	Derelict dwelling – good potential	730m SW of T3	320m
5	Bridge by N20 – moderate potential. Concrete but some gaps visible	450m W of T8	Adjacent
6	Bridge to E – good potential	610m NE of T6	430m
7	Farmyard – moderate to low. Mostly metal sheds	470m SW of T2	Adjacent
8	Stone sheds adjacent to dwelling	1.03km SW of T2	620m
9	Rockhill church – moderate potential as low amount of visible access points	2.52km NW of T9	2.1km
10	Stone shed adjacent to church – good potential	2.6km NW of T9	2.2km
11	Bruree Tower House and Church – high potential	2.68km NE of T9	2.5km
12	Culvert – no potential	2.42km SW of T1	2.01km
13	Culvert – no potential	4.86km SW of T1	4.5km
14	Bridge – no potential; pointed stonework (found along TDR)	25km NW of T9	24.9km

During the daylight search no evidence of bats were noted from any of the structures listed in Table 4-2. A survey in July 2022 indicated a bat roost located at a derelict dwelling (3) where good Pipistrelle activity was recorded although an exact roost was not determined. Sheds (2) were examined in 2022 and again in 2023. While no bats were found in 2022, a Natterer's satellite bat roost (2 bats) was recorded in 2023. Bridge (6) was found to contain a Soprano Pipistrelle satellite roost (2 bats) during the 2023 surveys and Bruree Tower House and Church (11) was found to contain a Soprano Pipistrelle, Common Pipistrelle and probable Brown Long-eared roost.

Structures 12, 13 and 14 were examined during a daylight search on the 07th of March 2024 as these are located along an alternative potential grid route. They showed no potential to host a bat roost.

Daylight / Emergence Survey Locations

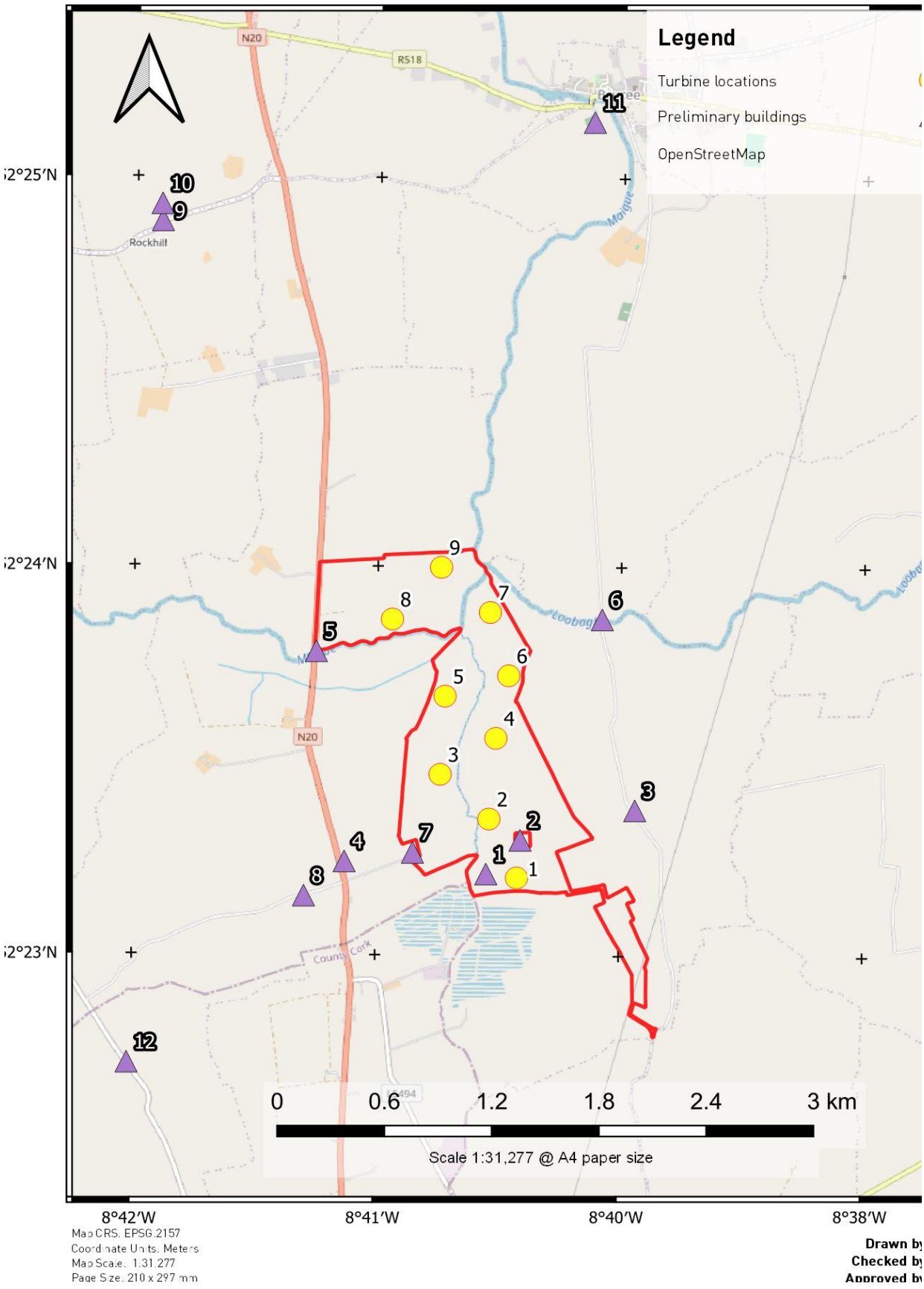


Figure 4-3: Daylight / emergence survey locations

4.2.3 Emergence & Transects

Night-time bat surveys commenced prior to sunset whilst dawn surveys commenced approximately two hours prior to sunrise and finished at sunrise.

Weather conditions were acceptable during each survey.

4.2.4 Emergence survey results

Table 4-3 provides a summary of all surveys undertaken at the site. Overall three roosts were discovered, the most significant being a Soprano Pipistrelle, Common Pipistrelle and probable Brown Long-eared roost (building 11) noted in Bruree. Two other satellite roosts were also found while another building possibly contains a roost. Full emergence survey results can be found in Appendix 1.4 Emergence / Transect Data, while an impact assessment of the proposed development on each roost is explored in section 6.1.

Table 4-3: Bat Survey Effort Summary 2022 and 2023

Survey No.	Date	Survey type	Start Time	End Time	Location	Roost?	Details	Grid ref (ITM) Start / Finish		Sunset / sunrise	Surveyor
1	07/07/2022	Roost survey	21:26	22:40	1	No	Mature tree at southern end of field with ruins where dawn survey was to take place. Very little bat activity.	52.384187	-8.670932	21:57	Rory
		Walked transect	22:40	23:35	T1 (red)	-	Walked southern section of the site focusing on turbine locations. In several areas, it was difficult to follow field margins and likely areas of bat activity due to height of vegetation/uneven ground. Very little bat activity.	Map			
		Walked transect	23:35	00:00	T2 (red)	-	Turned south and followed the steam running the centre of the site. Very little bat activity.				
2	08/07/2022	Walked transect	03:44	04:00	T3 (green)	-	Walked transect from near milking buildings (couldn't get too close as cattle were in adjacent field) to dawn emergence survey location. Very little bat activity detected.	Map		05:23	Rory
		Roost survey	04:00	05:23	2	No	Derelict shed with ruins. Roost survey at sites marked as ruins. Very little bat activity no signs of roosting bats.	52.3858744, -8.668026			
3	09/08/2022	Emergence survey	20:42	22:20	3	Possibly. Resurvey required.	Derelict house and old growth tree. Standing on main road. Significant amount of pip activity, bats circling trees in front of house. Not apparent which building emerging from.	52.387505, -8.658741		21:12	Rory
	09/08/2022	Walked transect	22:20	23:28	T4	-	Walked track from location 3 onto site and across towards milking parlour of farm and then down road to landowner's house adjacent to N20. Very little bat activity apart from at milking parlour where there were several bats feeding at the trees in front of entrance.	52.387505, -8.658741	52.385123, -8.677291		
4	10/08/2022	Roost survey	04:06	05:57	4	No	Derelict house adjacent to N20. According to landowner has been derelict for 20+ years. Bins have been paid up to July 1999. No bat activity observed, however due to location a lot of noise on the detector.	52.384871, -8.682490		06:06	Rory
5	29/08/2022	Emergence survey	20:00	21:15	5	No	Bridge on River Maigue under N20. Lot of vegetation at bridge but very little open water on this section of river. No bats roosting under bridge.	52.3955996, -8.6850242		20:30	Rory

Survey No.	Date	Survey type	Start Time	End Time	Location	Roost?	Details	Grid ref (ITM) Start / Finish		Sunset / sunrise	Surveyor
		Walked transect	21:15	22:54	T5	-	Walked fields to north of site adjacent to River Maigue. Very little bat activity detected.	52.395599, -8.685024	52.397522, -8.684580		
6	30/08/2022	Walked transect	04:42	05:06	T6	-	Walked road adjacent to bridge. Very little bat activity detected.	52.3973406, -8.6615441	52.3973406, -8.6615441	06:42	Rory
		Roost survey	05:06	06:42	6	No	Bridge on River Maigue on road from Bruree to Charleville. Water extremely shallow, large amount of tree cover. No bats roosting under bridge.	52.3973406, -8.6615441			
7	29/09/2022	Emergence survey	18:44	21:44	7	No	Farmyard to SW. Used thermal imaging. No bat roost found. Bats entered the site from the N20 to the W. Soprano Pipistrelle and a Leisler's hunting. BLE also recorded.	52.385354	-8.677051	19:16	John Curtin
		Emergence survey	18:44	21:44	4	No	Derelict dwelling by N20. Set night vision camcorder and SM-mini. Need to review	52.384745	-8.682407		
8	30/09/2022	Emergence survey	05:30	07:30	3	No	By derelict dwelling to east where Rory found roost. Weather not great. No roost found although odd bat recorded.	52.387505	-8.658741	07:32	John Curtin
9	10/08/2023	Dusk emergence	21:00	23:00	4	No	Derelict house to the south of busy road (N20). Sheltered area surrounded with treelines and hedgerows. No streetlights. Shed with galvanised roof to the rear (east) of the house. Most activity close to treelines at rear and side of the house (east and north side). Hedgerows / treeline south and west of the house provides connectivity to broader landscape.	52.384804	-8.682583	21:11	Ciara Morrin
		Point Survey	23:30	23:40	P1	-	Bridge on N20. Treelines lining N20 and river. No streetlights. Moderately sheltered.	52.395565	-8.685128		
		Point Survey	00:42	00:52	P2	-	Bridge on quiet minor public road with still shallow water underneath. Lots of shelter and connectivity to broader landscape. Treelines and hedgerows surrounding. Ivy-covered ruinous tone structure on south side of river, west of road. 2 Barn owls in stone structure.	52.397289	-8.661547		

Survey No.	Date	Survey type	Start Time	End Time	Location	Roost?	Details	Grid ref (ITM) Start / Finish		Sunset / sunrise	Surveyor
10	11/08/2023	Dawn roost	04:10	06:10	8	No	Old stone buildings with attached stone walls at entrance to residential property. Buildings located on quiet minor public road with good connectivity to broader landscape. Treelines to east and west of buildings. No roosts discovered in stonework. Bats using treeline east of buildings.	52.38302	-8.685894	06:10	Ciara Morrin
11	31/08/2023	Dusk emergence			2	Yes	Natterer's bat (2) in old stone shed with thick ivy and corrugated roof	52.385944	-8.668141	20:25	John Curtin
12	01/09/2023	Dawn roost			9	No	Rockhill church	52.417701	-8.697942	06:44	John Curtin
13	31/08/2023	Dusk emergence			5	No	Bridge N20. No emerging bats found. main section of the bridge is concrete and doesn't appear to have any gaps in it there are two smaller tunnels to either side built out of stone which look better for bats. bat detector started recording at around 8:30. At 8:48 detector says Leisler's bat. Please check most of the early recordings up until now have been a shrew detector thinks theses are bats First bat heard at 9 o'clock soprano Pipistrel. unseen Just saw owl fly from the north over the river and across the bridge then heard soprano Pipistrel Leisler's bat heard at 21:15 Soprano Pipistrel seen flying by the bridge heading north 21:19 Daubenton's heard at 21:19 unseen Soprano Pipistrel seen at 9:20 flying from the north west from the bridge south east away from the bridge down along the river Leisler's heard at 21:24 Common Pipistrel heard at 9:26 Detector says either whiskered bat or Natterers bat but lorry went by at the same time so could be disturbance from the lorry 21:36 At 21:40 noticed that one of the I R lights had turned off turned it back on IR light turned off again battery must be dead Brown long eared bat heard at 10:02	52.3956	-8.685024	20:25	Karolina Illien
14	01/09/2023	Dawn roost			10	No	Shed by church. Used guide track IR 19mm from road. No roosting bats found	52.418579,	-8.697981	06:44	Karolina Illien

Survey No.	Date	Survey type	Start Time	End Time	Location	Roost?	Details	Grid ref (ITM) Start / Finish		Sunset / sunrise	Surveyor
15	31/08/2023	Dusk emergence	20:15	22:35	6	Yes	Two-chamber stone bridge in sheltered area surrounded by treelines and hedgerows. Bat roost located in gap between stones in smaller north chamber without water flow. Roost was inhabited by two soprano pipistrelles. Both bats emerged at 21:06 and were captured on thermal imagery camera. Daubenton's bat also recorded hunting under the bridge (thermal imagery camera at 21:15).	52.397319	-8.661555	20:25	Ciara Morrin
16	01/09/2023	Dawn roost	04:45	06:35	11	Yes	Dawn roost survey at Bruree Tower House and Church. Two stone buildings in sheltered area with treelines surrounding. No artificial lighting. Roosts located in the steeple of the church and in the derelict, ivy-covered tower. Approximately 4 soprano pipistrelles roosting in the church with multiple entry/exit routes (4 window vents on the steeple). 05:53 - entry through western vent. 05:54 - entry through northern vent. Approximately 2 common pipistrelles roosting in the tower. 06:24-06:28 - one common pipistrelle flying around tower and one climbing in foliage. Brown long-eared bats also detected on the echometer.	52.422909	-8.662498	06:44	Ciara Morrin

4.3 STATIC DETECTOR RESULTS

The results of the static detector surveys deployed over eight rounds through 2022 and 2023. Overall, eight bat species were recorded (Common Pipistrelle, Soprano Pipistrelle, Nathusius' pipistrelle, Leisler's bat, Brown Long-eared bat, Natterer's bat, Daubenton's bat and Lesser Horseshoe bat). Where the call could not be identified to species, the identification was determined to the highest level possible. Several registrations were recorded with a peak frequency of 40kHz. These bats will have been either common or Nathusius's Pipistrelle. Further Myotis calls were identified only to genus level. More detailed results are provided in Appendix 14.

Table 4-4 provides a combined summary from the overall site showing total number of recordings per species while table 4-5 summarises per detector results from both 2022 and 2023. Figure 4-4 shows the detector locations and numbers from both years. Changes to the proposed layouts accounts for numbering and location changes.

Table 4-6 and figure 4-5 provides an activity summary per species based on bat passes per hour (Bp/Hr). Full details can be found in Appendix 1.1 Static Detector results

Table 4-4: Static Results

Common Name	Species	No. of recordings	%
Brown long-eared bat	*Plecotus auritus*	1,442	1.1
Common pipistrelle	*Pipistrellus pipistrellus*	19,104	14.2
Daubenton's bat	*Myotis daubentoniid*	13	0.01
Leisler's bat	*Nyctalus leisleri*	37,221	27.6
Lesser Horseshoe bat	*Rhinolophus hipposideros*	1	0.001
Nathusius' pipistrelle	*Pipistrellus nathusii*	54	0.04
Natterer's bat	*Myotis nattereri*	470	0.3
Soprano pipistrelle	*Pipistrellus pygmaeus*	66,090	49.0
40 kHz Pipistrelle	-	2,224	1.6
Unidentified Myotis species		8,360	6.2
Total registrations		134,979	

Table 4-5: All season summary per detector in 2022 and 2023

2022													
Detector	Results	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Minutes recorded	Total
1	Passes	414	118	312	1	0	86	0	17	0	118	19844	1066
	BP/Hr	1.3	0.4	0.9	0.003	0	0.3	0	0.1	0	0.4		3.2
2	Passes	1681	1310	3492	4	55	89	0	38	1	193	26983	6863
	BP/Hr	4	3	8	0.01	0.1	0.2	0	0.1	0.002	0.4		15.3
3	Passes	1925	1635	7661	2	27	98	0	18	6	215	26327	11587
	BP/Hr	4	4	17	0.005	0.1	0.2	0	0.04	0.01	0.5		26.4
4	Passes	1459	347	1808	0	8	95	0	16	0	579	26983	4312
	BP/Hr	3	0.8	4	0	0.02	0.2	0	0.04	0	1.3		9.6
5	Passes	1476	1416	2351	0	8	72	0	14	0	173	26983	5510
	BP/Hr	3	3	5	0	0.02	0.2	0	0.03	0	0.4		12.3
6	Passes	1582	223	706	0	7	96	0	41	0	190	26983	2845
	BP/Hr	4	0.5	2	0	0.02	0.2	0	0.1	0	0.4		6.3
7	Passes	2645	1189	2201	2	28	40	0	14	0	545	27813	6664
	BP/Hr	6	3	5	0.004	0.1	0.1	0	0.03	0	1.2		14.4
8	Passes	901	468	3947	0	32	60	0	35	1	282	21849	5726
	BP/Hr	2	1.3	11	0	0.1	0.2	0	0.1	0.003	0.8		15.7
9	Passes	4846	2051	6085	7	1603	87	0	21	0	115	26983	14815
	BP/Hr	11	5	14	0.02	4	0.2	0	0.05	0	0.3		32.9
10	Passes	1845	1644	3124	0	59	60	0	33	1	825	25354	7591
	BP/Hr	4	4	7	0	0.1	0.1	0	0.1	0.002	2		18
11	Passes	2160	1843	10368	2	73	73	0	28	1	348	26983	14896
	BP/Hr	5	4	23	0.004	0.2	0.2	0	0.1	0.002	0.8		33.1
12	Passes	2240	1883	11910	5	85	46	1	90	0	527	26983	16787
	BP/Hr	5	4	26	0.01	0.2	0.1	0.002	0.2	0	1.2		37.3
Total		23174	14127	53965	23	1985	902	1	365	10	4110	310068	98662
BP/Hr		4	3	10	0.004	0.4	0.2	0.0002	0.1	0.002	1		19

2023													
Detector	Results	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Minutes recorded	Total
1	Passes	2650	1980	6276	4	149	40	0	3	1	799	24627	11902
	BP/Hr	6	5	15	0.01	0.4	0.1	0	0.01	0.002	2		29
2	Passes	2228	746	1894	1	22	60	0	2	1	860	24627	5814
	BP/Hr	5	2	5	0.002	0.1	0.1	0	0.005	0	2		14
3	Passes	1080	213	371	0	12	73	0	2	0	106	21575	1857
	BP/Hr	3	1	1	0	0.03	0.2	0	0.01	0	0.3		5
4	Passes	641	214	419	1	9	50	0	23	0	352	16590	1709
	BP/Hr	2	1	2	0.004	0.03	0.2	0	0.1	0	1		6
5	Passes	1890	74	111	2	3	141	0	41	0	730	20228	2992
	BP/Hr	6	0.2	0.3	0.01	0.01	0.4	0	0.1	0	2		9
6	Passes	1416	680	841	1	13	63	0	12	1	853	25113	3880
	BP/Hr	3	2	2	0.002	0.03	0.2	0	0.03	0	2		9
7	Passes	294	47	87	9	0	19	0	2	0	171	15208	629
	BP/Hr	1	0.2	0.3	0	0	0.1	0	0.01	0	1		2
8	Passes	3340	963	2006	13	24	64	0	18	0	267	13677	6695
	BP/Hr	15	4	9	0.1	0.1	0.3	0	0.1	0	1		29
9	Passes	508	60	120	0	7	30	0	2	0	112	16506	839
	Av. BP/Hr	2	0.2	0.4	0	0.0	0.1	0	0.01	0	0.4		3
Total		14047	4977	12125	31	239	540	0	105	3	4250	178151	178151
Bat passes per hour		5	2	4	0.01	0.08	0.2	0	0.04	0.001	1.4		12

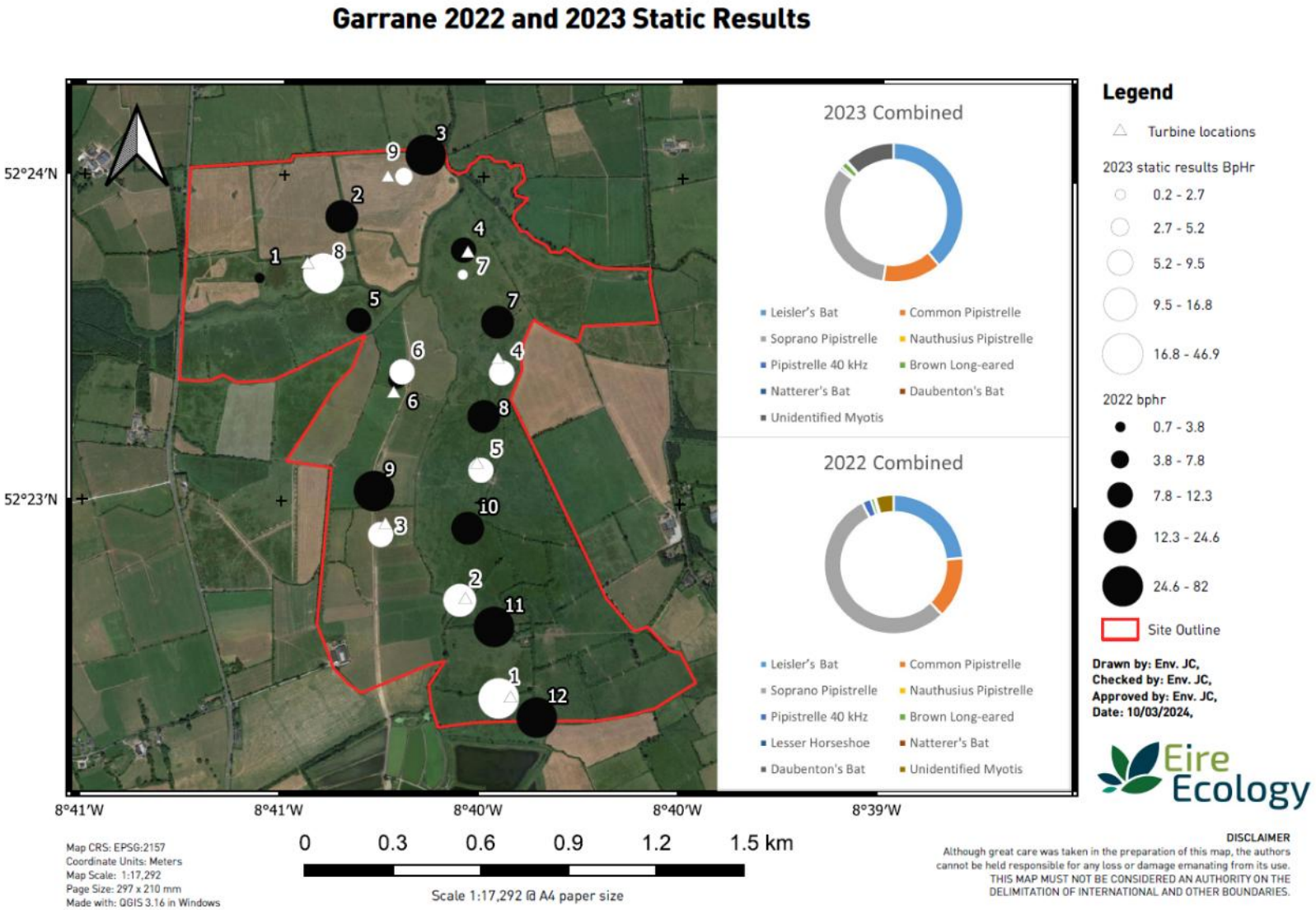


Figure 4-4 Total activity rates (Bp/Hr) for 2022 and 2023

Table 4-6: Comparison of bat activity rates for whole site through the seasons; bat passes per hour

Survey period	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Bp/Hr of total
Spring 2022	6.3	5.4	19.2	0.01	1.4	0.1	0	0.03	0.01	0.8	**33.2**
Summer 2022	1.6	2.5	6.5	0.005	0.04	0.1	0	0.1	0.001	0.6	**11.5**
August 2022	4.7	1.6	10.1	0.0	0.04	0.3	0	0.1	0.001	1.3	**18.1**
Autumn 2022	2.7	0.6	2.1	0.002	0.01	0.2	0.001	0.03	0.0	0.3	**5.9**
October 2022	1.8	0.9	3.4	0.001	0.03	0.02	0	0.02	0.0	0.1	**6.3**
Spring 2023	5.5	1.3	2.7	0.02	0.2	0.2	0	0.1	0.001	1.6	**11.4**
Summer 2023	1.9	1.0	2.2	0.001	0.004	0.02	0	0.02	0.002	1.1	**6.3**
Autumn 2023	6.6	2.7	7.3	0.01	0.1	0.3	0	0.03	0	1.6	**18.7**

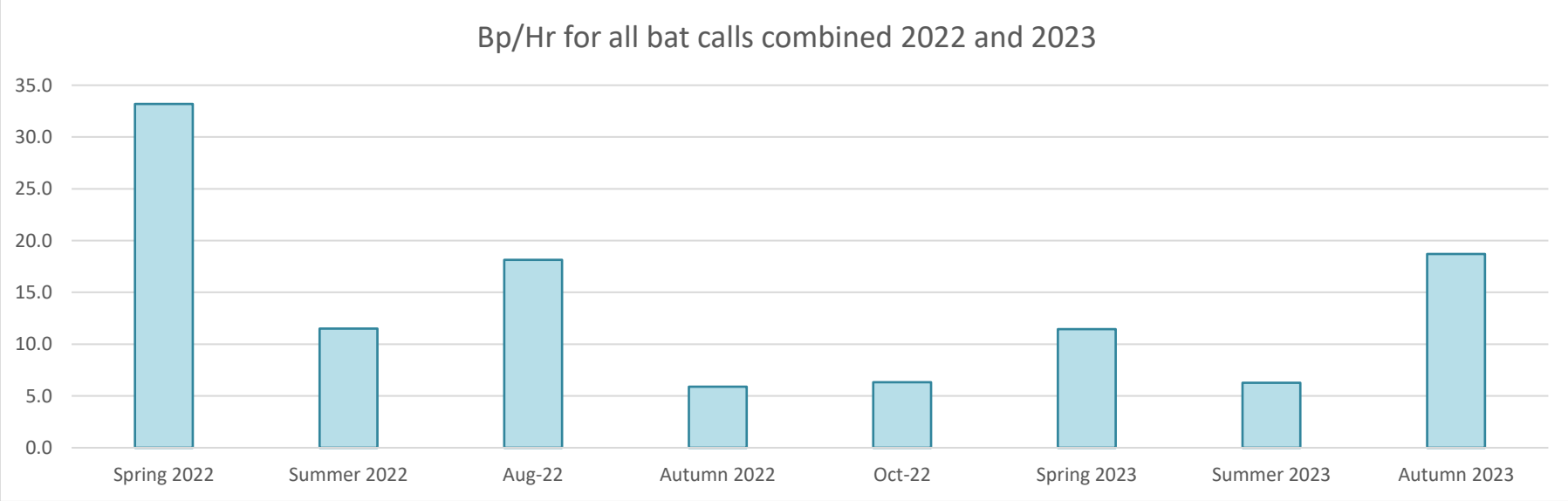


Figure 4-5: Bat activity levels across entire site in 2022 and 2023

Highest overall activity was recorded to the south of the site closest to proposed turbine 1. In 2022 Detector 12, set to the south-east of the proposed turbine had an overall rate of 37.3 bat passes per hour while in 2023 detector 1 recorded a rate of 29 BP/Hr. Both years saw highest activity here from Soprano Pipistrelle (15.3Bp/hr in 2023 and 26.5 Bp/Hr in 2022). Both detectors were set close to treelines and hedgerows.

Detector 8 2023 also showed relatively high bat activity during the spring and autumn surveys particularly for Leisler's bat with an average rate of 14.7Bp/Hr for 2023. The overall rate (all bats) from here in 2023 was 29.4Bp/Hr. This is in marked contrast to the 2022 surveys. The closest detector to this location (D1 2022) showed an average rate of 3.2Bp/Hr for all species and 1.3BpHr for Leisler's bats. Both detectors were set a similar distance to the Maigue river (60m and 80m respectively) in similar habitats.

Lowest activity was recorded at turbines 3, 4, 5, 7 and 9 in 2023. These are all locations where turbines are proposed within the centre of a field, away from landscape features usable by bats.

4.4 ECOBAT

Static results were interpreted through ECOBAT type analysis. Ecobat was an online tool which makes assessments of bat activity levels by comparing data entered by the user with bat survey information from similar areas. Specifically, a median bat activity level is calculated which corresponds to a bat activity category (Table 4-7). This software had not been operational between November 2022 and January 2025 prior to the analysis of the Garrane dataset.

Table 4-7: Median percentile range and corresponding bat activity

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

To prepare a risk assessment for the site, previous ECOBAT data the author has analysed was used to derive both an activity level and a median percentile. Data from numerous sites with similar habitat types were examined and compared with data from the subject site. Activity level from these donor sites were examined, activity percentiles were averaged to create a model from which activity can be derived. Garrane detectors were condensed into two groups; open grassland without a landscape feature within 25m of the turbine and locations close to edge habitat (be that hedgerow or treeline). The percentile rating for each night's total passes per species from the comparison sites were ranked and averaged to derive a percentile score for the Garrane detectors. Following (P. Lintott., 2017) a minimum range of 200 nights with at least one night of bat passes was compiled.

An assessment was conducted only for those species identified as being at high risk of turbine collision; Leisler's bat, Common, Soprano and Nathusius Pipistrelle (following the precautionary approach all 40kHz Pipistrelle recordings were added to Nathusius Pipistrelle data).

Rates were calculated first for the detector locations (2022 and 2023) before an assessment was made of the proposed turbine locations (where these differ from detectors).

Table 4-8: Garrane detectors grouped by habitat

Group	1	2
Habitats	Open grassland without a landscape feature within 25m	Close to edge habitat (treeline, hedgerow or woodland)
2022 Detectors	1, 4, 5, 6, 8, 9	2, 3, 7, 10, 11, 12
2023 Detectors	2, 3, 4, 5, 6, 7, 8, 9	1

Table 4-9: Assigned activity levels

Group	Percentile	80-100	60-79	40 - 59	20 - 39	0 - 19	Range
	Activity level	**High**	**Moderate High**	**Moderate**	**Moderate Low**	**Low**	
1	*Pipistrellus pipistrellus*	24 plus	7 to 23	3 to 6	2	0 to 1	545
	Pipistrellus pygmaeus	21 plus	7 to 20	3 to 6	2	0 to 1	552
	Nyctalus leisleri	22 plus	6 to 21	3 to 5	2	0 to 1	676
	Pipistrellus nathusii	31 plus	7 to 30	3 to 6	2	0 to 1	214
2	*Pipistrellus pipistrellus*	38 plus	8 to 37	4 to 7	2 to 3	0 to 1	369
	Pipistrellus pygmaeus	28 plus	9 to 27	3 to 8	2	0 to 1	366
	Nyctalus leisleri	32 plus	9 to 31	3 to 8	2	0 to 1	335
	Pipistrellus nathusii	25 plus	9 to 24	4 to 8	2 to 3	0 to 1	203

Table 4-10: Ecobat type analysis per detector

Detector	Species	Nights of High Activity	Nights of Low Activity	Nights of Low/ Moderate Activity	Nights of Moderate Activity	Nights of Moderate/ High Activity	Median Percentile	Median Category	Max Percentile	Max Category
2022-1	Common Pipistrelle	0	26	4	9	3	11	Low	70	Moderate to High
2022-1	Leisler's bat	1	10	7	8	16	53	Moderate	85	High
2022-1	Nathusius Pipistrelle	0	42	0	0	0	0	Low	11	Low
2022-1	Soprano Pipistrelle	0	9	7	11	15	53	Moderate	79	Moderate to High
2022-2	Common Pipistrelle	11	18	6	13	7	51	Moderate	96	High
2022-2	Leisler's bat	20	7	3	9	16	73	Moderate to High	95	High
2022-2	Nathusius Pipistrelle	1	50	3	1	0	0	Low	85	High
2022-2	Soprano Pipistrelle	21	3	5	11	15	70	Moderate to High	99	High
2022-3	Common Pipistrelle	17	12	3	10	12	65	Moderate to High	95	High
2022-3	Leisler's bat	24	14	2	4	10	80	Moderate to High	96	High
2022-3	Nathusius Pipistrelle	0	46	7	1	0	0	Low	43	Moderate
2022-3	**Soprano Pipistrelle**	**36**	**9**	**0**	**4**	**5**	**90**	**High**	**100**	**High**
2022-4	Common Pipistrelle	2	21	12	11	9	40	Low to Moderate	89	High
2022-4	Leisler's bat	19	7	7	8	14	68	Moderate to High	94	High
2022-4	Nathusius Pipistrelle	0	51	4	0	0	0	Low	31	Low to Moderate
2022-4	Soprano Pipistrelle	12	12	7	9	15	58	Moderate	99	High
2022-5	Common Pipistrelle	14	15	3	9	14	62	Moderate to High	97	High
2022-5	Leisler's bat	17	8	3	5	22	74	Moderate to High	94	High
2022-5	Nathusius Pipistrelle	0	54	1	0	0	0	Low	31	Low to Moderate
2022-5	Soprano Pipistrelle	27	4	3	3	18	80	Moderate to High	96	High
2022-6	Common Pipistrelle	0	13	11	11	9	40	Low to Moderate	73	Moderate to High
2022-6	Leisler's bat	18	2	3	4	17	76	Moderate to High	96	High
2022-6	Nathusius Pipistrelle	0	43	1	0	0	0	Low	31	Low to Moderate
2022-6	Soprano Pipistrelle	6	6	3	10	19	66	Moderate to High	92	High
2022-7	Common Pipistrelle	10	18	3	14	13	51	Moderate	96	High
2022-7	Leisler's bat	21	8	4	9	16	72	Moderate to High	97	High
2022-7	Nathusius Pipistrelle	0	51	4	3	0	0	Low	60	Moderate
2022-7	Soprano Pipistrelle	26	5	2	8	17	80	Moderate to High	95	High
2022-8	Common Pipistrelle	4	17	4	11	11	51	Moderate	87	High
2022-8	Leisler's bat	9	9	7	9	13	60	Moderate	92	High

Detector	Species	Nights of High Activity	Nights of Low Activity	Nights of Low/ Moderate Activity	Nights of Moderate Activity	Nights of Moderate/ High Activity	Median Percentile	Median Category	Max Percentile	Max Category
2022-8	Nathusius Pipistrelle	0	38	6	3	0	0	Low	55	Moderate
2022-8	**Soprano Pipistrelle**	**26**	**5**	**4**	**6**	**6**	**85**	**High**	**99**	**High**
2022-9	Common Pipistrelle	13	17	8	10	7	43	Moderate	98	High
2022-9	Leisler's bat	27	1	3	5	19	80	Moderate to High	100	High
2022-9	Nathusius Pipistrelle	11	42	1	1	0	0	Low	97	High
2022-9	Soprano Pipistrelle	17	7	6	11	14	66	Moderate to High	100	High
2022-10	Common Pipistrelle	11	11	5	10	18	65	Moderate to High	96	High
2022-10	Leisler's bat	20	13	3	8	11	71	Moderate to High	96	High
2022-10	Nathusius Pipistrelle	0	46	4	3	2	0	Low	70	Moderate to High
2022-10	**Soprano Pipistrelle**	**33**	**4**	**3**	**4**	**11**	**86**	**High**	**96**	**High**
2022-11	Common Pipistrelle	23	8	4	4	11	79	Moderate to High	96	High
2022-11	Leisler's bat	24	7	3	4	12	79	Moderate to High	97	High
2022-11	Nathusius Pipistrelle	0	39	6	3	2	5	Low	71	Moderate to High
2022-11	**Soprano Pipistrelle**	**37**	**0**	**2**	**1**	**10**	**96**	**High**	**100**	**High**
2022-12	Common Pipistrelle	26	11	1	5	12	79	Moderate to High	95	High
2022-12	Leisler's bat	25	12	2	3	13	78	Moderate to High	95	High
2022-12	Nathusius Pipistrelle	0	41	5	6	3	11	Low	68	Moderate to High
2022-12	**Soprano Pipistrelle**	**46**	**3**	**0**	**1**	**5**	**96**	**High**	**100**	**High**
2023-1	Common Pipistrelle	20	1	0	6	14	80	Moderate to High	98	High
2023-1	**Leisler's bat**	**29**	**0**	**0**	**2**	**10**	**87**	**High**	**96**	**High**
2023-1	Nathusius Pipistrelle	1	30	5	2	3	0	Low	88	High
2023-1	**Soprano Pipistrelle**	**36**	**1**	**0**	**0**	**4**	**95**	**High**	**99**	**High**
2023-2	Common Pipistrelle	6	2	1	11	21	68	Moderate to High	93	High
2023-2	**Leisler's bat**	**26**	**0**	**0**	**3**	**12**	**86**	**High**	**96**	**High**
2023-2	Nathusius Pipistrelle	0	34	7	0	0	0	Low	40	Low to Moderate
2023-2	**Soprano Pipistrelle**	**25**	**1**	**0**	**2**	**13**	**85**	**High**	**96**	**High**
2023-3	Common Pipistrelle	0	12	4	11	7	47	Moderate	78	Moderate to High
2023-3	Leisler's bat	10	1	3	3	17	72	Moderate to High	96	High
2023-3	Nathusius Pipistrelle	0	32	2	0	0	0	Low	40	Low to Moderate
2023-3	Soprano Pipistrelle	0	5	3	11	15	59	Moderate	80	Moderate to High
2023-4	Common Pipistrelle	1	8	5	8	6	51	Moderate	85	High

Detector	Species	Nights of High Activity	Nights of Low Activity	Nights of Low/ Moderate Activity	Nights of Moderate Activity	Nights of Moderate/ High Activity	Median Percentile	Median Category	Max Percentile	Max Category
2023-4	Leisler's bat	10	3	3	5	7	68	Moderate to High	92	High
2023-4	Nathusius Pipistrelle	0	25	3	0	0	0	Low	40	Low to Moderate
2023-4	Soprano Pipistrelle	3	4	5	5	11	60	Moderate	88	High
2023-5	Common Pipistrelle	0	27	10	7	0	11	Low	58	Moderate
2023-5	Leisler's bat	12	4	3	8	17	72	Moderate to High	99	High
2023-5	Nathusius Pipistrelle	0	43	1	0	0	0	Low	31	Low to Moderate
2023-5	Soprano Pipistrelle	0	24	9	9	2	11	Low	67	Moderate to High
2023-6	Common Pipistrelle	3	15	10	13	9	41	Moderate	97	High
2023-6	Leisler's bat	19	2	4	5	20	73	Moderate to High	92	High
2023-6	Nathusius Pipistrelle	0	48	2	0	0	0	Low	31	Low to Moderate
2023-6	Soprano Pipistrelle	3	9	4	15	19	54	Moderate	97	High
2023-7	Common Pipistrelle	0	19	4	6	0	0	Low	55	Moderate
2023-7	Leisler's bat	4	9	3	8	5	43	Moderate	88	High
2023-7	Nathusius Pipistrelle	0	27	0	2	0	0	Low	43	Moderate
2023-7	Soprano Pipistrelle	0	13	9	4	3	31	Low to Moderate	68	Moderate to High
2023-8	Common Pipistrelle	3	6	2	1	11	68	Moderate to High	99	High
2023-8	**Leisler's bat**	**12**	**2**	**1**	**0**	**8**	**81**	**High**	**100**	**High**
2023-8	Nathusius Pipistrelle	0	16	2	5	0	11	Low	53	Moderate
2023-8	Soprano Pipistrelle	9	4	0	5	5	71	Moderate to High	99	High
2023-9	Common Pipistrelle	0	20	6	4	1	11	Low	71	Moderate to High
2023-9	Leisler's bat	5	5	1	9	11	62	Moderate to High	92	High
2023-9	Nathusius Pipistrelle	0	29	2	0	0	0	Low	40	Low to Moderate
2023-9	Soprano Pipistrelle	0	13	6	10	2	31	Low to Moderate	76	Moderate to High

Table 4-11 Summary showing the number of nights recorded bat activity fell into each activity band for each species across the detectors for all survey periods combined

Latin Name	Common Name	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity	Median Percentile	Bat Activity Category
Nyctalus leisleri	Leisler's bat	352	286	119	65	124	72	Moderate to High
Pipistrellus nathusii	Nathusius Pipistrelle	13	10	30	66	827	1	Low
Pipistrellus pipistrellus	Common Pipistrelle	164	195	184	106	297	48	Moderate
Pipistrellus pygmaeus	Soprano Pipistrelle	363	224	140	78	141	67	Moderate to High

5 ASSESSMENT OF POTENTIAL EFFECTS

Common, Nathusius's and Soprano Pipistrelle alongside Leisler's bats are high risk species for windfarm collisions; (SNH, 2019), (Fiona Mathews, 2015), (BCI, 2012). (NIEA, 2021) states that peaks of bat activity should be accounted for in addition to median levels to appropriately quantify risk. The report also noted the 'Leisler's bats, while rare in Britain, are one of the commonest species found in Ireland. However, given their rarity in the rest of the UK, and indeed Europe, the Irish population is considered a global stronghold for the species (estimated population of 73,000 – 130,000 (2007-2012) (Roche, 2014) and therefore we have an international responsibility for its protection'.

Table 2: *Level of potential vulnerability of populations of British bat species.*
(Adapted from Wray et al., 2010)

Yellow = low population vulnerability

Beige = medium population vulnerability

Red = high population vulnerability

Relative abundance	England	Collision risk		
		Low collision risk	Medium collision risk	High collision risk
	Common species	Brown long eared bat		Common pipistrelle Soprano pipistrelle
	Rarer species	Daubenton's bat Natterer's bat Whiskered bat Brandt's bat Lesser horseshoe	Serotine bat	Nathusius' pipistrelle Noctule bat Leisler's bat
	Rarest species	Alcathoe bat Bechstein's bat Greater horseshoe Grey long eared bat	Barbastelle bat	

Figure 5-1: Level of potential vulnerability of populations of British bats.

5.1 RISK ASSESSMENT

A risk assessment has been completed with reference to Table 3a and b; bats and onshore wind turbine report (SNH, 2021), (SNH, 2019).

5.1.1 Initial site risk assessment

An initial risk assessment is based on an assessment of habitats and the size of the development. Habitat suitability is ranked either low, moderate and high while project size is ranked from small, medium and large. Habitats surrounding the subject turbines are ranked as High given connectivity to the wider landscape with the presence of hedgerows / treeline and rivers and the presence of bat roosts in the wider landscape. The Maigue River provides connectivity between the site and the bat roost located in the village of Bruee while the Loobagh stream provides connectivity to the small roost located within the bridge to the west. No other windfarm can be found within 5km of the site. The closest turbines are located 5.2km south-east where a 2-turbine windfarm (Rathnacally) is located. The next closest is Boolard windfarm; a 2-turbine windfarm found 7.39km to the south-west.

Regarding project size; the project is categorised as medium, as while the proposed development contains a low number of turbines (9), with no other operational windfarms within a 5km radius and proposed turbines reaching over 100m in height [4].

The proposed Garrane windfarm thus derives an Initial Site Risk Assessment Value of *4; high site risk*.

[4] The author: John Curtin contacted Robb Reiner SNH (Reiner, personal communication, 14/04/2023) (an editor of the 2021 SNH guidance document) regarding the definition of **project size** given the document states all turbines over 100m are classified as large. As most modern turbines are over this size the current classification system does not accurately proportion project size. Robb states this will be addressed in the next edition of the guidance document and suggests using personal interpretation in the meantime.

5.1.2 Overall risk assessment

The output from the initial site risk assessment is used in the below matrix to derive an overall risk assessment based on the activity level of high collision risk species. Common Pipistrelle, Soprano Pipistrelle, Nathusius's Pipistrelle and Leisler's bat.

Table 5-1: Summary of bat survey data relevant to current project and assessment

Turbine No	Static Detector ID used for assessment	Leisler's bat		Common pipistrelle		Soprano pipistrelle		Nathusius pipistrelle		Is location of static at turbine location?	Bat Habitat within 200m of turbine	If no mitigation is applied, what is the potential impact level?
		Maximum Percentile	Median Percentile	Maximum Percentile	Median Percentile	Maximum Percentile	Median Percentile	Maximum Percentile	Median Percentile			
1	2023 D1	20	20	20	16	20	20	20	4	Yes (2023)	Yes, treelines and hedgerows. Bat roost just outside 200m.	High
	2022 D12	20	16	20	12	20	16	20	4			
	Combined	20	18	20	14	20	18	20	4			
2	2023 D2	20	20	20	16	20	20	8	4	Close in 2023	Yes, treelines and hedgerows. Bat roost just outside 200m.	High
	2022 D10	20	16	20	12	20	16	12	4			
	2022 D11	20	12	20	12	20	20	12	4			
	Combined	21	17	21	14	21	19	11	5			
3	2023 D3	20	16	16	12	16	12	8	4	Yes (2023)	Some features within 200m but not much closer to turbine.	High
	2022 D9	20	16	16	8	20	16	8	4			
	Combined	20	16	16	10	18	14	8	4			
4	2023 D4	20	16	20	12	20	12	8	4	Yes (2023)	Some features within 200m but not much closer to turbine.	High
	2022 D8	20	16	20	16	20	16	8	4			
	Combined	19	15	19	13	19	13	7	3			
5	2023 D5	20	16	12	4	16	4	8	4	Yes (2022). 2023 detector also close	Some features within 200m but not much closer to turbine.	High
	2022 D6	20	16	20	16	20	20	12	4			
	Combined	20	16	16	10	18	12	10	4			
6	2023 D6	20	16	20	12	20	12	8	4	Yes (2023)	Some features within 200m but not much closer to turbine.	High
	2022 D7	20	16	20	8	20	12	8	4			
	Combined	19	15	19	9	19	11	7	3			

Turbine No	Static Detector ID used for assessment	Leisler's bat		Common pipistrelle		Soprano pipistrelle		Nathusius pipistrelle		Is location of static at turbine location?	Bat Habitat within 200m of turbine	If no mitigation is applied, what is the potential impact level?
		Maximum Percentile	Median Percentile	Maximum Percentile	Median Percentile	Maximum Percentile	Median Percentile	Maximum Percentile	Median Percentile			
7	2023 D7	20	12	12	4	16	8	12	4	Yes (2022). 2023 detector also close	Some features within 200m but not much closer to turbine.	High
	2022 D4	20	16	20	16	20	20	16	4			
	Combined	20	14	16	10	18	14	14	4			
8	2023 D8	20	20	20	16	20	16	12	4	Yes (2023)	Yes, hedgerow / treeline to north, river to south	High
	2022 D1	20	12	16	4	16	12	4	4			
	Combined	20	16	18	10	18	14	8	4			
9	2023 D9	20	16	16	4	16	8	8	4	Close 2023	Some features within 200m but not much closer to turbine.	High
	2022 D2	20	16	20	16	20	20	16	4			
	2022 D3	20	16	20	16	20	20	16	4			
	Combined	19	15	19	15	19	19	15	3			

6 DISCUSSION

The methodology for the proposed Garrane proposed wind farm bat surveys adhered to SNH (2019), (SNH, 2021) guidance for assessing the impact of proposed wind farm developments on local bat species while also following elements of the (NIEA, 2021) and (Collins, 2023) guidance document. Based on Northern Ireland guidance an additional, fourth and fifth round of static monitoring was conducted in 2022 based on an initial risk assessment. Roost assessment (structures and initial tree surveys), emergence surveys and activity surveys were undertaken in 2022 and 2023.

During walked surveys, a total of six species of bats were recorded: Common Pipistrelle, Soprano Pipistrelle, Leisler's bat, Brown Long-eared bat, Daubenton's and Natterer's bat. In addition, unidentified Myotis species were recorded. Where the call could not be identified to species, the identification was determined to the highest possible level. The most recorded species was Common and Soprano Pipistrelle, followed by Leisler's, with lower levels from other species.

A single roost was found within a 275m buffer of the turbines. This was identified as a satellite roost for Natterer's bats, found 205m south-east of T2 and 215m north of T1. A Soprano Pipistrelle satellite roost was also found c. 600m to the north-east of T6.

During static surveys, a total of eight species of bats were recorded: Common Pipistrelle, Soprano Pipistrelle, Leisler's bat, Nathusius's Pipistrelle, Brown Long-eared bat, Natterer's bat, Daubenton's bat and Lesser Horseshoe bat. Where the call could not be identified to species, the identification was determined to the highest possible level. The most recorded species was Soprano Pipistrelle followed by Leisler's and Common Pipistrelle, with lower levels from other species.

All bats recorded are classified as 'Least Concern' on the Irish Red List (2019) and protected under the EU Habitats Directive Annex IV and Wildlife Acts.

Due to the levels of nightly bat activity (regarding median values as determined by Ecobat type analysis) at each of the static locations, all turbines are deemed high risk for at least one species.

A single Lesser Horseshoe bat record was noted from detector 12 on the 02nd of October 2022. This detector was positioned to the very south of the site. The site does not lie within a Lesser Horseshoe bat region and the closest historical record from this species recorded on the NBDC lies 18km to the north-west at Grange and 20km to the north-west towards Rathkeale. Given the time of year recorded and the fact that only a single record out of 134,979 total recordings it is safe to assume this is a vagrant bat potentially moving between summer and winter roosts.

6.1 POTENTIAL IMPACTS

As outlined by Scottish Natural Heritage (2021), wind farms can affect bats in the following ways:

- 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.

Furthermore, as indicated in Richardson et al (2021) Common Pipistrelle bats may be attracted to wind turbines. The study showed Common Pipistrelle activity was 37% higher at turbines than at control locations. The study further discussed, the observed higher levels of activity could be because there are more bats around turbines, or because animals spend more time in these locations relative to

controls, even if the number of individual bats remains the same. We cannot distinguish between these possibilities using acoustic data. However, either way, higher levels of activity around turbines is likely to increase fatality risks and help to explain why fatality rates are often not predicted by acoustic surveys for bat activity conducted prior to facility construction.

6.1.1 Roost located 205m from T2

A natterer's roost was found to the south of the site within the CSZ for this species. Natterer's bats typically forage at heights of less than 5m, but occasionally may reach 15m in the tree canopy (BCT, 2010). This species typically flies close to vegetation such as trees and prefer semi-natural woodlands. (Smith, 2008) shows that while semi-natural woodland and river corridors are the most favoured feeding habitats for this species, they also utilise improved grassland. Key to negating the impact on bats using this roost is the retention of scrub and woodlands.

Table 2 of (SNH, 2021) states that Natterer's bats are a low turbine collision risk species, likely due to this species flying below the turbine blade height. The removal of landscape features leading to the turbines should be sufficient mitigation (see 6.1.1 below) to direct this species away from the wind turbines while the compensatory planting will ensure no net loss of feeding or commuting features.

6.1.2 Roost located c. 600m to the north-east of T6.

A small bat roost was found within a bridge located to the east of the site. This bridge was examined in 2022 and 2023. The 2022 survey did not find any roosting bats however the 2023 survey identified two Soprano Pipistrelle emerging from a crevice. The proposed development will not impact on the roost as a structural assessment of the bridge concluded it "*is currently in a relatively good structural condition. Our assessment indicates that the bridge is capable carrying the loads exerted on it by standard roadworthy vehicles."*

BCT states the Core sustenance zone for this species is 3km thus the proposed windfarm lies within this area. The Maigue River provides connectivity between the roost and the proposed windfarm. Figure 20, P.44 of the Bat Mitigation Guidelines for Ireland (Marnell, 2022) describes a roost status for the different types of roosts found in Ireland. Individual bat roost for a common species lies at the lowest end of roost status found in Ireland. Soprano Pipistrelle is a common bat species.

6.1.3 Bruree Church roost 2.6km northeast of T9

Soprano Pipistrelle, Common Pipistrelle and likely Brown Long-eared bats were noted roosting in the church to the north of the site during a survey in September 2023. Two turbines (7 and 9) lie within the CSZ of this roost for Soprano Pipistrelle while the Maigue River provides connectivity between the sites.

6.1.4 Potential roost 750m north-east of T1

A survey conducted on the 09th of August 2022 noted a significant amount of Pipistrelle activity close to a derelict house and trees to the northeast of T1 indicating a roost may be nearby, although no emerging bats were recorded. An additional re-entry survey conducted in September 2022 however did not find any evidence of a roost here. Treelines and hedges do provide connectivity between the proposed windfarm and this building. All turbines lie within the CSZ of this potential roost (2km for Common Pipistrelle and 3km for Soprano Pipistrelle).

The presence of confirmed roosts surrounding the site increased the habitat suitability from medium to high.

6.1.5 Historical roost located by bridge W of T1

While this record is dated from 2019, the record has only been uploaded to the BCI database after March 2024. The recorder; Caroline Shiels was contacted for further information. The bridge consists of a single masonry arch. While the BCI record states only a single bat was recorded, Caroline has found up to 5 Daubenton's using crevices (singly). She feels the bridge is not used as a maternity roost. This bridge is not located along the TDR or grid route and thus will not be impacted by the construction of the windfarm. Daubenton's bats are a low flying species; when over water this species flies at approx. 5-25cm above the water (Russ, 2021). This species can also hunt in woodlands. Very low levels of Daubenton's bats was recorded from static detectors within the subject site with 13 recordings over the two years. (SNH, 2021) states this species as having a low collision risk. No impacts are expected on this roost by the proposed development.

7 MITIGATION & ENHANCEMENT

7.1 MITIGATION DURING CONSTRUCTION PHASE

7.1.1 Buffer Zone

Bats typically use woodland edge habitats for commuting and feeding purposes. Various publications provide guidelines on buffer zones surrounding turbines to reduce the favourability of the site for bat activity. Eurobats 'Guidelines for consideration of bats in wind farm projects' (Rodrigues, et al., 2015) recommend buffer zones of 200m from turbine base to high potential features whilst Natural England

Bats (England, 2014) recommend 50m buffers from blade tip to tree. (NIEA, 2021) recommends a minimum buffer of 100m between the turbines at the edge of commercial forestry where wind farms are proposed to be key-holed.

The proposed Garrane windfarm is situated within habitats dominated, primarily by grassland with accompanying treelines and hedgerows. The proposed wind turbines; Vestas V-150 have a hub height of 95m and has a blade length of 75m. Should the typical 50m buffer be put in place it would require a buffer of 103m from the turbine base where treelines are affected and 96m buffer when hedgerows are impacted.

The following formula is used to calculate the distance required from the turbine base.

√((50+BL)^2-(HH-FH)^2)

Table 7-1: Buffer calculations

Buffer for treelines	√((50+75)^2-(95 – 25)^2)
	103m buffer zone for treelines
Buffer for hedgerows	√((50+75)^2-(95 – 15)^2)
	96m buffer zone for hedgerows

Where: bl = blade length, hh = hub height, fh = feature height (all in metres).

Based on a review of aerial photographs, a review of the habitat map and ground truthing, turbines 1, 2, 5 and 9 should have a clearing of **103m** given these are surrounded by treelines while all others require a **96m** buffer. Not all treelines and hedgerows within the buffers will be removed as the loss is deemed too high given the ecological value these hedgerows and treelines have in a local context. As such alternative mitigation measures have been proposed to reduce bat fatalities while retaining portions of these features (see table 7-2 and figure 7-1 below).

Table 7-2: Portions of hedge / treelines to be felled and retained within buffer of turbines.

Turbine no	Buffer Size	Notes	Length of hedgerows / treelines to be removed (m).
1	103	Treelines can be found to the north, east and south of the turbine. These treelines are of value to Natterer's bats. 25% of the 2022 static recordings from Natterers calls were from detector 12 located to the south of T1. Unexpectedly; very low numbers of Natterer's bats were recorded from D1 2023, located by the proposed turbine (3 calls) however 19% of Myotis calls from the 2023 surveys were recorded from here. A portion of these will have been from Natterer's bats. **Given the value of the southern and eastern treelines for these bats it is proposed to retain these and strengthen curtailment. Both**	170m close (treeline)

Turbine no	Buffer Size	Notes	Length of hedgerows / treelines to be removed (m).
		southern and eastern treelines are not located in areas that would draw bats into the sweep zone	
2	103	The proposed turbine is located adjacent to a treeline from the western Charleville stream heading north-east past the turbine location. The 103m buffer encompasses a treeline to the south leading towards the derelict dwelling where a Natterer's roost was found. Detector 11 2022 was placed along this treeline, 83m from the roost building. The detector recorded a total of 28 Natterers over the 5 periods and represent 8% of the total Natterers calls for the 20-22 season. This indicates Natterer's were only occasionally utilising this treeline during this period. Similarly, detector 2 2023 located top the NW of the proposed turbine only recorded 2 Natterers bats over the 2023 period. **It is proposed to remove the treeline adjacent to the turbine but retain treelines along the stream to the east and the southern treeline and instead strengthen curtailment. Both treelines provide good connectivity for bats without drawing bats into the turbine sweep area.**	205m (treeline) 20m hedge to N
3	96	Hedge being removed provides connectivity E-W between Charleville stream and western treeline. Compensationary hedgerow will be planted to south of turbine which will connect stream and western treeline. At this point, the Charleville stream has a nice associated treeline in comparison to the existing.	150m
4	96	The proposed turbine is located within the centre of a field with little landscape features surrounding. The closest hedgerow / treeline is a gappy hedge found 65m to the east.	130m (hedgerow)
5	103	A gappy hedge just to the north of the proposed turbine will be removed. This provides E-W connectivity between the Charleville and Graigues streams. **A portion of hedge along the Graigues stream (to the west of the turbine) within the 103m buffer will be retained as these have value as a landscape feature. Instead, curtailment will be strengthened. As compensation for the loss of the hedge, the eastern stream will be supplemented with riparian type treelines.**	174m hedge
6	96	The proposed turbine is located within the centre of a field with little landscape features surrounding. **An eastern hedgerow / treeline can be found some 75m from the proposed turbine. This hedge follows the Loobagh drain/ stream and would not act to draw bats into the turbine. Instead of felling, curtailment will be strengthened.**	0
7	96	While the turbine is proposed for the centre of a field there is a hedge to the east within the buffer zone. **Instead of felling, curtailment will be strengthened.**	0
8	96	A hedgerow located 18m to the north will be removed to achieve a buffer surrounding the turbine. Compensationary planting to the east and west will provide mitigation.	185m
9	103	The proposed turbine is located within the centre of a field with little landscape features surrounding. A northern hedgerow / treeline can be	0

Turbine no	Buffer Size	Notes	Length of hedgerows / treelines to be removed (m).
		found some 80m from the proposed turbine. This E-W hedge would not act to draw bats into the turbine. **Instead of felling, curtailment will be strengthened.**	
Length			1014m
Hedgerow losses accrued from civil works outside bat buffers[5]			601m
Total			1.649km

Construction operations within the wind farm site will take place during the hours of daylight where possible to minimise disturbances to faunal species at night. Some works along the cable route and wind farm site may occur at night but the project ecologist/ECoW shall limit night-time works to sections of the route / site which avoid sensitive features (e.g. mature treelines).

In addition, the following specific mitigation measures for bats are also now recommended:

7.1.2 Retention of trees

Any trees and treelines along approach roads and planned site access tracks will be retained unless felling is unavoidable. Retained trees should be protected from root damage by an exclusion zone of at least 7 metres or equivalent to canopy height. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing.

7.1.3 Mitigation for loss of commuting routes

Linear features such as hedgerows and treelines serve as commuting corridors for bats (and other wildlife). Measures are recommended to mitigate for the loss of features that are used by bats as commuting routes. These measures will also mitigate for habitat loss and provide continuity in the landscape. An example will be to reconnect hedgerows / treeline to mitigate for the loss of hedgerows / treelines currently used by bats. Native species of Irish provenance should be used as they support more insect life than non-native varieties.

7.1.4 Habitat retention, replacement and landscaping

Habitat replacement and landscaping could compensate for or add to the wildlife value of the area and provide areas of aesthetic as well as wildlife interest. In general, best practice design should aim to retain the quality of the landscape. Existing hedgerows and semi-natural scrub or semi-natural grasslands within the study area outside of the footprint of the development will be retained and incorporated into the landscaping.

In total, it is proposed to plant 1.646 km of new hedging, enhancement of 1.359km of existing hedging and re-vitilisation of 4.074km of existing hedges, in addition to the creation of 0.67ha of woodland. This

[5] Crossover exists where some of the hedgerows proposed for removal due to bat buffers would have had to be removed to allow construction. The total figure of 1.649km is correct

woodland will be located to the south-east of the Natterers roost shed found to the south of the site. In conjunction with treeline planting, this will offset the loss of connectivity caused by turbine buffers and access routes.

All treelines and woodland will consist of native Irish species of Irish provenance.

Treeline planting will be tailored to the existing habitats; with habitat specialist Dr. Brian Madden producing an accompanying BEMP document.

- For hedges, the species will be typical of hedgerows of the local area, and all are useful biodiversity species. The species will be selected from the following; Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Hazel *Corylus avellana*, Alder *Alnus glutinosa*, Holly *Ilex aquilifolium*, Rowan *Sorbus aucuparia*, Grey willow *Salix cinerea subsp. Oleifolia*, Downy birch *Betula pubescens*, Guelder rose *Virburnum opulus*, Spindle *Euonymous europaeus*, Crab apple *Malus sylvestris*, Pedunculate oak *Quercus robur*, Wild cherry *Prunus avium*, Black poplar *Populus nigra* and Aspen *Populus tremula*. Hawthorn and blackthorn will be the dominant species, comprising up to 40% of the plantings. Hazel, alder and willow will be the principal secondary species, comprising approximately 15% each, with the remainder made up of other species. Tree standards will be pedunculate oak and wild cherry, and, as available, occasional black poplar and/or aspen. Preferably, the new hedges will be planted on clay banks as this will maximise habitat diversity.The plantings will be fenced off from livestock at least until they are fully established.
- As soon as planning permission is approved the first step of construction will be the planting of new hedgerows and woodlands. This will allow time for these features to establish prior to the loss of existing features.
- Given hedgerows / treelines take several years to fully establish into usable landscape features by bats, plywood backed hoarding will be placed along routes where no existing feature exists.
- Treelines will consist of hedgerow species interspersed with trees. Saplings will be planted in double row strips 2m wide with a spacing of 20-30cm of 60—90cm high ‘whips. Hedgerows should consist of a variety of species including 50% Hawthorn, 20% holly, 10% Hazel, 10% Elder, 2% Wild Privet, 2% Spindle, 2% guelder rose, 2 % dog rose and 2% Alder buckthorn.
- Tall trees should be planted at 10m intervals and consist of sessile oak, whitebeam with alder and willows where close to streams.
- The location for the native woodland, which measures 0.67 ha, is to the north of the substation site. An existing tall treeline and associated drainage channel occurs here along the northern boundary, with hedging to the east and west. The principal tall tree species to be planted here will be pedunculate oak. Wild cherry will be a secondary species. For tall trees a minimum tree planting spacing of 3 x 3 metres is required, giving a planting density of 1,100 trees per hectare. Smaller tree species will include alder, hazel, rowan and holly – these can be planted at higher densities and also less formally, with varying spacing between stands or groups of trees. Ground preparation will be limited to inverted (or scrap) mounding, shallow ripping, pit planting and auger planting.

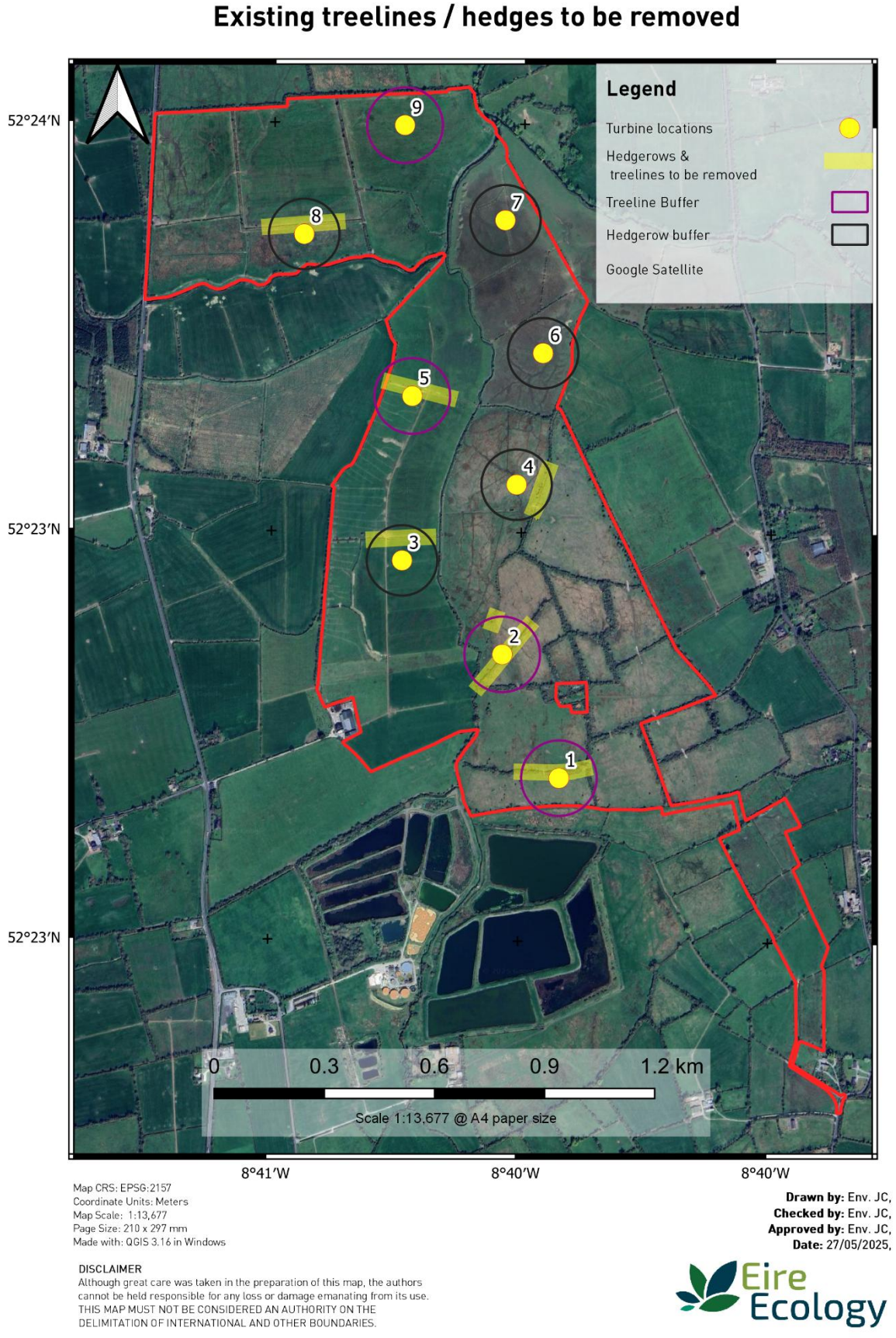
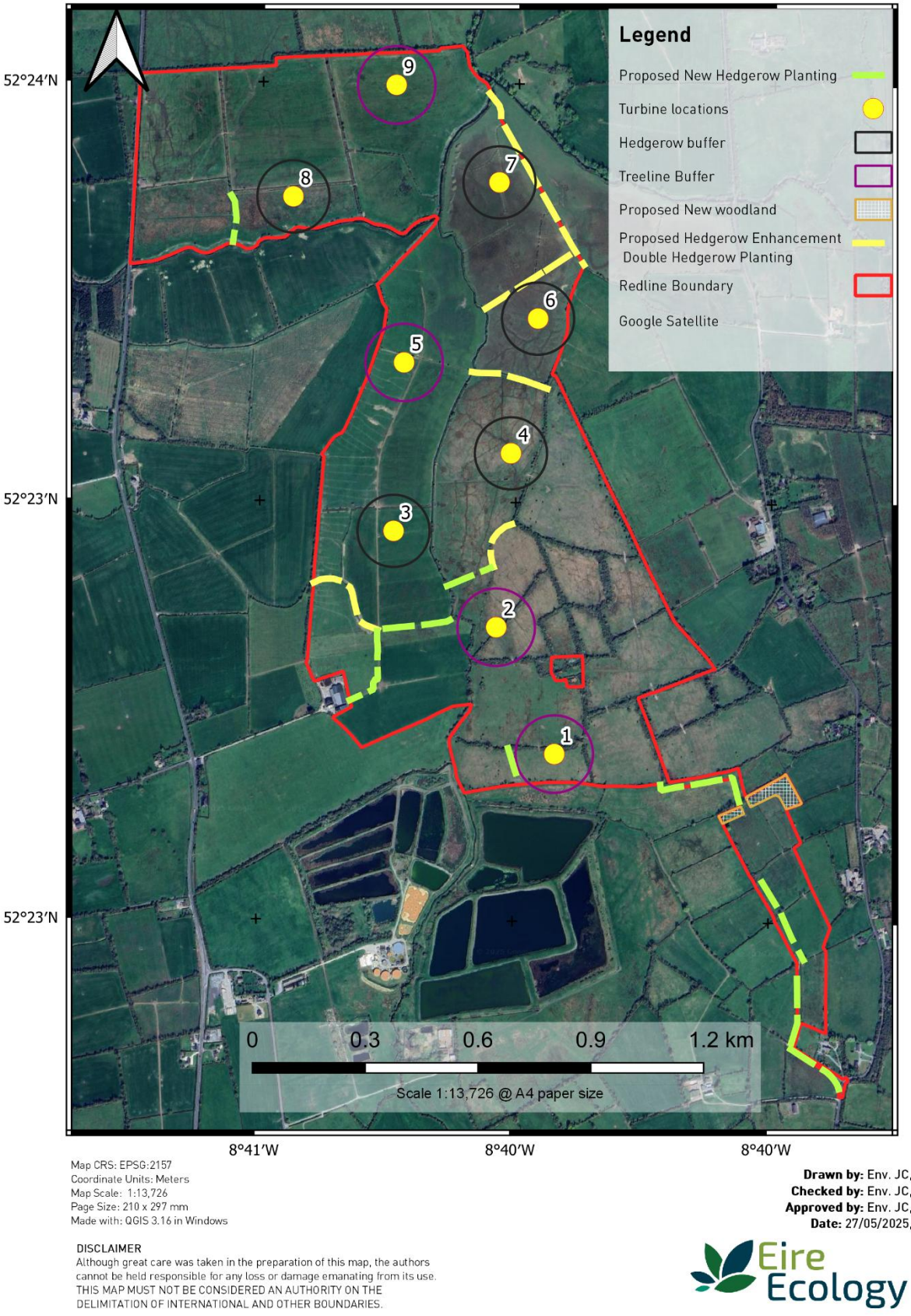


Figure 7-1: Removal of hedgerows and treelines

Proposed Planting Scheme



Map CRS: EPSG:2157
Coordinate Units: Meters
Map Scale: 1:13,726
Page Size: 210 x 297 mm
Made with: QGIS 3.16 in Windows

DISCLAIMER
Although great care was taken in the preparation of this map, the authors cannot be held responsible for any loss or damage emanating from its use. THIS MAP MUST NOT BE CONSIDERED AN AUTHORITY ON THE DELIMITATION OF INTERNATIONAL AND OTHER BOUNDARIES.

Drawn by: Env. JC,
Checked by: Env. JC,
Approved by: Env. JC,
Date: 27/05/2025,

Figure 7-2: Proposed planting scheme

7.1.5 Lighting restrictions

In general, artificial light creates a barrier to bats so lighting should be avoided where possible. Construction operations within the wind farm site will take place during the hours of daylight where possible to minimise disturbances to faunal species at night. Some works along the cable route and wind farm site may occur at night but the project ecologist/ECoW shall limit night-time works to sections of the route / site which avoid sensitive features (e.g. mature treelines). Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) will be used to prevent overspill. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only.

7.2 MONITORING DURING CONSTRUCTION PHASE

7.2.1 Pre-construction Surveys

A full suite of bat activity surveys will be completed in the season before construction commences. Future survey work will be completed according to best practice guidelines available (SNH, 2021, Collins 2023) and includes static detector, activity and roost inspection surveys.

7.2.2 Pre-felling survey of trees

A preliminary survey of trees within a 275m zone of each turbine was undertaken in March and April 2023; the correct time of year to carry out such a survey given trees had yet to fully leaf.

Trees and hedges along TDR pinch points and the entrance route were also examined. These surveys have identified 20 trees and shrubs with a potential roost feature and an additional 13 which require further assessment should they be impacted (see Appendix 1 below for details on all 157 records).

All trees registered as PRF or FAR will require at-height surveys to be conducted by a suitably qualified ecologist with roost disturbance and inspection camera licences should they be required to be felled. Should PRF's be found above ladder height the use of tree climbing / cherry pickers, scaffolding will be required to gain access to PRFs for detailed examination with the use of recording inspection cameras.

Surveyors should carry out a detailed internal inspection using a torch, mirror and endoscope. Data such as internal dimensions particularly length of cavity should be gathered. Should the removal of the roost be required at a later stage these dimensions will be vital. Should a bat roost be found a derogation licence will be sought from the NPWS seeking permission for the roost's translocation (if possible).

Evidence of bat usage sought during the surveys should include:

- Bat droppings (these will accumulate under an established roost or under access points);
- Live bats;
- Insect remains (under feeding perches);
- Oil (from fur) and urine stains;
- Scratch marks; and bat corpses.

7.3 MITIGATION DURING OPERATIONAL PHASE

7.3.1 Feathering of Blades

In addition to the creation of buffers between the proposed turbines and surrounding vegetation a reduced rotation speed will be implemented when turbines are idling. This is usually achieved by feathering the blades during low wind speeds; the angle of the blades is rotated to present the slimmest profile possible towards the wind, ensuring they do not rotate or 'idle' when not generating power.

Turbine blades spinning in low wind can kill bats, however bats cannot be killed by feathered blades which are not spinning (Horn *et al*., 2008). The feathering of turbine blades combined with increased cut-in speeds have been shown to reduce bat fatalities from 30% to 90% (NIEA, 2021), (SNH, 2021), (Wellig S.D., 2018), (Rydell J., 2010), (Arnett, 2011) and (Baerwald, 2009).

As such, the feathering of blades to prevent 'idling' during low wind speeds is recommended for all nine turbines during the bat activity season (April to October) when temperatures are optimal[6] for bat activity.

7.3.2 Cut-in Speeds/Curtailment

7.3.2.1 Curtailment definition

Increasing the cut-in speed above that set by the manufacturer can reduce the potential for bat/turbine collisions. A study by Arnett *et al*., (2011) showed a 50% decrease in bat fatality can be achieved by increasing the cut-in speed by 1.5 m/s.

The feathering of turbine blades combined with increased cut-in speeds have been shown to reduce bat fatalities from 30% to 90% (Adams et al., 2021, Arnett et al., 2008, 2011, 2013; Baerwald et al., 2009). The most recent of studies showed a 63% decrease in fatalities (Adams et al., 2021).

Species with elevated risk of collision (Leisler's bat, Soprano and Common Pipistrelle) would benefit from increasing the cut-in speed of turbines, as dictated on a case-by case basis depending on the activity levels recorded at each turbine (Richardson S. L., 2021).

7.3.2.2 Garrane Curtailment Strategy

SNH *et al*. (2019) acknowledge that it is difficult to predict how bat behaviour will change post-construction. Therefore, a two-step smart curtailment strategy is proposed that will protect bats while minimizing the curtailment periods and will be informed by post-construction monitoring.

I. Step 1; Operational Curtailment - Year 1

Smart curtailment will commence prior to the final close out of construction, as long as the turbine (s) are erected and turning i.e., posing a collision risk. Year 1 monitoring will be in line with the start of the bat active season (April) and will continue until the end of October.

[6] "When the air temperature is above a 9.5°C at nacelle height"

Results from the 2022 and 2023 static survey shows activity continues into October. As such smart curtailment will continue into October. Cut-in speeds will be increased during the bat activity season (April-October inclusive) where weather conditions are optimal for bat activity (see below) from 30 minutes prior to sunset and to 30 minutes after sunrise at all turbines.

Cut-in speeds restrictions will be operated according to specific weather conditions:

For turbines 1, 2, 5, 6, 7 and 9

When the air temperature is above a 9.5°C at nacelle height.
Wind speeds below 5.5m/s (at nacelle height).

For turbines 3, 4 and 8

When the air temperature is above a 10.0°C at nacelle height.
Wind speeds below 5.0m/s (at nacelle height).

II. Step 2; Operational Curtailment - Year 2 onwards

Smart curtailment must be guided by a coherent and comprehensive post-construction monitoring methodology, which will clarify the bat usage of the site at turbine locations post construction.

Year 1 fatality monitoring together with information from static deployment at height and at feature level on temporal usage of the site at specific turbine locations post-construction (including usage over each season (i.e., Spring, Summer & Autumn) and over night-time periods within specific seasons) will be utilised to provide a highly effective mitigation approach by implementing smart curtailment during the periods and environmental parameters that are known to be preferred by at risk-species.

A risk assessment will be produced based on the Year 1 data which will be used to inform a curtailment strategy from Year 2 onwards, where required. Static deployment data will be compared with weather stations based at nacelle height to inform cut-in speeds restrictions according to specific weather conditions. The post construction surveys (static deployment, transects, fatality monitoring) will be used to refine the Year 1 curtailment regime designed around the values for the key weather parameters and other factors that are known to influence collision risk. This will include all the following:

- Wind speed in m/s (measured at nacelle height)
- Time after sunset
- Month of the year
- Temperature (ºC)
- Precipitation (mm/hr)

Should it be found that the results of the bat activity surveys and fatality searches confirm that the level of bat activity at turbine locations post construction is low, the cessation in the requirement for curtailment measures, or a reduction on the timing restrictions for these measures will be implemented. This will subsequently be monitored in Years 5, 7, 10, 15, 20, 25 and 30 with further review after each monitoring period.

If bat activity increases above the baseline and/or remains consistently high and fatality monitoring indicates fatalities are occurring, increased cut-in speeds will be considered combined with increased buffer zones (see Section 7.4.2.2 below).

Acoustic monitoring will be supplemented with thermal imaging cameras etc. to provide more detailed information on bat activity in the vicinity of turbines.

An assessment of static data gathered during operational surveillance will be completed using Ecobat type analysis as recommended by SNH (2021) as a minimum, or other equivalent guidance as dictated by up-to date standards and practices.

7.3.3 Buffer zones

The vegetation-free buffer zones (refer to section 7.1.1 above) around the identified turbines will be managed and maintained during the operational life of the development.

The immediate surroundings of individual turbines should be managed and maintained so that they do not attract insects (i.e. the concentration of insects in the wind turbine vicinity should be reduced as much as possible, but not such that insect abundancies affected elsewhere on the site). This should be achieved through physical management of habitats without the use of toxic substances.

7.4 POST CONSTRUCTION MONITORING

As per NatureScot 2019 "*In order to evaluate the success of the curtailment regime, a minimum of 3 years of monitoring should take place during which time casualty searches and acoustic monitoring should take place concurrently"* monitoring will take place for at least 3 years after construction. This will provide sufficient data to detect any significant change in bat activity relative to pre-construction levels. It will assess changes in bat activity patterns and the efficacy of mitigation outlined to inform any changes to curtailment.

During years one to three of operation, bat activity will be measured at each turbine location, in combination with fatality surveys. In addition, wind speed and temperature data will be continuously recorded at the nacelle height of each turbine. Modern remotely-operated wind turbines as proposed here allow cut-in speeds to be controlled centrally/automatically, facilitating an operation regime designed to minimise harmful impacts to bats.

A recommended schedule for monitoring is given in Table 7-1 below.

7.4.1 Monitoring Curtailment

If, following the initial 3 years of post-construction surveys, bat activity increases above the baseline and/or remains consistently high and carcass searches indicate fatalities are occurring (refer below), increased cut-in speeds will continue. This will subsequently be monitored in years 5, 7, 10, 15, 20, 25 and 30 with further review after each monitoring period.

Alternatively, if it is found that the results of bat activity surveys and fatality searches confirm that the level of bat activity at turbine locations is low, the cessation in the requirement for these cut-in speeds / curtailment measures, or a reduction on the timing restrictions for these measures can be implemented.

Acoustic monitoring will be supplemented with thermal imaging cameras etc. to provide more detailed information on bat activity in the vicinity of turbines.

An assessment of static data gathered during operational surveillance will be completed using Ecobat type analysis as recommended by SNH (2021) as a minimum, or other equivalent guidance as dictated by up-to date standards and practices.

7.4.2 Monitoring of mitigation measures

7.4.2.1 Bat fatality monitoring

Although curtailment is a mitigation proven to lower bat fatalities it is recommended that the scheme be monitored for bat fatalities for the first three years of operation (post construction surveys) and subsequently in years 5, 7, 10, 15, 20, 25 and 30 as part of the additional curtailment monitoring schedule. A comprehensive onsite fatality monitoring programme will be undertaken following published best practice (e.g. SNH 2021 or equivalent at the time of operation). All turbines should be included in the searches in Years 1, 2 and 3 and refined thereafter further to review of results. The fatality monitoring programme will include:

a) Carcass removal trials to establish levels of predator removal of possible fatalities. This should be done following best recommended practice and with due cognisance of published effects such as predator swamping; whereby excessive placement of carcasses at one time provides more food source for predators than normal, prolonging carcass persistence times. At the time of writing (2022), predation trials set using trail cameras following guidance set out in (Smallwood, 2010) provides the most accurate results.
b) Turbine searches for bat fatalities should be undertaken following best practice in terms of search area (minimum radius hub height) and at intervals selected to effectively sample fatality rates as determined by carcass removal trials in (a) above. At the time of writing (2022), the typical search area surrounding the turbine bases follow (Edkins, 2014) Impacts Of Wind Energy Developments On Birds And Bats: Looking Into The Problem, who recommends the "search width should be equal to the maximum rotor tip height'', e.g. turbines at Garrane have a max tip height of 170m thus the spread of searched area, as a rectangle, square or circle, should be 85m in either direction form the turbine base."
c) Search intervals will follow (SNH, 2021) - Appendix 4.
d) Recorded fatalities will be calibrated against known predator removal rates to provide an estimate of overall fatality rates.
e) A monitoring report will be submitted in each monitoring year to Limerick County Council and the NPWS.

7.4.2.2 Bat activity monitoring

As per NatureScot 2019 "*In order to evaluate the success of the curtailment regime, a minimum of 3 years of monitoring should take place during which time casualty searches and acoustic monitoring should take place concurrently"* monitoring will take place for at least 3 years after construction. This will provide sufficient data to detect any significant change in bat activity relative to pre-construction levels. It will assess changes in bat activity patterns and the efficacy of mitigation outlined to inform any changes to curtailment.

During years one to three of operation, bat activity will be measured at each turbine location, in combination with fatality surveys. In addition, wind speed and temperature data will be continuously recorded at the nacelle height of each turbine. Modern remotely-operated wind turbines as proposed here allow cut-in speeds to be controlled centrally/automatically, facilitating an operation regime designed to minimise harmful impacts to bats.

A recommended schedule for monitoring is given in Table 7-3 below.

Table 7-3: Monitoring schedule recommended for bat mitigation measures

Mitigation measure	Monitoring required	Description	Duration
Bat boxes, tubes	Monitor bat use	Bat boxes, rocket boxes and tubes to be placed at locations removed from wind farm as determined by project ecologist/ECoW at least 1 season before construction start. These shall be examined by a licensed bat specialist according to NPWS recommendations. Records should be submitted to *Bat Conservation Ireland* for inclusion in its bat distribution database. If the boxes / tubes are not used within the first three years of deployment re-site if necessary. Annual cleaning required if well used by bats or if used by birds. Replacement if damaged/lost.	From mounting to 3 years post construction.
Roost monitoring	Emergence surveys	Conduct emergence surveys of Natterer's bat roost throughout the bat active season of first 3 years of operational phase. Observed if mitigation measures are working and bats are travelling east. Use of thermal cameras are recommended for surveys to avoid disturbance. Should Natterer fatalities be found, provide further mitigation to prevent further losses.	From initial operation conducted during years 1, 2, 3
Activity surveys	Static detectors	Static surveys conducted both at feature height (2-5m) and at nacelle during spring, summer and autumn foe the first three years of operation.	From initial operation conducted during years 1, 2, 3
Mortality study	Fatality monitoring	Corpse searches beneath turbines to assess the impact of operation on bats.	From initial operation conducted during years 1, 2, 3, 5, 7, 10, 15, 20 and 25 post construction.

The success of the implemented mitigation measures for bats on the project should be monitored for a period of three years after construction and appropriate measures taken to enhance these if and where required. Should bat fatalities be found within the first three years of surveys additional mitigation measures will be implemented to prevent this from reoccurring. Buffer zones surrounding the turbines will be increased from 50m to 65m and or curtailment parameters will be tweaked to increase cut-off of activity times.

8 Residual Impacts after Mitigation

Following extensive surveys within and surrounding the site, it is the authors opinion the landscape in which the proposed wind farm is situated is of moderate high suitability for Soprano Pipistrelle and Leisler's bat, moderate suitability for Common Pipistrelle and low suitability for Nathusius Pipistrelle (based on combined median percentile from 2022 and 2023 static surveys).

The proposed development and the surveyor feels the development will not have a long-term negative impact on the local bat populations.

The proposed project will not result in any likely significant effects to foraging and/or commuting high risk species such as pipistrelle and Leisler with the implementation of the mitigation outlined above. The proposed project will not have a long-term negative impact on the local bat populations once operated

in accordance with best practice and mitigation measures as described. Impacts on other bat species, particularly Natterer's bat have also been assessed. While this species is not at high risk from collision, they can be impacted by loss of connectivity features and loss of roosting sites. The proposed development will see a substantial enhancement of hedgerows alongside the creation of 0.67ha of woodland.

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1 TABLES AND FIGURES

1.1 HISTORICAL DATA

Table 1-1: Irish bat species recorded in the locality

Type of Record	*Species*	Distance from site	Date of last record	Details
Bridge roost	*Myotis daubentonii*	560m from edge of site to SW	06/09/2019	5 bats noted roosting singly in separate crevices under arch
Bridge roost	*Myotis daubentonii*	6.56km to NE	25/05/2023	Single bat recorded in crevice
Bridge roost	*Myotis daubentonii*	8.5km to NNW	06/09/2019	3 bats recorded in separate crevices
BCI Batlas	*Pipistrellus pipistrellus*	Adjacent	17/11/2020	Batlas 2020 survey conducted by Loobagh River to east of site.
	Pipistrellus pygmaeus			
Ad hoc	*Pipistrellus sp*	175m E	17/11/2020	Could be duplicate record. Recorded from within field
BCI Batlas	*Myotis Daubentonii*	2km W	17/10/2009	Near River Maigue. Shows Daubenton's bats use the river that bisects the site.
	Nyctalus Leisleri			
Ad hoc	*Myotis Daubentonii*	3.1km W	Unknown	Fort West Bridge over River Maigue. Record again shows Daubenton's use the river, to the west of the proposed development.
	Unidentified bat			
Ad hoc	*Myotis mystacinus*	2km N	01/06/2021	Record of bat by farm buildings
Ad hoc	*Myotis nattereri*	2.1km N	24/07/2021	Bat recorded by River Maigue just outside of Bruree.
Ad hoc	*Plecotus auritus*	2.58km N	13/04/2021	Recorded by River Maigue within the village of Bruree.
	Myotis Daubentonii			
Ad hoc	*Pipistrellus pipistrellus*	3.4km SW	17/10/2009	Recorded along wooded lane.
	Myotis			

1.2 GLTA Results

Table 1-2: GLTA results surrounding turbines and along supply route.

No.	Lat	Lon	GLTA	Species	Location	Details	Date
1	52.39795	-8.68146	None	Willow	T8	No potential. Some ivy but not mat forming.	05/04/2023
2	52.39779	-8.68143	PRF	Pine	T8	One cavity, loose bark.	05/04/2023
3	52.39754	-8.68134	PRF	Pine	T8	Loose bark, broken limb.	05/04/2023
4	52.39743	-8.68133	PRF	Pine	T8	Loose bark	05/04/2023
5	52.39733	-8.68113	PRF	Pine	T8	Loose bark, broken limb.	05/04/2023
6	52.39739	-8.68067	None	Pine	T8	No potential	05/04/2023
7	52.39753	-8.67883	None	Hedge	T8	No potential	05/04/2023
8	52.39864	-8.67682	None	Sycamore	T9	No potential	05/04/2023
9	52.39891	-8.67693	None	Willow	T9	No potential	05/04/2023
10	52.39903	-8.67695	None	Pine	T9	No potential	05/04/2023
11	52.39881	-8.67688	None	Willow	T9	No potential	05/04/2023
12	52.39962	-8.67726	None	Pine	T9	No potential	05/04/2023
13	52.39982	-8.67731	None	Willow	T9	No potential	05/04/2023
14	52.40005	-8.67738	None	Willow	T9	No potential	05/04/2023
15	52.40022	-8.67736	None	Beech	T9	No potential	05/04/2023
16	52.40041	-8.67756	None	Pine	T9	No potential	05/04/2023
17	52.40074	-8.67539	None	Pine/ beech	T9	Row of pine/beech covered in ivy but not thick enough to form mats.	05/04/2023
18	52.4008	-8.6728	None	Row of small oak	T9	No potential	05/04/2023
19	52.40051	-8.67204	None	Poplar	T9	Row of trees.	05/04/2023
20	52.40038	-8.67184	PRF	Poplar	T9	One cavity	05/04/2023
21	52.40037	-8.67193	None	Poplar	T9	Split in trunk but open and of no potential	05/04/2023
22	52.40028	-8.67187	PRF	Poplar	T9	One cavity, good potential	05/04/2023
23	52.39832	-8.67607	None	Sycamore	T9	No potential	05/04/2023
24	52.39785	-8.67645	None	Hedge	T8	No potential	05/04/2023
25	52.39724	-8.67638	None	Willow	T8	Willow / hedge mix. No potential	05/04/2023
26	52.38985	-8.67541	None	No trees	T3	No potential	05/04/2023
27	52.39306	-8.67578	None	Hedge, no trees	T5	No potential	05/04/2023
28	52.38954	-8.67643	None	Ash	T3	No potential	05/04/2023
29	52.3897	-8.67767	None	Ash	T3	Line of young ash. No potential	05/04/2023
30	52.38532	-8.67177	None	Poplar	T2	No potential	05/04/2023
31	52.38413	-8.67094	None	Poplar	T1	No potential	05/04/2023
32	52.38427	-8.66747	None	Poplar	T1	No potential	05/04/2023
33	52.38333	-8.66762	None	Ash	T1	Four small ash. No potential	05/04/2023
34	52.38332	-8.66907	None	Willow	T1	No potential	05/04/2023
35	52.38332	-8.66936	PRF	Willow	T1	Fork in tree, cavity also.	05/04/2023
36	52.38273	-8.6647	None	No trees	Outside buffers	No potential	05/04/2023
37	52.38508	-8.66615	None	Willow	T1	No potential	05/04/2023
38	52.38504	-8.66676	None	Ash / willow	T1	Line of willow and ash. No potential	05/04/2023

No.	Lat	Lon	GLTA	Species	Location	Details	Date
39	52.38545	-8.66737	None	Ash / willow	T1	Mix of sally/ash. No potential	05/04/2023
40	52.38574	-8.66809	PRF	Elder	T1	Cavities and splits, good potential	05/04/2023
41	52.38584	-8.66826	None	Ash / willow	T1	Mix of sally and ash. No potential	05/04/2023
42	52.38584	-8.66873	None	Ash	T2	No potential	05/04/2023
43	52.38601	-8.6691	None	Ash	T2	Ash within hedge. No potential	05/04/2023
44	52.38625	-8.66954	None	Ash	T2	Ash within hedge. No potential	05/04/2023
45	52.38623	-8.67029	None	Ash	T2	No potential	05/04/2023
46	52.38594	-8.6718	None	Hedge	T2	No potential	05/04/2023
47	52.38654	-8.67113	None	Ash	T2	No potential	05/04/2023
48	52.38755	-8.67241	None	Hedge	T2	No potential	05/04/2023
49	52.3868	-8.67092	None	Hedge	T2	No potential	05/04/2023
50	52.38706	-8.67042	PRF	Poplar	T2	One deep cavity due to branch loss	05/04/2023
51	52.38765	-8.66972	None	Ash	T2	Hedge with 2 small ash. No potential	05/04/2023
52	52.38814	-8.66905	None	Poplar	T2	No potential	05/04/2023
53	52.38816	-8.66906	PRF	Poplar	T2	Small cavity due to branch loss	05/04/2023
54	52.38927	-8.66936	None	Ash / blackthorn	T4	Mix of Ash and blackthorn. No potential	05/04/2023
55	52.39751	-8.66535	None	Alder	Outside buffers	No potential	05/04/2023
56	52.3978	-8.66591	None	Poplar	Outside buffers	No potential	05/04/2023
57	52.39793	-8.66664	None	Poplar	Outside buffers	Row of trees.	05/04/2023
58	52.39925	-8.67062	None	Willow	T7	No potential	05/04/2023
59	52.39826	-8.66982	None	Hedge	T7	No potential	05/04/2023
60	52.39795	-8.66951	None	Willow	T7	No potential	05/04/2023
61	52.39588	-8.6681	None	Willow	T6	No potential	05/04/2023
62	52.39464	-8.66807	None	Willow	T6	No potential	05/04/2023
63	52.39314	-8.66939	None	No trees	T6	No potential hedge	05/04/2023
64	52.39276	-8.66922	None	Willow	T6	Hedge with mix of sally. No potential	05/04/2023
65	52.3912	-8.67037	None	No trees	T4	No potential	05/04/2023
66	52.39232	-8.66896	None	Hedge with one small ash	T4	No potential	05/04/2023
67	52.39285	-8.66821	None	Hedge	T6	No potential	05/04/2023
68	52.39223	-8.6669	None	Ash	Outside buffers	Line of ash. No potential	05/04/2023
69	52.64629	-8.66997	None	Ornamental	TDR Route - Limerick	group of 23 immature ornamental trees	07/03/2024
70	52.64542	-8.67213	None	Ornamental	TDR Route - Limerick	group of approx. 25 semimature trees	07/03/2024
71	52.3977	-8.68487	None	Ash	Entrance route	mixed hedgerow of mainly ash & hawthorn. road side cut short and inside field left to grow, semimature ash	07/03/2024
72	52.37585	-8.65729	None	Hawthorn	Substation subsite	short, immature hedgerow	07/03/2024
73	52.37606	-8.65699	None	No trees	Substation subsite	hedge/ trees have been flattened	07/03/2024
74	52.37587	-8.65849	None	Hawthorn	Substation subsite	cut hedge	07/03/2024

No.	Lat	Lon	GLTA	Species	Location	Details	Date
75	52.37582	-8.66065	PRF	Ash	Substation subsite	Mature tree located in hedge. Some ivy but not mat forming. Has tear off branch at approx 5 m with prf. Probably prf-i	07/03/2024
76	52.37603	-8.66077	None	Ash	Substation subsite	Some ivy but not mat forming. No potential	07/03/2024
77	52.37605	-8.66069	None	Hawthorn	Substation subsite	Scrappy hawthorn. Ivy not mat forming.	07/03/2024
78	52.37616	-8.66075	FAR	Ash	Substation subsite	Mature with fairly thick ivy. Needs further examination to verify if prf's are present.	07/03/2024
79	52.37624	-8.66068	None	Hawthorn	Substation subsite	Several hawthorn with ivy but not mat forming.	07/03/2024
80	52.37641	-8.66072	FAR	Ash	Substation subsite	Semi mature with small cavities, not sure if they are deep enough. Needs further assessment.	07/03/2024
81	52.37651	-8.66071	None	Ash	Substation subsite	treeline with ivy but not mat forming	07/03/2024
82	52.37726	-8.66066	None	Hawthorn	Substation subsite	mainly hawthorn hedge with ivy not forming mats.	07/03/2024
83	52.37768	-8.66053	PRF	Ash	Substation subsite	Mature with branch holes	07/03/2024
84	52.37782	-8.66065	None	Hawthorn	Substation subsite	cut short in past	07/03/2024
85	52.37805	-8.66071	FAR	Ash	Substation subsite	Mature with thick ivy. Requires further assessment	07/03/2024
86	52.37819	-8.66066	None	Hawthorn	Substation subsite	Mature with ivy but not mat forming. Lots of bramble clutter would inhibit access for bats	07/03/2024
87	52.37811	-8.66067	None	Damsan	Substation subsite	Mature with ivy but not mat forming. Lots of bramble clutter would inhibit access for bats	07/03/2024
88	52.37844	-8.66055	None	Hawthorn	Substation subsite	Mature with ivy but not mat forming. Lots of bramble clutter would inhibit access for bats	07/03/2024
89	52.37856	-8.66017	PRF-I	Willow	Substation subsite	Small cervices in semi-mature tree	07/03/2024
90	52.37857	-8.66005	FAR	Ash	Substation subsite	Mature with broken branches and thick ivy. Requires a check if impacted.	07/03/2024
91	52.37872	-8.65984	None	Hawthorn	Substation subsite	hedge	07/03/2024
92	52.37871	-8.6597	None	Willow	Substation subsite		
93	52.37879	-8.65956	None	Willow	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
94	52.37887	-8.65936	None	Willow	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
95	52.37894	-8.65921	None	Hawthorn	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
96	52.37897	-8.65901	FAR	Ash	Substation subsite	Mature with ivy but not mat forming. Potential groves on branch that could provide a prf. Needs further assessment.	07/03/2024
97	52.37902	-8.65887	FAR	Ash	Substation subsite	Tree has ivy but not mat forming	07/03/2024
98	52.37917	-8.65852	PRF	Ash	Substation subsite	Mature with ivy and branch holes	07/03/2024
99	52.37961	-8.65934	None	Hawthorn	Substation subsite		
100	52.37593	-8.65931	FAR	Ash	Substation subsite	Thick ivy	07/03/2024
101	52.37603	-8.65929	None	Ash	Substation subsite	Mature with ivy but not mat forming.	07/03/2024

No.	Lat	Lon	GLTA	Species	Location	Details	Date
102	52.37614	-8.65932	None	Ash	Substation subsite	Has bit of a double leader but no cavity.	07/03/2024
103	52.37625	-8.65933	None	Ash	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
104	52.37643	-8.65931	FAR	Ash	Substation subsite	Thick ivy cover. Would require further assessment if impacted.	07/03/2024
105	52.37724	-8.65943	None	Ash	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
106	52.37734	-8.65956	None	Ash	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
107	52.37736	-8.65971	None	Ash	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
108	52.37653	-8.65771	None	Ash	Substation subsite	most of this treeline taken down. a few ash with ivy left. Not mat forming.	07/03/2024
109	52.37674	-8.65828	None	Ash	Substation subsite	On boundary line. Tear off without cavity.	07/03/2024
110	52.37688	-8.65861	None	Ash	Substation subsite	Ivy without mats. Farmer has taken most trees down	07/03/2024
111	52.37697	-8.6586	None	Ash	Substation subsite		Tree with ivy but not mat forming.
112	52.37716	-8.65893	None	No trees	Substation subsite		
113	52.37756	-8.65875	None	Ash	Substation subsite		No potential
114	52.37833	-8.65868	None	Hawthorn	Substation subsite	mixed hedgerow hawthorn & elder	07/03/2024
115	52.37759	-8.65824	None	Ash	Substation subsite	treeline mainly taken down	07/03/2024
116	52.37756	-8.65811	None	Ash	Substation subsite		
117	52.37756	-8.65787	None	Willow	Substation subsite	Tree with ivy but not mat forming.	07/03/2024
118	52.37787	-8.65779	None	Willow	Substation subsite	one mature tree left in treeline	07/03/2024
119	52.37819	-8.6578	None	Willow	Substation subsite		No potential
120	52.37854	-8.65773	None	Ash	Substation subsite		No potential
121	52.37899	-8.65775	None	Hawthorn	Substation subsite		No potential
122	52.37932	-8.65769	None	Ash	Substation subsite		No potential
123	52.37932	-8.658	None	Hawthorn	Substation subsite		No potential
124	52.37971	-8.65772	None	Hawthorn	Substation subsite	hawthorn hedge	07/03/2024
125	52.38068	-8.65869	PRF	Ash	Substation subsite	Cavity in branch cut off	07/03/2024
126	52.38075	-8.65854	PRF	Ash	Substation subsite	Three crevices in ash	07/03/2024
127	52.38107	-8.65852	None	Hawthorn	Substation subsite	mature hedgerow/ treeline with some ivy	07/03/2024
128	52.38189	-8.65891	None	Hawthorn	Substation subsite	mature with ivy	07/03/2024
129	52.38226	-8.659	None	Hawthorn	Substation subsite	mature hedge with some ivy	07/03/2024
130	52.38239	-8.65901	None	Willow	Substation subsite		
131	52.38297	-8.6588	None	Ash	Substation subsite		
132	52.38281	-8.65908	None	Hawthorn	Substation subsite	short hedge	07/03/2024

No.	Lat	Lon	GLTA	Species	Location	Details	Date
133	52.38326	-8.65905	None	Hawthorn	Substation subsite	short hedge	07/03/2024
134	52.38353	-8.65939	None	Willow	Substation subsite	mature with ivy that is not mat forming.	07/03/2024
135	52.38353	-8.65961	None	Hawthorn	Substation subsite	Mature with ivy but not mat forming	07/03/2024
136	52.38347	-8.65975	FAR	Ash	Substation subsite	Several small branch holes that might form prfs. On branch which has potential access route.	07/03/2024
137	52.38332	-8.66001	None	Hawthorn	Substation subsite	very mature group of trees, but no obvious crevices	07/03/2024
138	52.38326	-8.66012	None	Hawthorn	Substation subsite	mature with ivy	07/03/2024
139	52.38279	-8.6604	None	Hawthorn	Substation subsite	immature hawthorn hedge	07/03/2024
140	52.38287	-8.66074	PRF	Willow	Substation subsite	mature with ivy. Small prf visible at ground level	07/03/2024
141	52.38281	-8.66091	PRF	Ash	Substation subsite	Mature with cervices	07/03/2024
142	52.38277	-8.66117	FAR	Ash	Substation subsite	Mature with broken bits and thick ivy	07/03/2024
143	52.38273	-8.66131	PRF	Willow	Substation subsite	very mature. branch holes visible	07/03/2024
144	52.38276	-8.66133	FAR	Willow	Substation subsite	mature with plenty of tear offs that could form cavities. Needs further assessment.	07/03/2024
145	52.38273	-8.66146	PRF	Unknown tree	Substation subsite	mature tree with cervices visible	07/03/2024
146	52.38259	-8.66154	FAR	Willow	Substation subsite	broken portions of tree require further assessment.	07/03/2024
147	52.38263	-8.66176	FAR	Ash	Substation subsite	several large trees with ivy and broken bits. Require further assessment	07/03/2024
148	52.38337	-8.66111	None	Ash	Substation subsite	mature with ivy but not mat forming.	07/03/2024
149	52.38249	-8.66172	None	Willow	Substation subsite		No potential
150	52.38221	-8.66156	None	Willow	Substation subsite	Mature but not mat forming. No potential	07/03/2024
151	52.38184	-8.66118	None	Willow	Substation subsite	No potential	07/03/2024
152	52.38129	-8.66085	None	Hawthorn	Substation subsite	mature with ivy but not mat forming	07/03/2024
153	52.38143	-8.66008	None	Hawthorn	Substation subsite	immature hedgerow	07/03/2024
154	52.38035	-8.65936	None	Ash	Substation subsite		Nice tree but no potential
155	52.3802	-8.65951	None	Ash	Substation subsite		Nice tree but no potential
156	52.37884	-8.65877	None	Hawthorn	Substation subsite	immature hedgerow	07/03/2024
157	52.33422	-8.69799	None	Leylandii	Grid Route	mature treeline of mainly Leyland with one hawthorn with ivy cover but not mat forming.	07/03/2024

1.3 STATIC DETECTOR RESULTS

Table 1-3: Static Result summary per season

Spring 2022													
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
2	706	799	2232	4	12	10	0	2	0	49	3814	7139	32.1
3	839	426	4720	1	9	14	0	2	6	101	6118	7139	51.4
4	582	235	1536	0	8	32	0	2	0	92	2487	7139	20.9
5	463	180	486	0	4	8	0	4	0	65	1210	7139	10.2
6	540	88	195	0	6	6	0	9	0	75	919	7139	7.7
7	349	839	737	2	23	9	0	1	0	127	2087	7969	15.7
8	642	285	2038	0	27	22	0	1	1	100	3116	7139	26.2
9	1018	1774	5286	6	1600	9	0	6	0	52	9751	7139	82.0
10	1118	1192	1096	0	50	4	0	6	1	241	3708	7139	31.2
11	1212	798	4985	0	58	8	0	0	0	77	7138	7139	60.0
12	862	474	2082	0	15	3	0	9	0	103	3548	7139	29.8
Total	8331	7090	25393	13	1812	125	0	42	8	1082	43896	79359	**33.2**
Bat passes per hour	6.3	5.4	19.2	0.0	1.4	0.1	0.0	0.0	0.0	0.8			
Summer 2022													

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	61	46	130	0	0	17	0	4	0	34	292	5489	3.2
2	84	56	151	0	0	7	0	11	1	45	355	5489	3.9
3	294	530	1300	0	8	25	0	6	0	47	2210	5489	24.2
4	86	32	90	0	0	3	0	4	0	79	294	5489	3.2
5	59	833	516	0	0	6	0	0	0	22	1436	5489	15.7
6	55	43	117	0	0	11	0	8	0	24	258	5489	2.8
7	76	91	393	0	0	0	0	2	0	66	628	5489	6.9
8	103	73	1016	0	0	8	0	19	0	89	1308	5489	14.3
9	136	32	60	0	0	7	0	2	0	17	254	5489	2.8
10	101	183	547	0	1	8	0	12	0	84	936	5489	10.2
11	135	242	668	2	4	8	0	11	0	64	1134	5489	12.4
12	565	547	2195	3	35	7	0	62	0	123	3537	5489	38.7
Total	1755	2708	7183	5	48	107	0	141	1	694	12642	65868.0	**11.5**
BP/Hr	1.6	2.5	6.5	0.0	0.0	0.1	0.0	0.1	0.0	0.6			
August 2022													
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	239	37	97	0	0	44	0	7	0	46	470	6378	4.4
2	585	44	172	0	0	48	0	12	0	66	927	6378	8.7
3	61	22	189	0	0	1	0	1	0	2	276	6378	2.6
4	546	57	136	0	0	36	0	3	0	362	1140	6378	10.7
5	431	226	523	0	1	36	0	4	0	56	1277	6378	12.0
6	533	73	296	0	1	56	0	19	0	52	1030	6378	9.7
7	427	85	536	0	5	15	0	6	0	225	1299	6378	12.2
8	56	5	67	0	0	5	0	2	0	27	162	1244	7.8
9	972	101	167	0	0	48	0	5	0	21	1314	6378	12.4
10	516	182	1041	0	6	33	0	11	0	379	2168	6378	20.4
11	491	384	3053	0	8	36	0	13	1	172	4158	6378	39.1
12	692	648	5772	0	32	30	0	13	0	188	7375	6378	69.4
Total	5549	1864	12049	0	53	388	0	96	1	1596	21596	71402	**18.1**
BP/Hr	4.7	1.6	10.1	0.0	0.0	0.3	0.0	0.1	0.0	1.3			
September 2022													

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	87	19	31	0	0	20	0	5	0	19	181	7977	1.4
2	259	104	160	0	3	18	0	4	0	15	563	7977	4.2
3	449	97	941	1	6	54	0	7	0	49	1604	7977	12.1
4	87	19	31	0	0	20	0	5	0	19	181	7977	1.4
5	296	118	186	0	3	18	0	4	0	15	640	7977	4.8
6	454	19	98	0	0	23	0	5	0	39	638	7977	4.8
7	1738	165	179	0	0	14	0	5	0	116	2217	7977	16.7
8	87	19	31	0	0	20	0	5	0	19	181	7977	1.4
9	296	118	186	0	3	18	0	4	0	15	640	7977	4.8
10	101	34	87	0	1	12	0	2	0	79	316	6348	3.0
11	296	118	186	0	3	18	0	4	0	15	640	7977	4.8
12	110	111	1134	2	2	5	1	2	0	85	1452	7977	10.9
Total	4260	941	3250	3	21	240	1	52	0	485	9253	94095	**5.9**
BP/Hr	2.7	0.6	2.1	0.0	0.0	0.2	0.0	0.0	0.0	0.3			
October 2022													
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	27	16	54	1	0	5	0	1	0	19	123	9865	0.7
2	47	307	777	0	40	6	0	9	0	18	1204	9865	7.3
3	282	560	511	0	4	4	0	2	0	16	1379	9865	8.4
4	158	4	15	0	0	4	0	2	0	27	210	8085	1.6
5	227	59	640	0	0	4	0	2	0	15	947	9865	5.8
7	55	9	356	0	0	2	0	0	0	11	433	9865	2.6
8	13	86	795	0	5	5	0	8	0	47	959	9865	5.8
9	2424	26	386	1	0	5	0	4	0	10	2856	9865	17.4
10	9	53	353	0	1	3	0	2	0	42	463	9865	2.8
11	26	301	1476	0	0	3	0	0	0	20	1826	9865	11.1
12	11	103	727	0	1	1	0	4	0	28	875	9865	5.3
Total	3279	1524	6090	2	51	42	0	34	0	253	11275	106735	**6.3**
BP/Hr	1.8	0.9	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1			

Spring 2023													
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	763	815	1968	3	113	6	0	1	1	189	3859	8037	28.8
2	920	166	375	0	8	7	0	1	0	302	1779	8037	13.3
3	513	85	141	0	8	6	0	1	0	49	803	8037	6.0
5	1199	47	65	2	2	132	0	39	0	660	2146	8037	16.0
6	401	45	74	0	8	5	0	1	0	149	683	8037	5.1
7	165	26	43	9	0	18	0	0	0	29	290	8037	2.2
8	1506	120	162	6	16	24	0	17	0	211	2062	7442	16.6
9	343	25	52	0	5	14	0	2	0	92	533	8037	4.0
Total	5810	1329	2880	20	160	212	0	62	1	1681	12155	63701	11.4
BP/Hr	5.5	1.3	2.7	0.0	0.2	0.2	0.0	0.1	0.0	1.6			
Summer 2023													
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	463	287	880	0	3	0	0	2	0	276	1911	6529	17.6
2	254	122	524	1	0	3	0	1	1	155	1061	6529	9.8
3	58	10	29	0	0	1	0	0	0	3	101	3477	1.7
4	58	18	44	0	0	1	0	1	0	55	177	6529	1.6
5	462	22	38	0	1	6	0	2	0	69	600	12191	3.0
6	263	467	464	0	0	4	0	6	1	290	1495	7015	12.8
7	113	19	42	0	0	1	0	2	0	140	317	6529	2.9
8	0	0	0	0	0	0	0	0	0	1	1	310	0.2
9	98	12	34	0	0	4	0	0	0	7	155	6529	1.4
Total	1769	957	2055	1	4	20	0	14	2	996	5818	55638	6.3
BP/Hr	1.9	1.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1			

September 2023													
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BP/Hr
1	1424	878	3428	1	33	34	0	0	0	334	6132	10061	36.6
2	1054	458	995	0	14	50	0	0	0	403	2974	10061	17.7
3	509	118	201	0	4	66	0	1	0	54	953	10061	5.7
4	583	196	375	1	9	49	0	22	0	297	1532	10061	9.1
5	229	5	8	0	0	3	0	0	0	1	246	5472	2.7
6	752	168	303	1	5	54	0	5	0	414	1702	10061	10.2
7	16	2	2	0	0	0	0	0	0	2	22	642	2.1
8	1834	843	1844	7	8	40	0	1	0	55	4632	5925	46.9
9	67	23	34	0	2	12	0	0	0	13	151	1940	4.7
Total	6468	2691	7190	10	75	308	0	29	0	1573	18344	58812	18.7
BP/Hr	6.6	2.7	7.3	0.0	0.1	0.3	0.0	0.0	0.0	1.6			

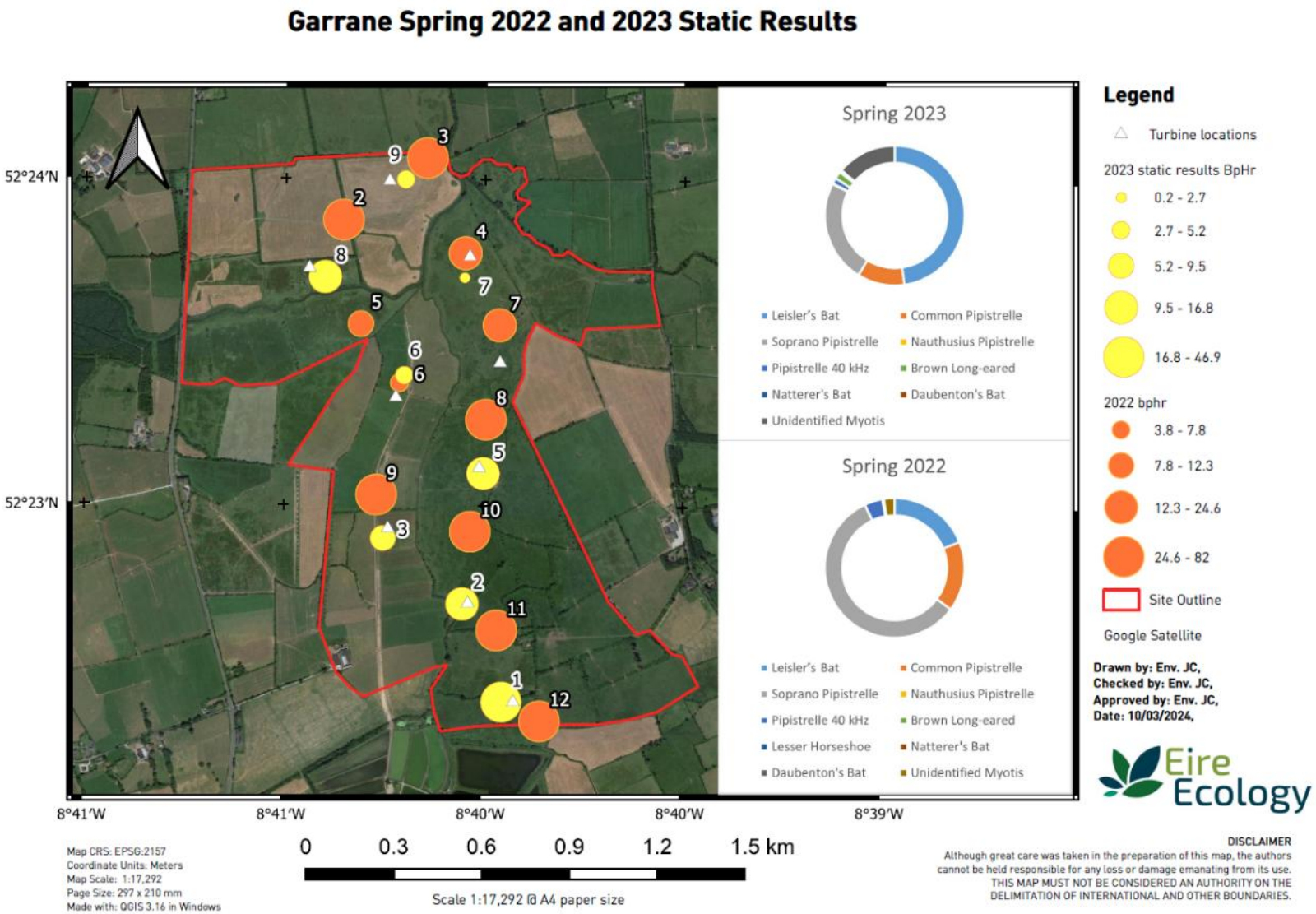

Figure 1-1: Combined Spring activity rates (Bp/Hr) for 2022 and 2023

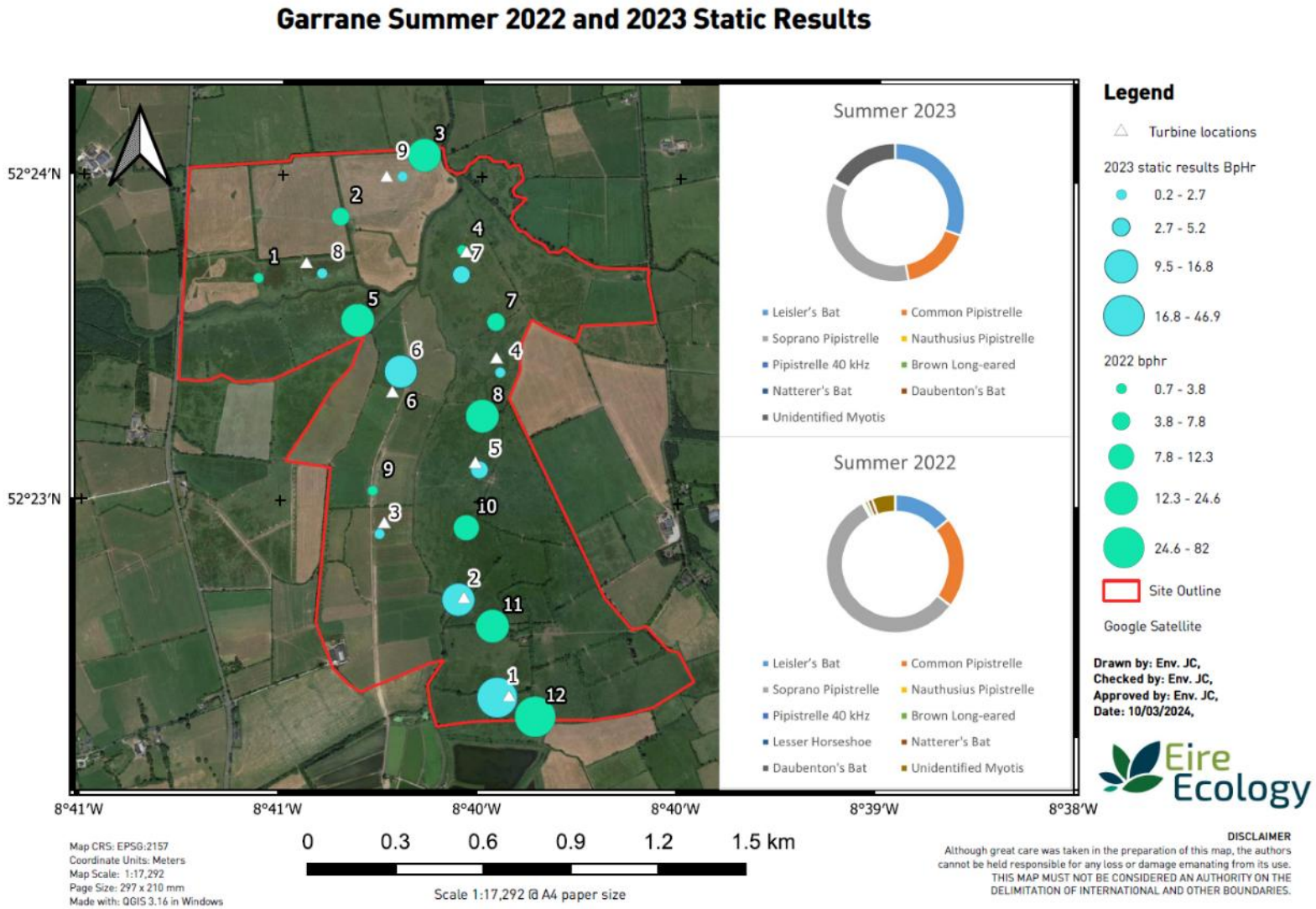

Figure 1-2 Combined Summer activity rates (Bp/Hr) for 2022 and 2023

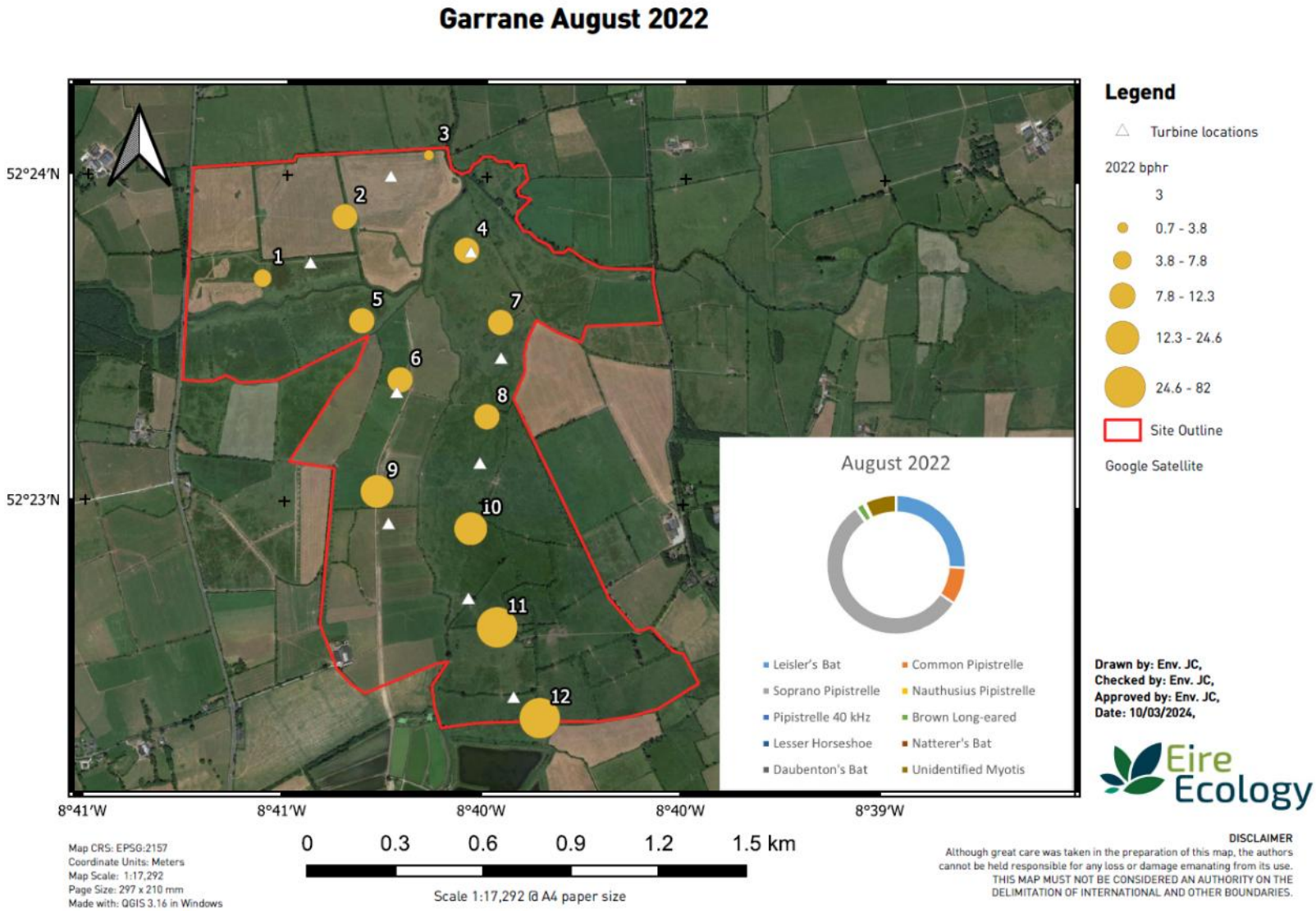

Figure 1-3 Combined August activity rates (Bp/Hr) 2022

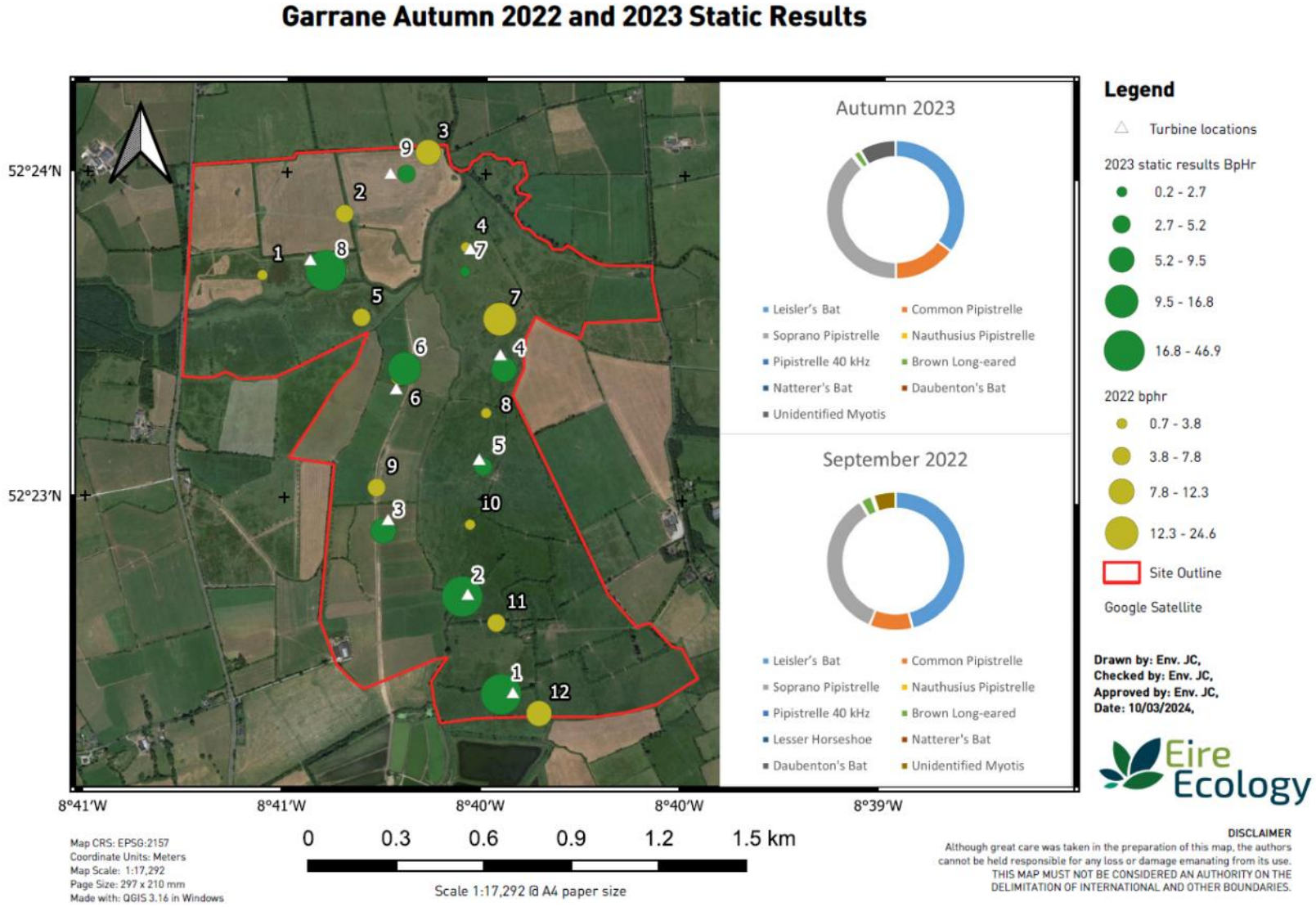

Figure 1-4 Combined Autumn activity rates (Bp/Hr) for 2022 and 2023

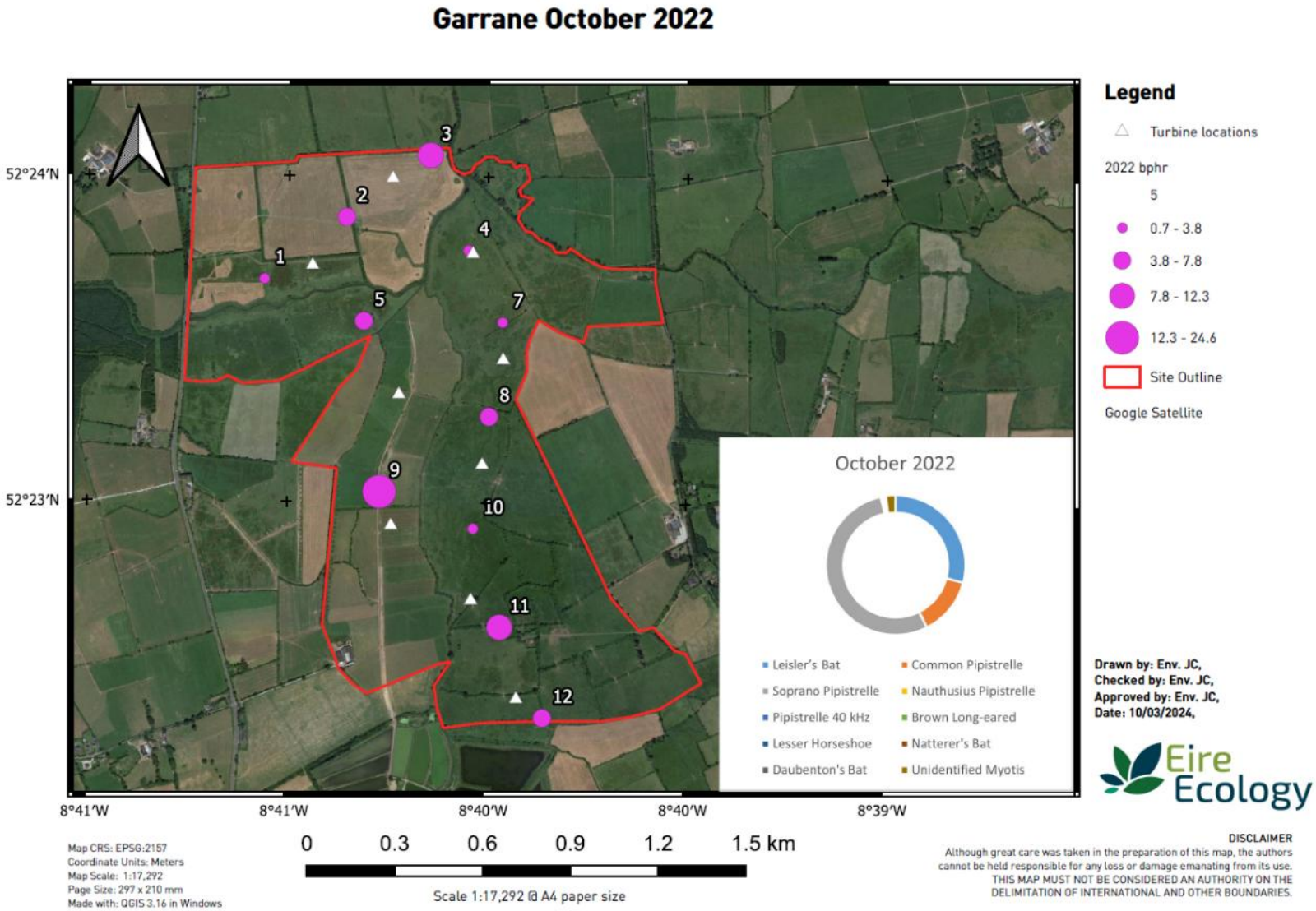

Figure 1-5 Combined October 2022 activity rates (Bp/Hr)

Table 1-4: All static results combined

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
1	2022	2nd July	1	0	10	0	0	0	0	0	0	0	0	11
1	2022	3rd July	1	2	3	0	0	0	0	0	0	0	1	7
1	2022	4th July	5	1	1	0	0	0	0	1	0	0	0	8
1	2022	5th July	6	1	10	0	0	3	0	1	0	0	1	22
1	2022	6th July	1	0	3	0	0	0	0	1	0	0	0	5
1	2022	7th July	6	6	10	0	0	2	0	0	0	0	3	27
1	2022	8th July	11	6	12	0	0	0	0	0	0	0	6	35
1	2022	9th July	10	14	13	0	0	4	0	0	0	0	9	50
1	2022	10th July	11	6	18	0	0	4	0	1	0	0	4	44
1	2022	11th July	6	9	31	0	0	0	0	0	0	0	3	49
1	2022	12th July	3	1	19	0	0	4	0	0	0	0	7	34
1	2022	16th August	7	1	3	0	0	5	0	0	0	0	1	17
1	2022	17th August	38	0	5	0	0	5	0	1	0	0	7	56
1	2022	18th August	21	0	6	0	0	5	0	0	0	0	1	33
1	2022	19th August	25	3	11	0	0	3	0	0	0	0	1	43
1	2022	20th August	32	7	10	0	0	8	0	1	0	0	4	62
1	2022	21st August	30	2	24	0	0	2	0	0	0	0	7	65
1	2022	22nd August	30	6	19	0	0	0	0	0	0	0	10	65

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
1	2022	23rd August	23	11	7	0	0	4	0	3	0	0	5	53
1	2022	24th August	10	0	4	0	0	9	0	2	0	0	7	32
1	2022	25th August	23	7	8	0	0	3	0	0	0	0	3	44
1	2022	24th Sept	8	0	0	0	0	2	0	0	0	0	2	12
1	2022	25th Sept	14	0	1	0	0	0	0	0	0	0	0	15
1	2022	26th Sept	3	0	2	0	0	0	0	0	0	0	0	5
1	2022	27th Sept	3	0	1	0	0	0	0	1	0	0	1	6
1	2022	28th Sept	6	0	0	0	0	3	0	0	0	0	2	11
1	2022	29th Sept	3	1	3	0	0	5	0	0	0	0	3	15
1	2022	30th Sept	3	0	7	0	0	0	0	0	0	0	1	11
1	2022	1st October	10	2	4	0	0	6	0	1	0	0	2	25
1	2022	2nd October	6	16	10	0	0	4	0	3	0	0	8	47
1	2022	3rd October	31	0	3	0	0	0	0	0	0	0	0	34
1	2022	19th October	2	1	13	0	0	0	0	0	0	0	0	16
1	2022	20th October	11	1	0	0	0	0	0	0	0	0	0	12
1	2022	21st October	2	1	12	0	0	0	0	0	0	0	2	17
1	2022	22nd October	12	9	6	1	0	2	0	0	0	0	8	38
1	2022	23rd October	0	4	8	0	0	2	0	0	0	0	7	21
1	2022	24th October	0	0	6	0	0	0	0	1	0	0	1	8

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
1	2022	25th October	0	0	0	0	0	0	0	0	0	0	0	0
1	2022	26th October	0	0	1	0	0	1	0	0	0	0	0	2
1	2022	27th October	0	0	5	0	0	0	0	0	0	0	1	6
1	2022	28th October	0	0	3	0	0	0	0	0	0	0	0	3
1	2022	29th October	0	0	0	0	0	0	0	0	0	0	0	0
2	2022	22nd April	66	28	311	0	1	1	0	2	0	0	2	411
2	2022	23rd April	37	24	71	0	0	1	0	0	0	0	10	143
2	2022	24th April	28	9	80	0	0	0	0	0	0	0	2	119
2	2022	25th April	145	95	524	1	2	3	0	0	0	0	8	778
2	2022	26th April	24	7	46	0	0	0	0	0	0	0	7	84
2	2022	27th April	51	34	148	1	0	1	0	0	0	0	7	242
2	2022	28th April	44	5	34	0	0	1	0	0	0	0	1	85
2	2022	29th April	42	115	208	0	0	1	0	0	0	0	0	366
2	2022	30th April	17	0	3	0	0	0	0	0	0	0	0	20
2	2022	1st May	77	189	248	1	2	0	0	0	0	0	2	519
2	2022	2nd May	80	178	326	1	4	0	0	0	0	0	2	591
2	2022	3rd May	74	79	54	0	3	0	0	0	0	0	3	213
2	2022	4th May	21	36	179	0	0	2	0	0	0	0	5	243
2	2022	2nd July	20	0	0	0	0	0	0	0	0	0	0	20

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
2	2022	3rd July	0	1	2	0	0	1	0	1	0	0	2	7
2	2022	4th July	2	1	3	0	0	0	0	0	0	0	6	12
2	2022	5th July	6	13	50	0	0	0	0	1	0	0	1	71
2	2022	6th July	3	1	5	0	0	1	0	1	0	0	1	12
2	2022	7th July	6	2	5	0	0	2	0	2	0	0	6	23
2	2022	8th July	3	1	4	0	0	0	0	1	0	0	9	18
2	2022	9th July	22	16	36	0	0	0	0	2	0	0	6	82
2	2022	10th July	13	9	16	0	0	0	0	2	0	0	4	44
2	2022	11th July	4	8	18	0	0	2	0	1	0	0	3	36
2	2022	12th July	5	4	12	0	0	1	0	0	0	1	7	30
2	2022	16th August	22	2	18	0	0	6	0	3	0	0	16	67
2	2022	17th August	65	3	11	0	0	4	0	2	0	0	8	93
2	2022	18th August	82	4	15	0	0	5	0	0	0	0	5	111
2	2022	19th August	59	1	6	0	0	1	0	0	0	0	5	72
2	2022	20th August	107	8	32	0	0	7	0	2	0	0	9	165
2	2022	21st August	58	8	35	0	0	3	0	1	0	0	7	112
2	2022	22nd August	35	1	8	0	0	4	0	3	0	0	3	54
2	2022	23rd August	47	9	24	0	0	8	0	1	0	0	7	96
2	2022	24th August	63	1	9	0	0	7	0	0	0	0	4	84

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
2	2022	25th August	47	7	14	0	0	3	0	0	0	0	2	73
2	2022	24th Sept	21	3	16	0	1	1	0	3	0	0	1	46
2	2022	25th Sept	71	6	4	0	0	1	0	0	0	0	0	82
2	2022	26th Sept	21	1	18	0	0	2	0	0	0	0	1	43
2	2022	27th Sept	7	0	9	0	0	1	0	0	0	0	2	19
2	2022	28th Sept	17	0	8	0	0	4	0	0	0	0	0	29
2	2022	29th Sept	19	2	15	0	1	2	0	0	0	0	4	43
2	2022	30th Sept	9	4	16	0	0	0	0	0	0	0	1	30
2	2022	1st October	23	20	10	0	0	1	0	0	0	0	1	55
2	2022	2nd October	61	68	62	0	1	6	0	1	0	0	4	203
2	2022	3rd October	10	0	2	0	0	0	0	0	0	0	1	13
2	2022	19th October	12	17	358	0	0	0	0	2	0	0	9	398
2	2022	20th October	6	10	56	0	0	1	0	0	0	0	2	75
2	2022	21st October	6	0	3	0	0	0	0	0	0	0	3	12
2	2022	22nd October	19	148	220	0	40	2	0	5	0	0	2	436
2	2022	23rd October	4	61	46	0	0	3	0	0	0	0	0	114
2	2022	24th October	0	2	15	0	0	0	0	0	0	0	0	17
2	2022	25th October	0	0	5	0	0	0	0	0	0	0	0	5
2	2022	26th October	0	0	6	0	0	0	0	0	0	0	2	8

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
2	2022	27th October	0	0	0	0	0	0	0	0	0	0	0	0
2	2022	28th October	0	69	68	0	0	0	0	2	0	0	0	139
2	2022	29th October	0	0	0	0	0	0	0	0	0	0	0	0
3	2022	22nd April	71	100	1473	0	0	0	0	0	0	1	3	1648
3	2022	23rd April	36	47	1290	1	2	1	0	1	0	0	4	1382
3	2022	24th April	33	7	889	0	0	1	0	1	0	0	3	934
3	2022	25th April	121	75	482	0	2	2	0	0	0	0	9	691
3	2022	26th April	33	6	91	0	1	0	0	0	0	0	5	136
3	2022	27th April	110	36	76	0	2	1	0	0	0	2	15	242
3	2022	28th April	33	5	46	0	0	0	0	0	0	2	7	93
3	2022	29th April	85	22	81	0	1	1	0	0	0	1	12	203
3	2022	30th April	7	0	1	0	0	0	0	0	0	0	0	8
3	2022	1st May	53	1	1	0	0	0	0	0	0	0	0	55
3	2022	2nd May	116	21	110	0	0	6	0	0	0	0	12	265
3	2022	3rd May	71	56	121	0	0	1	0	0	0	0	13	262
3	2022	4th May	70	50	59	0	1	1	0	0	0	0	18	199
3	2022	2nd July	11	131	63	0	0	0	0	0	0	0	0	205
3	2022	3rd July	15	9	35	0	1	0	0	0	0	0	3	63
3	2022	4th July	12	14	59	0	0	3	0	1	0	0	2	91

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
3	2022	5th July	31	30	79	0	0	0	0	0	0	0	2	142
3	2022	6th July	12	25	90	0	0	1	0	0	0	0	5	133
3	2022	7th July	23	67	131	0	0	3	0	0	0	0	2	226
3	2022	8th July	18	22	152	0	0	1	0	1	0	0	6	200
3	2022	9th July	49	37	128	0	2	3	0	1	0	0	5	225
3	2022	10th July	44	82	109	0	2	10	0	2	0	0	9	258
3	2022	11th July	38	34	123	0	1	1	0	0	0	0	3	200
3	2022	12th July	41	79	331	0	2	3	0	1	0	0	10	467
3	2022	16th August	58	14	175	0	0	0	0	1	0	0	1	249
3	2022	17th August	0	0	1	0	0	0	0	0	0	0	0	1
3	2022	18th August	2	0	5	0	0	0	0	0	0	0	0	7
3	2022	19th August	0	0	0	0	0	0	0	0	0	0	0	0
3	2022	20th August	0	1	0	0	0	0	0	0	0	0	0	1
3	2022	21st August	0	1	0	0	0	0	0	0	0	0	0	1
3	2022	22nd August	0	0	0	0	0	0	0	0	0	0	0	0
3	2022	23rd August	0	6	4	0	0	0	0	0	0	0	1	11
3	2022	24th August	1	0	4	0	0	1	0	0	0	0	0	6
3	2022	24th Sept	42	6	156	0	4	6	0	2	0	0	2	218
3	2022	25th Sept	63	8	96	0	1	2	0	0	0	0	2	172

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
3	2022	26th Sept	43	9	288	0	0	9	0	2	0	0	7	358
3	2022	27th Sept	6	2	42	0	0	0	0	0	0	0	1	51
3	2022	28th Sept	7	2	164	0	0	7	0	1	0	0	7	188
3	2022	29th Sept	34	7	39	0	1	8	0	0	0	0	7	96
3	2022	30th Sept	50	5	21	0	0	2	0	0	0	0	3	81
3	2022	1st October	50	21	39	1	0	6	0	1	0	0	13	131
3	2022	2nd October	96	27	84	0	0	11	0	1	0	0	6	225
3	2022	3rd October	58	10	12	0	0	3	0	0	0	0	1	84
3	2022	19th October	9	150	161	0	1	0	0	0	0	0	0	321
3	2022	20th October	0	145	66	0	0	1	0	0	0	0	3	215
3	2022	21st October	3	1	7	0	0	0	0	0	0	0	1	12
3	2022	22nd October	230	134	81	0	3	0	0	1	0	0	3	452
3	2022	23rd October	40	31	29	0	0	1	0	0	0	0	5	106
3	2022	24th October	0	40	52	0	0	1	0	0	0	0	4	97
3	2022	25th October	0	0	0	0	0	0	0	0	0	0	0	0
3	2022	26th October	0	10	19	0	0	0	0	0	0	0	0	29
3	2022	27th October	0	0	1	0	0	0	0	0	0	0	0	1
3	2022	28th October	0	46	62	0	0	1	0	1	0	0	0	110
3	2022	29th October	0	3	33	0	0	0	0	0	0	0	0	36

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
4	2022	22nd April	65	17	581	0	0	1	0	0	0	0	4	668
4	2022	23rd April	39	7	108	0	0	1	0	1	0	0	7	163
4	2022	24th April	16	6	39	0	0	3	0	0	0	0	6	70
4	2022	25th April	57	24	139	0	0	2	0	0	0	0	3	225
4	2022	26th April	25	2	42	0	0	3	0	1	0	0	6	79
4	2022	27th April	56	8	44	0	0	4	0	0	0	0	4	116
4	2022	28th April	32	13	125	0	2	2	0	0	0	0	11	185
4	2022	29th April	42	11	94	0	2	3	0	0	0	0	8	160
4	2022	30th April	14	5	68	0	0	1	0	0	0	0	7	95
4	2022	1st May	77	32	129	0	0	3	0	0	0	0	9	250
4	2022	2nd May	51	58	77	0	0	3	0	0	0	0	10	199
4	2022	3rd May	62	38	73	0	2	2	0	0	0	0	8	185
4	2022	4th May	46	14	17	0	2	4	0	0	0	0	9	92
4	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
4	2022	3rd July	3	1	3	0	0	1	0	0	0	0	6	14
4	2022	4th July	10	3	6	0	0	0	0	0	0	0	4	23
4	2022	5th July	11	4	14	0	0	0	0	1	0	0	7	37
4	2022	6th July	5	0	3	0	0	0	0	0	0	0	1	9
4	2022	7th July	3	3	11	0	0	0	0	0	0	0	2	19

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
4	2022	8th July	9	3	8	0	0	0	0	1	0	0	2	23
4	2022	9th July	15	6	15	0	0	1	0	0	0	0	14	51
4	2022	10th July	5	7	10	0	0	0	0	2	0	0	20	44
4	2022	11th July	15	3	13	0	0	0	0	0	0	0	16	47
4	2022	12th July	10	2	7	0	0	1	0	0	0	0	7	27
4	2022	16th August	17	2	8	0	0	0	0	1	0	0	38	66
4	2022	17th August	97	4	10	0	0	1	0	0	0	0	30	142
4	2022	18th August	42	3	14	0	0	4	0	0	0	0	37	100
4	2022	19th August	74	4	11	0	0	2	0	1	0	0	17	109
4	2022	20th August	57	8	18	0	0	3	0	0	0	0	44	130
4	2022	21st August	71	14	19	0	0	4	0	0	0	0	28	136
4	2022	22nd August	63	3	18	0	0	5	0	0	0	0	34	123
4	2022	23rd August	55	13	16	0	0	11	0	1	0	0	48	144
4	2022	24th August	19	2	8	0	0	3	0	0	0	0	41	73
4	2022	25th August	51	4	14	0	0	3	0	0	0	0	45	117
4	2022	24th Sept	8	0	0	0	0	2	0	0	0	0	2	12
4	2022	25th Sept	14	0	1	0	0	0	0	0	0	0	0	15
4	2022	26th Sept	3	0	2	0	0	0	0	0	0	0	0	5
4	2022	27th Sept	3	0	1	0	0	0	0	1	0	0	1	6

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
4	2022	28th Sept	6	0	0	0	0	3	0	0	0	0	2	11
4	2022	29th Sept	3	1	3	0	0	5	0	0	0	0	3	15
4	2022	30th Sept	3	0	7	0	0	0	0	0	0	0	1	11
4	2022	1st October	10	2	4	0	0	6	0	1	0	0	2	25
4	2022	2nd October	6	16	10	0	0	4	0	3	0	0	8	47
4	2022	3rd October	31	0	3	0	0	0	0	0	0	0	0	34
4	2022	19th October	6	0	2	0	0	0	0	0	0	0	0	8
4	2022	20th October	70	0	1	0	0	0	0	0	0	0	0	71
4	2022	21st October	4	0	1	0	0	0	0	0	0	0	0	5
4	2022	22nd October	75	2	2	0	0	2	0	1	0	0	5	87
4	2022	23rd October	3	1	4	0	0	2	0	0	0	0	2	12
4	2022	24th October	0	0	0	0	0	0	0	1	0	0	18	19
4	2022	25th October	0	0	0	0	0	0	0	0	0	0	0	0
4	2022	26th October	0	0	0	0	0	0	0	0	0	0	0	0
4	2022	27th October	0	0	0	0	0	0	0	0	0	0	0	0
4	2022	28th October	0	0	0	0	0	0	0	0	0	0	0	0
4	2022	29th October	0	1	5	0	0	0	0	0	0	0	2	8
5	2022	22nd April	28	10	36	0	0	1	0	1	0	0	7	83
5	2022	23rd April	30	5	15	0	1	0	0	0	0	0	7	58

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
5	2022	24th April	21	5	16	0	0	3	0	0	0	0	2	47
5	2022	25th April	60	20	50	0	0	0	0	0	0	0	12	142
5	2022	26th April	14	3	3	0	0	0	0	0	0	0	2	22
5	2022	27th April	39	17	30	0	0	0	0	1	0	0	2	89
5	2022	28th April	43	4	15	0	0	0	0	0	0	0	5	67
5	2022	29th April	36	34	99	0	1	2	0	0	0	0	7	179
5	2022	30th April	12	1	12	0	0	0	0	0	0	0	0	25
5	2022	1st May	62	14	78	0	0	1	0	0	0	0	7	162
5	2022	2nd May	50	34	56	0	0	0	0	1	0	0	5	146
5	2022	3rd May	49	27	66	0	2	0	0	1	0	0	4	149
5	2022	4th May	19	6	10	0	0	1	0	0	0	0	5	41
5	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
5	2022	3rd July	0	240	20	0	0	1	0	0	0	0	1	262
5	2022	4th July	2	125	54	0	0	0	0	0	0	0	3	184
5	2022	5th July	4	129	88	0	0	0	0	0	0	0	1	222
5	2022	6th July	1	76	35	0	0	0	0	0	0	0	1	113
5	2022	7th July	1	80	69	0	0	1	0	0	0	0	2	153
5	2022	8th July	7	38	24	0	0	1	0	0	0	0	3	73
5	2022	9th July	25	42	82	0	0	2	0	0	0	0	3	154

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
5	2022	10th July	10	14	36	0	0	0	0	0	0	0	4	64
5	2022	11th July	7	15	63	0	0	1	0	0	0	0	2	88
5	2022	12th July	2	74	45	0	0	0	0	0	0	0	2	123
5	2022	16th August	16	1	14	0	0	4	0	0	0	0	5	40
5	2022	17th August	99	17	33	0	0	1	0	0	0	0	8	158
5	2022	18th August	24	14	43	0	0	3	0	0	0	0	6	90
5	2022	19th August	23	39	49	0	0	2	0	1	0	0	1	115
5	2022	20th August	32	53	118	0	0	5	0	1	0	0	6	215
5	2022	21st August	73	25	55	0	0	5	0	0	0	0	6	164
5	2022	22nd August	27	30	89	0	0	4	0	0	0	0	10	160
5	2022	23rd August	38	29	64	0	0	8	0	2	0	0	5	146
5	2022	24th August	34	8	24	0	0	2	0	0	0	0	9	77
5	2022	25th August	65	10	34	0	1	2	0	0	0	0	0	112
5	2022	24th Sept	22	3	17	0	1	1	0	3	0	0	1	48
5	2022	25th Sept	77	6	10	0	0	1	0	0	0	0	0	94
5	2022	26th Sept	23	1	20	0	0	2	0	0	0	0	1	47
5	2022	27th Sept	7	0	9	0	0	1	0	0	0	0	2	19
5	2022	28th Sept	21	0	12	0	0	4	0	0	0	0	0	37
5	2022	29th Sept	20	3	15	0	1	2	0	0	0	0	4	45

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
5	2022	30th Sept	11	4	18	0	0	0	0	0	0	0	1	34
5	2022	1st October	24	20	11	0	0	1	0	0	0	0	1	57
5	2022	2nd October	81	81	72	0	1	6	0	1	0	0	4	246
5	2022	3rd October	10	0	2	0	0	0	0	0	0	0	1	13
5	2022	19th October	88	5	217	0	0	0	0	0	0	0	2	312
5	2022	20th October	24	1	4	0	0	0	0	0	0	0	0	29
5	2022	21st October	38	1	52	0	0	0	0	0	0	0	4	95
5	2022	22nd October	54	42	183	0	0	3	0	0	0	0	6	288
5	2022	23rd October	7	9	136	0	0	1	0	2	0	0	1	156
5	2022	24th October	2	0	40	0	0	0	0	0	0	0	2	44
5	2022	25th October	14	0	1	0	0	0	0	0	0	0	0	15
5	2022	26th October	0	0	4	0	0	0	0	0	0	0	0	4
5	2022	27th October	0	1	3	0	0	0	0	0	0	0	0	4
5	2022	28th October	0	0	0	0	0	0	0	0	0	0	0	0
5	2022	29th October	0	0	0	0	0	0	0	0	0	0	0	0
6	2022	22nd April	21	8	13	0	0	0	0	1	0	0	10	53
6	2022	23rd April	35	1	13	0	1	2	0	1	0	0	11	64
6	2022	24th April	23	2	4	0	0	0	0	0	0	0	6	35
6	2022	25th April	57	11	24	0	0	0	0	2	0	0	10	104

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
6	2022	26th April	24	3	11	0	0	1	0	2	0	0	2	43
6	2022	27th April	37	4	15	0	1	0	0	0	0	0	6	63
6	2022	28th April	127	2	11	0	0	1	0	1	0	0	4	146
6	2022	29th April	38	15	28	0	1	0	0	0	0	0	7	89
6	2022	30th April	19	2	3	0	0	0	0	1	0	0	0	25
6	2022	1st May	27	0	4	0	0	1	0	0	0	0	0	32
6	2022	2nd May	54	16	25	0	1	1	0	1	0	0	9	107
6	2022	3rd May	58	21	35	0	2	0	0	0	0	0	7	123
6	2022	4th May	20	3	9	0	0	0	0	0	0	0	3	35
6	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
6	2022	3rd July	1	1	1	0	0	2	0	1	0	0	1	7
6	2022	4th July	15	2	3	0	0	0	0	0	0	0	3	23
6	2022	5th July	4	0	4	0	0	0	0	0	0	0	1	9
6	2022	6th July	3	0	0	0	0	0	0	0	0	0	2	5
6	2022	7th July	3	3	5	0	0	3	0	0	0	0	4	18
6	2022	8th July	4	5	3	0	0	0	0	0	0	0	4	16
6	2022	9th July	13	14	24	0	0	1	0	0	0	0	0	52
6	2022	10th July	3	6	25	0	0	2	0	3	0	0	3	42
6	2022	11th July	4	7	46	0	0	1	0	2	0	0	3	63

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
6	2022	12th July	5	5	6	0	0	2	0	2	0	0	3	23
6	2022	16th August	15	1	7	0	0	1	0	1	0	0	6	31
6	2022	17th August	70	3	15	0	0	0	0	0	0	0	1	89
6	2022	18th August	39	5	19	0	0	3	0	3	0	0	3	72
6	2022	19th August	42	11	34	0	0	0	0	2	0	0	1	90
6	2022	20th August	24	9	39	0	1	9	0	2	0	0	8	92
6	2022	21st August	160	13	74	0	0	13	0	4	0	0	7	271
6	2022	22nd August	47	11	67	0	0	9	0	4	0	0	7	145
6	2022	23rd August	27	12	17	0	0	10	0	1	0	0	9	76
6	2022	24th August	28	3	10	0	0	9	0	2	0	0	10	62
6	2022	25th August	81	5	14	0	0	2	0	0	0	0	0	102
6	2022	24th Sept	22	4	7	0	0	2	0	1	0	0	2	38
6	2022	25th Sept	29	1	1	0	0	0	0	0	0	0	2	33
6	2022	26th Sept	42	0	8	0	0	2	0	2	0	0	4	58
6	2022	27th Sept	11	0	1	0	0	0	0	0	0	0	0	12
6	2022	28th Sept	10	0	0	0	0	3	0	0	0	0	7	20
6	2022	29th Sept	20	2	6	0	0	4	0	1	0	0	5	38
6	2022	30th Sept	43	2	19	0	0	1	0	0	0	0	1	66
6	2022	1st October	96	1	16	0	0	6	0	1	0	0	9	129

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
6	2022	2nd October	37	8	27	0	0	5	0	0	0	0	9	86
6	2022	3rd October	144	1	13	0	0	0	0	0	0	0	0	158
7	2022	5th May	31	60	37	0	0	0	0	0	0	0	10	138
7	2022	6th May	6	3	12	0	0	0	0	0	0	0	11	32
7	2022	7th May	22	151	136	0	1	1	0	0	0	0	10	321
7	2022	8th May	48	10	21	0	0	0	0	0	0	0	6	85
7	2022	9th May	9	67	32	0	3	0	0	0	0	0	3	114
7	2022	10th May	23	17	14	0	0	0	0	0	0	0	4	58
7	2022	11th May	14	102	41	0	4	0	0	0	0	0	20	181
7	2022	12th May	27	45	41	0	2	0	0	0	0	0	6	121
7	2022	13th May	40	138	114	1	8	0	0	0	0	0	10	311
7	2022	14th May	5	90	73	0	0	2	0	0	0	0	9	179
7	2022	15th May	42	95	131	0	4	2	0	0	0	0	7	281
7	2022	16th May	23	2	8	0	0	0	0	0	0	0	1	34
7	2022	17th May	19	4	11	0	0	0	0	0	0	0	6	40
7	2022	18th May	2	3	6	0	0	0	0	0	0	0	12	23
7	2022	19th May	19	27	15	1	0	1	0	1	0	0	4	68
7	2022	20th May	19	25	45	0	1	3	0	0	0	0	8	101
7	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
7	2022	3rd July	0	4	17	0	0	0	0	0	0	0	4	25
7	2022	4th July	10	1	19	0	0	0	0	0	0	0	5	35
7	2022	5th July	13	4	36	0	0	0	0	0	0	0	5	58
7	2022	6th July	8	0	4	0	0	0	0	0	0	0	6	18
7	2022	7th July	7	13	58	0	0	0	0	1	0	0	4	83
7	2022	8th July	6	5	33	0	0	0	0	0	0	0	6	50
7	2022	9th July	13	39	75	0	0	0	0	1	0	0	7	135
7	2022	10th July	8	10	45	0	0	0	0	0	0	0	19	82
7	2022	11th July	6	10	75	0	0	0	0	0	0	0	4	95
7	2022	12th July	5	5	31	0	0	0	0	0	0	0	6	47
7	2022	16th August	14	4	12	0	0	2	0	1	0	0	23	56
7	2022	17th August	57	6	57	0	0	0	0	0	0	0	22	142
7	2022	18th August	42	4	33	0	0	1	0	0	0	0	25	105
7	2022	19th August	45	5	61	0	0	5	0	0	0	0	10	126
7	2022	20th August	58	15	101	0	2	2	0	2	0	0	20	200
7	2022	21st August	55	11	79	0	3	1	0	0	0	0	16	165
7	2022	22nd August	49	19	53	0	0	0	0	0	0	0	37	158
7	2022	23rd August	56	10	72	0	0	1	0	0	0	0	14	153
7	2022	24th August	15	4	32	0	0	2	0	0	0	0	21	74

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
7	2022	25th August	36	7	36	0	0	1	0	3	0	0	37	120
7	2022	24th Sept	213	104	24	0	0	3	0	0	0	0	6	350
7	2022	25th Sept	174	8	2	0	0	1	0	0	0	0	1	186
7	2022	26th Sept	312	0	4	0	0	0	0	0	0	0	2	318
7	2022	27th Sept	204	0	1	0	0	1	0	0	0	0	2	208
7	2022	28th Sept	42	1	2	0	0	1	0	0	0	0	8	54
7	2022	29th Sept	85	4	7	0	0	2	0	1	0	0	34	133
7	2022	30th Sept	176	1	56	0	0	1	0	1	0	0	3	238
7	2022	1st October	144	33	38	0	0	2	0	2	0	0	40	259
7	2022	2nd October	170	13	35	0	0	3	0	1	0	0	17	239
7	2022	3rd October	218	1	10	0	0	0	0	0	0	0	3	232
7	2022	19th October	2	1	144	0	0	0	0	0	0	0	0	147
7	2022	20th October	15	0	1	0	0	0	0	0	0	0	0	16
7	2022	21st October	2	0	25	0	0	0	0	0	0	0	3	30
7	2022	22nd October	33	8	75	0	0	1	0	0	0	0	2	119
7	2022	23rd October	2	0	58	0	0	0	0	0	0	0	1	61
7	2022	24th October	0	0	29	0	0	0	0	0	0	0	1	30
7	2022	25th October	0	0	0	0	0	0	0	0	0	0	0	0
7	2022	26th October	0	0	7	0	0	0	0	0	0	0	0	7

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
7	2022	27th October	0	0	1	0	0	0	0	0	0	0	0	1
7	2022	28th October	1	0	9	0	0	1	0	0	0	0	1	12
7	2022	29th October	0	0	7	0	0	0	0	0	0	0	3	10
8	2022	22nd April	35	32	450	0	3	0	0	0	0	0	5	525
8	2022	23rd April	19	17	335	0	3	0	0	0	0	0	9	383
8	2022	24th April	27	3	18	0	0	2	0	0	0	0	8	58
8	2022	25th April	82	21	177	0	2	6	0	0	0	0	2	290
8	2022	26th April	21	5	24	0	0	0	0	0	0	0	5	55
8	2022	27th April	57	24	37	0	3	2	0	0	0	0	10	133
8	2022	28th April	72	30	669	0	0	1	0	0	0	0	5	777
8	2022	29th April	46	41	76	0	7	3	0	1	0	1	10	185
8	2022	30th April	25	5	19	0	0	0	0	0	0	0	2	51
8	2022	1st May	58	22	57	0	0	2	0	0	0	0	4	143
8	2022	2nd May	79	36	64	0	5	2	0	0	0	0	12	198
8	2022	3rd May	75	37	92	0	2	3	0	0	0	0	12	221
8	2022	4th May	46	12	20	0	2	1	0	0	0	0	16	97
8	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
8	2022	3rd July	3	0	78	0	0	1	0	1	0	0	3	86
8	2022	4th July	9	1	71	0	0	0	0	0	0	0	3	84

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
8	2022	5th July	19	3	85	0	0	1	0	0	0	0	4	112
8	2022	6th July	11	0	3	0	0	0	0	0	0	0	2	16
8	2022	7th July	6	6	97	0	0	0	0	0	0	0	4	113
8	2022	8th July	7	4	38	0	0	0	0	1	0	0	12	62
8	2022	9th July	20	20	141	0	0	3	0	6	0	0	21	211
8	2022	10th July	11	8	129	0	0	1	0	5	0	0	19	173
8	2022	11th July	9	23	270	0	0	1	0	1	0	0	6	310
8	2022	12th July	8	8	104	0	0	1	0	5	0	0	15	141
8	2022	16th August	29	0	39	0	0	4	0	2	0	0	17	91
8	2022	17th August	27	5	28	0	0	1	0	0	0	0	10	71
8	2022	24th Sept	8	0	0	0	0	2	0	0	0	0	2	12
8	2022	25th Sept	14	0	1	0	0	0	0	0	0	0	0	15
8	2022	26th Sept	3	0	2	0	0	0	0	0	0	0	0	5
8	2022	27th Sept	3	0	1	0	0	0	0	1	0	0	1	6
8	2022	28th Sept	6	0	0	0	0	3	0	0	0	0	2	11
8	2022	29th Sept	3	1	3	0	0	5	0	0	0	0	3	15
8	2022	30th Sept	3	0	7	0	0	0	0	0	0	0	1	11
8	2022	1st October	10	2	4	0	0	6	0	1	0	0	2	25
8	2022	2nd October	6	16	10	0	0	4	0	3	0	0	8	47

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
8	2022	3rd October	31	0	3	0	0	0	0	0	0	0	0	34
8	2022	19th October	3	5	185	0	0	0	0	2	0	0	3	198
8	2022	20th October	0	5	6	0	0	1	0	1	0	0	1	14
8	2022	21st October	0	5	63	0	0	0	0	2	0	0	15	85
8	2022	22nd October	8	45	113	0	4	2	0	1	0	0	5	178
8	2022	23rd October	2	13	104	0	0	1	0	0	0	0	4	124
8	2022	24th October	0	9	133	0	1	0	0	1	0	0	11	155
8	2022	25th October	0	0	7	0	0	0	0	0	0	0	0	7
8	2022	26th October	0	0	86	0	0	0	0	0	0	0	3	89
8	2022	27th October	0	0	5	0	0	0	0	0	0	0	0	5
8	2022	28th October	0	3	7	0	0	1	0	0	0	0	0	11
8	2022	29th October	0	1	86	0	0	0	0	1	0	0	5	93
9	2022	22nd April	46	365	163	0	216	0	0	1	0	0	0	791
9	2022	23rd April	48	114	70	2	202	2	0	2	0	0	11	451
9	2022	24th April	54	42	78	0	77	1	0	0	0	0	4	256
9	2022	25th April	233	201	398	0	258	2	0	1	0	0	2	1095
9	2022	26th April	97	23	43	0	43	0	0	0	0	0	1	207
9	2022	27th April	117	70	190	1	229	1	0	1	0	0	5	614
9	2022	28th April	82	20	56	0	3	1	0	0	0	0	10	172

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
9	2022	29th April	60	159	786	0	69	1	0	0	0	0	9	1084
9	2022	30th April	21	42	95	0	4	0	0	0	0	0	0	162
9	2022	1st May	68	244	1106	1	188	0	0	0	0	0	2	1609
9	2022	2nd May	65	183	1269	0	68	0	0	0	0	0	2	1587
9	2022	3rd May	87	178	769	0	128	1	0	0	0	0	6	1169
9	2022	4th May	40	133	263	2	115	0	0	1	0	0	0	554
9	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
9	2022	3rd July	8	2	5	0	0	0	0	1	0	0	0	16
9	2022	4th July	17	0	4	0	0	0	0	0	0	0	0	21
9	2022	5th July	15	3	2	0	0	0	0	0	0	0	0	20
9	2022	6th July	5	2	0	0	0	0	0	0	0	0	0	7
9	2022	7th July	4	4	4	0	0	0	0	0	0	0	1	13
9	2022	8th July	9	4	2	0	0	1	0	0	0	0	1	17
9	2022	9th July	10	9	7	0	0	1	0	1	0	0	2	30
9	2022	10th July	25	4	15	0	0	2	0	0	0	0	7	53
9	2022	11th July	10	4	19	0	0	1	0	0	0	0	1	35
9	2022	12th July	33	0	2	0	0	2	0	0	0	0	5	42
9	2022	16th August	16	1	1	0	0	4	0	1	0	0	1	24
9	2022	17th August	248	2	11	0	0	0	0	0	0	0	2	263

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
9	2022	18th August	61	4	4	0	0	4	0	0	0	0	1	74
9	2022	19th August	68	10	8	0	0	3	0	0	0	0	2	91
9	2022	20th August	57	44	74	0	0	5	0	1	0	0	4	185
9	2022	21st August	146	5	16	0	0	5	0	0	0	0	2	174
9	2022	22nd August	86	15	19	0	0	10	0	1	0	0	1	132
9	2022	23rd August	105	9	8	0	0	8	0	1	0	0	2	133
9	2022	24th August	44	1	5	0	0	4	0	1	0	0	1	56
9	2022	25th August	141	10	21	0	0	5	0	0	0	0	5	182
9	2022	24th Sept	22	3	17	0	1	1	0	3	0	0	1	48
9	2022	25th Sept	77	6	10	0	0	1	0	0	0	0	0	94
9	2022	26th Sept	23	1	20	0	0	2	0	0	0	0	1	47
9	2022	27th Sept	7	0	9	0	0	1	0	0	0	0	2	19
9	2022	28th Sept	21	0	12	0	0	4	0	0	0	0	0	37
9	2022	29th Sept	20	3	15	0	1	2	0	0	0	0	4	45
9	2022	30th Sept	11	4	18	0	0	0	0	0	0	0	1	34
9	2022	1st October	24	20	11	0	0	1	0	0	0	0	1	57
9	2022	2nd October	81	81	72	0	1	6	0	1	0	0	4	246
9	2022	3rd October	10	0	2	0	0	0	0	0	0	0	1	13
9	2022	19th October	3	0	4	0	0	0	0	0	0	0	0	7

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
9	2022	20th October	11	0	2	0	0	0	0	0	0	0	0	13
9	2022	21st October	10	0	1	0	0	0	0	0	0	0	1	12
9	2022	22nd October	18	3	13	1	0	3	0	0	0	0	5	43
9	2022	23rd October	2	21	298	0	0	1	0	1	0	0	2	325
9	2022	24th October	2	2	58	0	0	1	0	1	0	0	1	65
9	2022	25th October	91	0	0	0	0	0	0	0	0	0	0	91
9	2022	26th October	30	0	7	0	0	0	0	0	0	0	0	37
9	2022	27th October	919	0	1	0	0	0	0	0	0	0	0	920
9	2022	28th October	352	0	2	0	0	0	0	2	0	0	1	357
9	2022	29th October	986	0	0	0	0	0	0	0	0	0	0	986
10	2022	22nd April	61	159	167	0	16	0	0	3	0	0	12	418
10	2022	23rd April	61	113	124	0	1	0	0	0	0	0	16	315
10	2022	24th April	56	44	62	0	0	2	0	0	0	0	18	182
10	2022	25th April	134	222	174	0	10	1	0	0	0	0	13	554
10	2022	26th April	71	7	30	0	2	0	0	0	0	0	12	122
10	2022	27th April	117	52	88	0	3	0	0	0	0	0	27	287
10	2022	28th April	151	18	42	0	0	0	0	0	0	1	24	236
10	2022	29th April	66	162	98	0	7	0	0	1	0	0	32	366
10	2022	30th April	30	49	7	0	0	0	0	0	0	0	2	88

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
10	2022	1st May	42	17	23	0	0	0	0	0	0	0	1	83
10	2022	2nd May	166	177	135	0	2	1	0	0	0	0	33	514
10	2022	3rd May	95	146	117	0	6	0	0	2	0	0	26	392
10	2022	4th May	68	26	29	0	3	0	0	0	0	0	25	151
10	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
10	2022	3rd July	3	24	40	0	0	0	0	2	0	0	7	76
10	2022	4th July	3	2	82	0	0	0	0	0	0	0	7	94
10	2022	5th July	11	18	47	0	0	0	0	0	0	0	9	85
10	2022	6th July	9	2	13	0	0	0	0	1	0	0	3	28
10	2022	7th July	3	34	48	0	0	1	0	1	0	0	6	93
10	2022	8th July	4	14	49	0	0	1	0	0	0	0	3	71
10	2022	9th July	21	24	44	0	1	1	0	4	0	0	12	107
10	2022	10th July	13	20	49	0	0	0	0	1	0	0	10	93
10	2022	11th July	26	30	102	0	0	3	0	0	0	0	15	176
10	2022	12th July	8	15	73	0	0	2	0	3	0	0	12	113
10	2022	16th August	20	9	34	0	0	7	0	5	0	0	31	106
10	2022	17th August	81	10	58	0	0	1	0	0	0	0	26	176
10	2022	18th August	74	5	49	0	0	2	0	1	0	0	28	159
10	2022	19th August	49	11	115	0	0	1	0	0	0	0	27	203

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
10	2022	20th August	53	40	100	0	0	2	0	1	0	0	49	245
10	2022	21st August	74	29	215	0	0	7	0	2	0	0	50	377
10	2022	22nd August	38	33	168	0	0	3	0	0	0	0	40	282
10	2022	23rd August	46	33	75	0	6	4	0	1	0	0	45	210
10	2022	24th August	54	5	36	0	0	3	0	1	0	0	43	142
10	2022	25th August	27	7	191	0	0	3	0	0	0	0	40	268
10	2022	24th Sept	15	2	17	0	0	1	0	1	0	0	16	52
10	2022	25th Sept	26	0	8	0	0	1	0	0	0	0	1	36
10	2022	26th Sept	7	0	19	0	0	0	0	0	0	0	10	36
10	2022	27th Sept	6	0	1	0	0	0	0	0	0	0	2	9
10	2022	28th Sept	4	0	5	0	0	4	0	1	0	0	9	23
10	2022	29th Sept	20	14	11	0	0	2	0	0	0	0	21	68
10	2022	30th Sept	17	11	11	0	1	0	0	0	0	0	11	51
10	2022	1st October	6	7	15	0	0	4	0	0	0	0	9	41
10	2022	2nd October	0	0	0	0	0	0	0	0	0	0	0	0
10	2022	3rd October	0	0	0	0	0	0	0	0	0	0	0	0
10	2022	19th October	0	8	64	0	1	0	0	0	0	0	8	81
10	2022	20th October	0	1	9	0	0	0	0	0	0	0	1	11
10	2022	21st October	0	6	35	0	0	2	0	0	0	0	6	49

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
10	2022	22nd October	7	19	30	0	0	0	0	0	0	0	12	68
10	2022	23rd October	0	2	35	0	0	0	0	1	0	0	7	45
10	2022	24th October	0	3	86	0	0	0	0	1	0	0	0	90
10	2022	25th October	0	0	3	0	0	0	0	0	0	0	0	3
10	2022	26th October	0	0	25	0	0	1	0	0	0	0	4	30
10	2022	27th October	0	0	2	0	0	0	0	0	0	0	0	2
10	2022	28th October	1	9	2	0	0	0	0	0	0	0	1	13
10	2022	29th October	1	5	62	0	0	0	0	0	0	0	3	71
11	2022	22nd April	60	94	635	0	3	3	0	0	0	0	6	801
11	2022	23rd April	77	69	586	0	17	0	0	0	0	0	2	751
11	2022	24th April	121	91	461	0	1	0	0	0	0	0	5	679
11	2022	25th April	139	79	1046	0	5	1	0	0	0	0	3	1273
11	2022	26th April	54	33	356	0	4	0	0	0	0	0	5	452
11	2022	27th April	86	130	819	0	14	1	0	0	0	0	5	1055
11	2022	28th April	93	35	222	0	1	0	0	0	0	0	14	365
11	2022	29th April	90	46	246	0	6	2	0	0	0	0	6	396
11	2022	30th April	40	17	77	0	2	0	0	0	0	0	1	137
11	2022	1st May	43	0	3	0	0	0	0	0	0	0	0	46
11	2022	2nd May	238	58	163	0	1	1	0	0	0	0	8	469

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
11	2022	3rd May	76	98	144	0	1	0	0	0	0	0	13	332
11	2022	4th May	95	48	227	0	3	0	0	0	0	0	9	382
11	2022	7th July	7	62	87	0	0	0	0	0	0	0	18	174
11	2022	8th July	6	55	67	0	1	0	0	1	0	0	8	138
11	2022	9th July	15	30	84	0	1	3	0	7	0	0	17	157
11	2022	10th July	40	26	203	1	0	2	0	0	0	0	5	277
11	2022	11th July	54	45	155	0	2	1	0	0	0	0	9	266
11	2022	12th July	13	24	72	1	0	2	0	3	0	0	7	122
11	2022	16th August	6	21	196	0	0	0	0	7	0	0	28	258
11	2022	17th August	90	56	187	0	0	4	0	0	0	0	10	347
11	2022	18th August	54	22	405	0	0	3	0	1	0	0	17	502
11	2022	19th August	38	30	266	0	1	0	0	0	0	0	14	349
11	2022	20th August	66	38	290	0	2	3	0	1	0	0	19	419
11	2022	21st August	48	42	390	0	1	4	0	0	0	1	16	502
11	2022	22nd August	31	50	416	0	0	5	0	0	0	0	17	519
11	2022	23rd August	62	43	262	0	3	10	0	0	0	0	21	401
11	2022	24th August	28	40	254	0	1	5	0	0	0	0	7	335
11	2022	25th August	68	42	387	0	0	2	0	4	0	0	23	526
11	2022	24th Sept	22	3	17	0	1	1	0	3	0	0	1	48

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
11	2022	25th Sept	77	6	10	0	0	1	0	0	0	0	0	94
11	2022	26th Sept	23	1	20	0	0	2	0	0	0	0	1	47
11	2022	27th Sept	7	0	9	0	0	1	0	0	0	0	2	19
11	2022	28th Sept	21	0	12	0	0	4	0	0	0	0	0	37
11	2022	29th Sept	20	3	15	0	1	2	0	0	0	0	4	45
11	2022	30th Sept	11	4	18	0	0	0	0	0	0	0	1	34
11	2022	1st October	24	20	11	0	0	1	0	0	0	0	1	57
11	2022	2nd October	81	81	72	0	1	6	0	1	0	0	4	246
11	2022	3rd October	10	0	2	0	0	0	0	0	0	0	1	13
11	2022	19th October	0	7	61	0	0	0	0	0	0	0	1	69
11	2022	20th October	2	3	35	0	0	0	0	0	0	0	1	41
11	2022	21st October	2	21	105	0	0	2	0	0	0	0	1	131
11	2022	22nd October	2	180	561	0	0	1	0	0	0	0	4	748
11	2022	23rd October	18	63	226	0	0	0	0	0	0	0	1	308
11	2022	24th October	1	15	167	0	0	0	0	0	0	0	3	186
11	2022	25th October	0	1	21	0	0	0	0	0	0	0	0	22
11	2022	26th October	0	2	95	0	0	0	0	0	0	0	1	98
11	2022	27th October	0	0	31	0	0	0	0	0	0	0	1	32
11	2022	28th October	1	8	149	0	0	0	0	0	0	0	7	165

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
11	2022	29th October	0	1	25	0	0	0	0	0	0	0	0	26
12	2022	22nd April	34	51	233	0	0	0	0	1	0	0	6	325
12	2022	23rd April	54	43	187	0	1	0	0	1	0	0	12	298
12	2022	24th April	40	27	169	0	1	0	0	0	0	0	10	247
12	2022	25th April	96	76	361	0	1	1	0	0	0	0	9	544
12	2022	26th April	50	16	66	0	0	0	0	1	0	0	8	141
12	2022	27th April	95	45	148	0	1	0	0	1	0	0	7	297
12	2022	28th April	55	12	193	0	3	0	0	2	0	0	8	273
12	2022	29th April	49	59	158	0	2	1	0	0	0	0	12	281
12	2022	30th April	16	0	16	0	0	0	0	0	0	0	0	32
12	2022	1st May	41	0	0	0	0	0	0	0	0	0	0	41
12	2022	2nd May	150	66	184	0	4	1	0	1	0	0	12	418
12	2022	3rd May	123	43	214	0	1	0	0	1	0	0	14	396
12	2022	4th May	59	36	153	0	1	0	0	1	0	0	5	255
12	2022	2nd July	0	0	0	0	0	0	0	0	0	0	0	0
12	2022	3rd July	114	65	280	0	14	4	0	14	0	0	7	498
12	2022	4th July	25	58	156	0	5	0	0	11	0	0	11	266
12	2022	5th July	46	47	159	2	2	0	0	23	0	0	15	294
12	2022	6th July	28	21	68	0	0	0	0	5	0	0	10	132

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
12	2022	7th July	24	46	121	0	2	0	0	0	0	0	16	209
12	2022	8th July	23	58	186	0	0	0	0	1	0	0	15	283
12	2022	9th July	28	49	214	0	1	2	0	3	0	0	11	308
12	2022	10th July	107	68	289	0	1	0	0	1	0	0	13	479
12	2022	11th July	144	59	438	1	9	1	0	1	0	0	22	675
12	2022	12th July	26	76	284	0	1	0	0	3	0	0	3	393
12	2022	16th August	11	16	290	0	0	0	0	0	0	0	24	341
12	2022	17th August	109	56	486	0	5	3	0	2	0	0	19	680
12	2022	18th August	67	44	589	0	0	0	0	6	0	0	20	726
12	2022	19th August	121	58	1044	0	3	3	0	0	0	0	18	1247
12	2022	20th August	50	65	683	0	5	7	0	1	0	0	14	825
12	2022	21st August	75	73	692	0	1	6	0	0	0	0	20	867
12	2022	22nd August	84	131	663	0	0	3	0	2	0	0	23	906
12	2022	23rd August	69	78	453	0	1	5	0	1	0	0	19	626
12	2022	24th August	61	29	368	0	13	1	0	1	0	0	10	483
12	2022	25th August	45	98	504	0	4	2	0	0	0	0	21	674
12	2022	24th Sept	7	6	76	0	0	2	0	1	0	0	11	103
12	2022	25th Sept	20	7	67	0	0	0	0	0	0	0	6	100
12	2022	26th Sept	5	4	67	0	0	1	0	0	0	0	4	81

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
12	2022	27th Sept	1	1	28	0	0	0	0	0	0	0	12	42
12	2022	28th Sept	3	0	73	0	0	0	0	0	0	0	6	82
12	2022	29th Sept	11	10	68	0	2	0	0	1	0	0	21	113
12	2022	30th Sept	32	14	188	0	0	0	0	0	0	0	6	240
12	2022	1st October	22	31	268	1	0	1	0	0	0	0	8	331
12	2022	2nd October	6	31	99	1	0	1	1	0	0	0	8	147
12	2022	3rd October	3	7	200	0	0	0	0	0	0	0	3	213
12	2022	19th October	0	3	85	0	0	0	0	0	0	0	1	89
12	2022	20th October	0	4	49	0	0	0	0	2	0	0	2	57
12	2022	21st October	1	0	102	0	0	0	0	0	0	0	4	107
12	2022	22nd October	10	58	104	0	1	0	0	0	0	0	9	182
12	2022	23rd October	0	13	109	0	0	1	0	2	0	0	8	133
12	2022	24th October	0	24	229	0	0	0	0	0	0	0	4	257
12	2022	25th October	0	0	1	0	0	0	0	0	0	0	0	1
12	2022	26th October	0	1	6	0	0	0	0	0	0	0	0	7
12	2022	27th October	0	0	10	0	0	0	0	0	0	0	0	10
12	2022	28th October	0	0	15	0	0	0	0	0	0	0	0	15
12	2022	29th October	0	0	17	0	0	0	0	0	0	0	0	17
1	2023	20th April	21	15	108	0	0	1	0	0	0	0	18	163

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
1	2023	21st April	74	24	92	0	2	0	0	0	0	1	14	207
1	2023	22nd April	13	6	63	0	1	0	0	0	0	0	26	109
1	2023	23rd April	49	50	120	0	5	0	0	0	0	0	15	239
1	2023	24th April	12	4	45	0	1	0	0	1	0	0	18	81
1	2023	25th April	45	16	88	0	0	0	0	0	0	0	13	162
1	2023	26th April	70	52	356	0	1	0	0	0	0	0	13	492
1	2023	27th April	114	4	32	0	0	0	0	0	0	0	0	150
1	2023	28th April	66	7	46	0	1	0	0	0	0	0	5	125
1	2023	29th April	120	315	400	0	31	1	0	0	0	0	14	881
1	2023	30th April	76	62	155	0	4	3	0	0	0	0	18	318
1	2023	1st May	54	180	299	2	50	1	0	0	0	0	17	603
1	2023	2nd May	49	80	164	1	17	0	0	0	0	0	18	329
1	2023	3rd July	34	19	53	0	0	0	0	0	0	0	30	136
1	2023	4th July	10	15	25	0	0	0	0	0	0	0	29	79
1	2023	5th July	34	53	116	0	0	0	0	0	0	0	16	219
1	2023	6th July	9	0	0	0	0	0	0	0	0	0	0	9
1	2023	7th July	150	6	11	0	0	0	0	0	0	0	3	170
1	2023	8th July	6	44	92	0	2	0	0	0	0	0	30	174
1	2023	9th July	21	22	91	0	0	0	0	0	0	0	12	146

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
1	2023	10th July	18	21	75	0	0	0	0	1	0	0	22	137
1	2023	11th July	19	14	44	0	0	0	0	0	0	0	30	107
1	2023	12th July	29	33	79	0	1	0	0	0	0	0	24	166
1	2023	13th July	70	42	180	0	0	0	0	0	0	0	20	312
1	2023	14th July	53	14	85	0	0	0	0	0	0	0	35	187
1	2023	15th July	10	4	29	0	0	0	0	1	0	0	25	63
1	2023	22nd August	179	82	247	0	0	4	0	0	0	0	12	524
1	2023	23rd August	73	53	198	0	0	1	0	0	0	0	22	347
1	2023	24th August	105	28	169	0	0	4	0	0	0	0	24	330
1	2023	25th August	36	39	310	0	1	0	0	0	0	0	30	416
1	2023	26th August	32	61	296	0	0	0	0	0	0	0	34	423
1	2023	27th August	49	57	281	0	0	0	0	0	0	0	37	424
1	2023	28th August	146	64	127	0	0	0	0	0	0	0	14	351
1	2023	29th August	62	52	203	0	2	1	0	0	0	0	31	351
1	2023	30th August	165	147	130	0	0	0	0	0	0	0	16	458
1	2023	31st August	130	83	275	0	2	2	0	0	0	0	17	509
1	2023	1st Sept	87	23	171	0	24	0	0	0	0	0	16	321
1	2023	2nd Sept	100	15	154	0	0	2	0	0	0	0	15	286
1	2023	3rd Sept	49	16	85	0	1	5	0	0	0	0	11	167

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
1	2023	4th Sept	45	67	459	0	1	11	0	0	0	0	32	615
1	2023	5th Sept	166	91	323	1	2	4	0	0	0	0	23	610
2	2023	20th April	25	7	16	0	0	2	0	0	0	0	21	71
2	2023	21st April	36	9	15	0	0	0	0	0	0	0	28	88
2	2023	22nd April	35	6	10	0	0	0	0	0	0	0	18	69
2	2023	23rd April	24	7	17	0	0	1	0	1	0	0	22	72
2	2023	24th April	10	5	4	0	0	1	0	0	0	0	19	39
2	2023	25th April	43	10	24	0	1	1	0	0	0	0	16	95
2	2023	26th April	140	9	28	0	0	2	0	0	0	0	9	188
2	2023	27th April	158	13	39	0	1	0	0	0	0	0	21	232
2	2023	28th April	64	10	44	0	0	0	0	0	0	0	30	148
2	2023	29th April	112	11	36	0	2	0	0	0	0	0	18	179
2	2023	30th April	100	40	65	0	2	0	0	0	0	0	36	243
2	2023	1st May	46	20	37	0	2	0	0	0	0	0	44	149
2	2023	2nd May	127	19	40	0	0	0	0	0	0	0	20	206
2	2023	3rd July	6	25	181	0	0	0	0	1	0	0	17	230
2	2023	4th July	13	15	82	0	0	0	0	0	0	0	6	116
2	2023	5th July	52	25	36	0	0	0	0	0	0	0	9	122
2	2023	6th July	6	3	12	0	0	0	0	0	0	0	4	25

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
2	2023	7th July	11	1	1	0	0	0	0	0	0	0	1	14
2	2023	8th July	24	19	47	0	0	3	0	0	0	0	20	113
2	2023	9th July	22	4	9	0	0	0	0	0	0	0	8	43
2	2023	10th July	13	4	20	0	0	0	0	0	0	0	11	48
2	2023	11th July	28	5	19	0	0	0	0	0	0	0	6	58
2	2023	12th July	12	10	68	0	0	0	0	0	0	1	20	111
2	2023	13th July	48	6	22	1	0	0	0	0	0	0	17	94
2	2023	14th July	15	4	16	0	0	0	0	0	0	0	22	57
2	2023	15th July	4	1	11	0	0	0	0	0	0	0	14	30
2	2023	22nd August	90	49	91	0	1	6	0	0	0	0	25	262
2	2023	23rd August	40	20	61	0	0	3	0	0	0	0	33	157
2	2023	24th August	67	32	46	0	0	1	0	0	0	0	25	171
2	2023	25th August	40	14	60	0	0	3	0	0	0	0	31	148
2	2023	26th August	39	14	41	0	0	0	0	0	0	0	35	129
2	2023	27th August	64	17	55	0	1	1	0	0	0	0	25	163
2	2023	28th August	77	21	52	0	0	0	0	0	0	0	10	160
2	2023	29th August	66	20	80	0	1	4	0	0	0	0	40	211
2	2023	30th August	128	23	88	0	0	1	0	0	0	0	12	252
2	2023	31st August	96	34	77	0	0	4	0	0	0	0	25	236

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
2	2023	1st Sept	54	35	53	0	3	3	0	0	0	0	25	173
2	2023	2nd Sept	68	20	70	0	3	4	0	0	0	0	30	195
2	2023	3rd Sept	18	24	29	0	2	8	0	0	0	0	20	101
2	2023	4th Sept	50	93	96	0	2	4	0	0	0	0	34	279
2	2023	5th Sept	157	42	96	0	1	8	0	0	0	0	33	337
3	2023	20th April	8	1	7	0	0	0	0	0	0	0	7	23
3	2023	21st April	19	1	1	0	1	0	0	0	0	0	4	26
3	2023	22nd April	1	1	8	0	0	0	0	0	0	0	2	12
3	2023	23rd April	2	7	3	0	0	3	0	1	0	0	3	19
3	2023	24th April	2	1	0	0	1	0	0	0	0	0	1	5
3	2023	25th April	27	4	6	0	0	0	0	0	0	0	7	44
3	2023	26th April	89	6	16	0	1	0	0	0	0	0	3	115
3	2023	27th April	50	0	1	0	0	0	0	0	0	0	0	51
3	2023	28th April	12	0	1	0	0	0	0	0	0	0	0	13
3	2023	29th April	159	24	25	0	1	0	0	0	0	0	3	212
3	2023	30th April	41	12	24	0	3	1	0	0	0	0	3	84
3	2023	1st May	18	13	27	0	0	1	0	0	0	0	6	65
3	2023	2nd May	85	15	22	0	1	1	0	0	0	0	10	134
3	2023	3rd July	2	0	4	0	0	0	0	0	0	0	1	7

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
3	2023	4th July	5	2	4	0	0	0	0	0	0	0	1	12
3	2023	5th July	17	8	7	0	0	1	0	0	0	0	0	33
3	2023	6th July	10	0	1	0	0	0	0	0	0	0	0	11
3	2023	7th July	19	0	2	0	0	0	0	0	0	0	0	21
3	2023	8th July	5	0	11	0	0	0	0	0	0	0	1	17
3	2023	9th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	10th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	11th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	12th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	13th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	14th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	15th July	0	0	0	0	0	0	0	0	0	0	0	0
3	2023	22nd August	59	5	14	0	0	4	0	0	0	0	6	88
3	2023	23rd August	18	5	14	0	0	5	0	0	0	0	4	46
3	2023	24th August	29	3	12	0	0	4	0	0	0	0	2	50
3	2023	25th August	10	0	3	0	0	0	0	0	0	0	0	13
3	2023	26th August	13	2	9	0	0	1	0	0	0	0	2	27
3	2023	27th August	21	0	4	0	0	2	0	0	0	0	1	28
3	2023	28th August	44	9	11	0	0	0	0	1	0	0	1	66

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
3	2023	29th August	15	2	13	0	0	5	0	0	0	0	6	41
3	2023	30th August	96	7	15	0	0	1	0	0	0	0	1	120
3	2023	31st August	31	17	21	0	0	6	0	0	0	0	5	80
3	2023	1st Sept	20	8	5	0	0	3	0	0	0	0	3	39
3	2023	2nd Sept	40	9	9	0	1	6	0	0	0	0	6	71
3	2023	3rd Sept	13	6	7	0	0	15	0	0	0	0	2	43
3	2023	4th Sept	31	29	31	0	1	6	0	0	0	0	9	107
3	2023	5th Sept	69	16	33	0	2	8	0	0	0	0	6	134
4	2023	3rd July	2	3	7	0	0	0	0	0	0	0	9	21
4	2023	4th July	4	0	3	0	0	0	0	1	0	0	4	12
4	2023	5th July	8	2	8	0	0	0	0	0	0	0	2	20
4	2023	6th July	0	0	0	0	0	0	0	0	0	0	0	0
4	2023	7th July	0	0	1	0	0	0	0	0	0	0	0	1
4	2023	8th July	0	1	1	0	0	0	0	0	0	0	3	5
4	2023	9th July	11	0	7	0	0	0	0	0	0	0	1	19
4	2023	10th July	2	1	3	0	0	0	0	0	0	0	4	10
4	2023	11th July	6	0	3	0	0	0	0	0	0	0	4	13
4	2023	12th July	4	3	2	0	0	0	0	0	0	0	5	14
4	2023	13th July	12	5	6	0	0	1	0	0	0	0	10	34

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
4	2023	14th July	3	1	3	0	0	0	0	0	0	0	8	15
4	2023	15th July	6	2	0	0	0	0	0	0	0	0	5	13
4	2023	22nd August	53	16	36	0	1	3	0	13	0	0	49	171
4	2023	23rd August	39	8	30	0	0	3	0	1	0	0	33	114
4	2023	24th August	29	6	13	0	0	2	0	1	0	0	9	60
4	2023	25th August	16	3	6	0	0	0	0	0	0	0	2	27
4	2023	26th August	38	5	12	0	0	0	0	0	0	0	12	67
4	2023	27th August	28	6	20	0	0	1	0	0	0	0	19	74
4	2023	28th August	49	11	23	0	0	1	0	0	0	0	14	98
4	2023	29th August	37	9	42	1	1	2	0	2	0	0	35	129
4	2023	30th August	68	5	31	0	0	0	0	0	0	0	13	117
4	2023	31st August	45	20	28	0	1	7	0	2	0	0	24	127
4	2023	1st Sept	18	26	17	0	0	7	0	0	0	0	18	86
4	2023	2nd Sept	40	15	25	0	1	2	0	0	0	0	19	102
4	2023	3rd Sept	11	9	10	0	2	11	0	0	0	0	10	53
4	2023	4th Sept	35	39	53	0	3	5	0	0	0	0	20	155
4	2023	5th Sept	77	18	29	0	0	5	0	3	0	0	20	152
5	2023	20th April	5	0	2	0	0	1	0	4	0	0	33	45
5	2023	21st April	25	2	2	0	0	5	0	4	0	0	36	74

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
5	2023	22nd April	18	3	2	0	0	5	0	3	0	0	60	91
5	2023	23rd April	12	3	2	1	0	16	0	2	0	0	91	127
5	2023	24th April	5	0	0	0	0	0	0	0	0	0	2	7
5	2023	25th April	30	2	3	0	0	18	0	8	0	0	98	159
5	2023	26th April	598	8	7	0	2	19	0	9	0	0	120	763
5	2023	27th April	142	5	6	0	0	7	0	1	0	0	37	198
5	2023	28th April	32	7	3	0	0	36	0	2	0	0	55	135
5	2023	29th April	120	6	10	0	0	3	0	4	0	0	37	180
5	2023	30th April	112	1	6	0	0	16	0	0	0	0	27	162
5	2023	1st May	25	7	9	1	0	6	0	0	0	0	16	64
5	2023	2nd May	75	3	13	0	0	0	0	2	0	0	48	141
5	2023	18th July	2	3	1	0	0	0	0	0	0	0	1	7
5	2023	19th July	3	0	0	0	0	0	0	0	0	0	1	4
5	2023	20th July	13	1	0	0	0	0	0	0	0	0	3	17
5	2023	21st July	6	0	1	0	0	0	0	0	0	0	2	9
5	2023	22nd July	1	0	0	0	0	0	0	0	0	0	0	1
5	2023	23rd July	8	0	0	0	0	0	0	0	0	0	1	9
5	2023	24th July	9	2	1	0	0	3	0	1	0	0	14	30
5	2023	25th July	67	0	4	0	0	0	0	0	0	0	19	90

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
5	2023	26th July	5	0	4	0	0	1	0	0	0	0	6	16
5	2023	27th July	66	4	8	0	0	0	0	0	0	0	9	87
5	2023	28th July	91	7	7	0	0	1	0	0	0	0	6	112
5	2023	29th July	33	1	0	0	0	1	0	1	0	0	3	39
5	2023	30th July	7	0	0	0	0	0	0	0	0	0	3	10
5	2023	31st July	9	2	1	0	0	0	0	0	0	0	0	12
5	2023	1st August	52	2	8	0	1	0	0	0	0	0	0	63
5	2023	2nd August	3	0	0	0	0	0	0	0	0	0	0	3
5	2023	3rd August	0	0	0	0	0	0	0	0	0	0	0	0
5	2023	4th August	0	0	0	0	0	0	0	0	0	0	0	0
5	2023	5th August	34	0	2	0	0	0	0	0	0	0	1	37
5	2023	6th August	13	0	0	0	0	0	0	0	0	0	0	13
5	2023	7th August	20	0	1	0	0	0	0	0	0	0	0	21
5	2023	8th August	20	0	0	0	0	0	0	0	0	0	0	20
5	2023	9th August	1	0	0	0	0	0	0	0	0	0	0	1
5	2023	10th August	36	1	1	0	0	0	0	0	0	0	0	38
5	2023	11th August	21	1	1	0	0	0	0	0	0	0	1	24
5	2023	12th August	12	1	1	0	0	0	0	0	0	0	0	14
5	2023	13th August	21	0	2	0	0	0	0	0	0	0	0	23

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
5	2023	14th August	24	0	1	0	0	1	0	0	0	0	0	26
5	2023	15th August	19	0	0	0	0	2	0	0	0	0	0	21
5	2023	16th August	24	0	0	0	0	0	0	0	0	0	0	24
5	2023	17th August	71	2	2	0	0	0	0	0	0	0	0	75
6	2023	20th April	9	1	6	0	1	0	0	0	0	0	6	23
6	2023	21st April	17	3	4	0	0	1	0	0	0	0	13	38
6	2023	22nd April	11	0	1	0	0	0	0	0	0	0	5	17
6	2023	23rd April	11	2	2	0	0	0	0	0	0	0	12	27
6	2023	24th April	3	0	0	0	0	1	0	0	0	0	6	10
6	2023	25th April	24	1	5	0	0	0	0	0	0	0	11	41
6	2023	26th April	79	3	4	0	2	1	0	0	0	0	6	95
6	2023	27th April	61	1	5	0	0	0	0	0	0	0	15	82
6	2023	28th April	24	3	3	0	1	0	0	0	0	0	13	44
6	2023	29th April	41	2	5	0	1	1	0	0	0	0	15	65
6	2023	30th April	68	14	16	0	0	0	0	1	0	0	24	123
6	2023	1st May	18	8	9	0	1	1	0	0	0	0	13	50
6	2023	2nd May	35	7	14	0	2	0	0	0	0	0	10	68
6	2023	3rd July	3	1	7	0	0	0	0	2	0	0	31	44
6	2023	4th July	10	4	6	0	0	1	0	0	0	0	22	43

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
6	2023	5th July	23	3	10	0	0	0	0	0	0	0	11	47
6	2023	6th July	1	0	0	0	0	0	0	0	0	0	0	1
6	2023	7th July	11	0	1	0	0	0	0	0	0	0	0	12
6	2023	8th July	7	6	1	0	0	0	0	1	0	0	21	36
6	2023	9th July	2	1	3	0	0	0	0	0	0	0	11	17
6	2023	10th July	14	3	6	0	0	2	0	0	0	0	16	41
6	2023	11th July	30	2	4	0	0	0	0	0	0	0	5	41
6	2023	12th July	19	1	3	0	0	0	0	1	0	1	19	44
6	2023	13th July	42	2	5	0	0	0	0	0	0	0	24	73
6	2023	14th July	18	1	4	0	0	0	0	1	0	0	10	34
6	2023	15th July	22	0	0	0	0	1	0	0	0	0	4	27
6	2023	16th July	13	2	7	0	0	0	0	0	0	0	25	47
6	2023	17th July	3	0	1	0	0	0	0	0	0	0	3	7
6	2023	18th July	0	0	0	0	0	0	0	0	0	0	0	0
6	2023	19th July	11	17	0	0	0	0	0	0	0	0	5	33
6	2023	20th July	11	15	14	0	0	0	0	0	0	0	3	43
6	2023	21st July	11	132	69	0	0	0	0	0	0	0	8	220
6	2023	22nd July	4	264	282	0	0	0	0	0	0	0	70	620
6	2023	23rd July	4	7	25	0	0	0	0	0	0	0	1	37

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
6	2023	24th July	4	6	16	0	0	0	0	1	0	0	1	28
6	2023	22nd August	33	16	24	0	1	6	0	0	0	0	36	116
6	2023	23rd August	46	9	14	0	0	2	0	0	0	0	37	108
6	2023	24th August	63	6	23	0	0	6	0	1	0	0	32	131
6	2023	25th August	59	1	6	0	0	0	0	0	0	0	4	70
6	2023	26th August	75	7	20	0	0	3	0	0	0	0	31	136
6	2023	27th August	73	7	25	1	0	4	0	0	0	0	26	136
6	2023	28th August	46	8	22	0	0	0	0	1	0	0	25	102
6	2023	29th August	41	5	22	0	1	1	0	0	0	0	35	105
6	2023	30th August	65	4	16	0	0	1	0	0	0	0	20	106
6	2023	31st August	44	11	19	0	0	3	0	0	0	0	24	101
6	2023	1st Sept	34	22	17	0	1	3	0	3	0	0	30	110
6	2023	2nd Sept	48	12	20	0	0	3	0	0	0	0	30	113
6	2023	3rd Sept	14	11	12	0	1	8	0	0	0	0	23	69
6	2023	4th Sept	57	36	39	0	0	9	0	0	0	0	37	178
6	2023	5th Sept	54	13	24	0	1	5	0	0	0	0	24	121
7	2023	20th April	9	0	3	0	0	4	0	0	0	0	8	24
7	2023	21st April	0	0	0	0	0	0	0	0	0	0	0	0
7	2023	22nd April	0	0	0	0	0	0	0	0	0	0	0	0

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
7	2023	23rd April	0	0	0	0	0	0	0	0	0	0	0	0
7	2023	24th April	0	0	0	0	0	0	0	0	0	0	0	0
7	2023	25th April	1	0	0	0	0	0	0	0	0	0	0	1
7	2023	26th April	33	2	0	0	0	1	0	0	0	0	0	36
7	2023	27th April	1	0	0	0	0	0	0	0	0	0	0	1
7	2023	28th April	0	0	0	0	0	0	0	0	0	0	0	0
7	2023	29th April	35	6	4	1	0	2	0	0	0	0	3	51
7	2023	30th April	39	6	14	4	0	5	0	0	0	0	7	75
7	2023	31st April	10	7	14	4	0	5	0	0	0	0	8	48
7	2023	32nd April	37	5	8	0	0	1	0	0	0	0	3	54
7	2023	3rd July	2	0	0	0	0	0	0	0	0	0	12	14
7	2023	4th July	6	2	2	0	0	0	0	0	0	0	5	15
7	2023	5th July	4	1	2	0	0	0	0	0	0	0	2	9
7	2023	6th July	1	0	2	0	0	0	0	0	0	0	17	20
7	2023	7th July	7	0	0	0	0	0	0	0	0	0	0	7
7	2023	8th July	2	3	7	0	0	0	0	0	0	0	13	25
7	2023	9th July	2	0	4	0	0	0	0	0	0	0	5	11
7	2023	10th July	0	1	2	0	0	0	0	0	0	0	12	15
7	2023	11th July	4	0	3	0	0	0	0	0	0	0	8	15

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
7	2023	12th July	4	4	2	0	0	0	0	0	0	0	12	22
7	2023	13th July	53	7	12	0	0	1	0	2	0	0	28	103
7	2023	14th July	12	0	3	0	0	0	0	0	0	0	12	27
7	2023	15th July	12	0	1	0	0	0	0	0	0	0	3	16
7	2023	16th July	6	0	1	0	0	0	0	0	0	0	3	12
7	2023	17th July	4	1	1	0	0	0	0	0	0	0	8	14
7	2023	22nd August	16	2	2	0	0	0	0	0	0	0	2	22
8	2023	20th April	19	1	8	0	0	1	0	1	0	0	17	47
8	2023	21st April	25	3	5	2	3	2	0	2	0	0	22	64
8	2023	22nd April	33	27	32	2	3	13	0	0	0	0	33	143
8	2023	23rd April	28	1	9	0	0	0	0	1	0	0	18	57
8	2023	24th April	2	0	0	0	0	0	0	1	0	0	1	4
8	2023	25th April	157	3	5	0	1	0	0	0	0	0	12	178
8	2023	26th April	488	21	15	0	1	0	0	5	0	0	14	544
8	2023	27th April	140	18	5	0	3	1	0	2	0	0	13	182
8	2023	28th April	62	1	0	0	1	4	0	0	0	0	3	71
8	2023	29th April	342	16	48	0	0	0	0	1	0	0	34	441
8	2023	30th April	147	15	18	2	3	1	0	2	0	0	28	216
8	2023	1st May	63	14	17	0	1	2	0	2	0	0	16	115

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
8	2023	2nd May	0	0	0	0	0	0	0	0	0	0	0	0
8	2023	3rd July	0	0	0	0	0	0	0	0	0	0	1	1
8	2023	22nd August	28	30	56	0	6	3	0	0	0	0	8	131
8	2023	23rd August	27	14	45	0	0	6	0	0	0	0	10	102
8	2023	24th August	40	14	24	0	0	2	0	0	0	0	2	82
8	2023	25th August	35	107	438	0	2	12	0	0	0	0	6	600
8	2023	26th August	30	67	424	0	0	3	0	0	0	0	8	532
8	2023	27th August	15	18	140	0	0	10	0	1	0	0	5	189
8	2023	28th August	286	15	94	0	0	0	0	0	0	0	7	402
8	2023	29th August	62	9	76	1	0	4	0	0	0	0	5	157
8	2023	30th August	1311	569	547	6	0	0	0	0	0	0	4	2437
9	2023	20th April	12	0	4	0	0	0	0	0	0	0	7	23
9	2023	21st April	13	1	0	0	0	3	0	0	0	0	14	31
9	2023	22nd April	17	2	0	0	1	0	0	0	0	0	1	21
9	2023	23rd April	17	1	0	0	0	0	0	0	0	0	13	31
9	2023	24th April	6	0	1	0	0	1	0	1	0	0	16	25
9	2023	25th April	55	3	8	0	1	2	0	1	0	0	6	76
9	2023	26th April	80	8	23	0	3	4	0	0	0	0	5	123
9	2023	27th April	27	2	5	0	0	2	0	0	0	0	12	48

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
9	2023	28th April	4	0	0	0	0	0	0	0	0	0	0	4
9	2023	29th April	45	4	3	0	0	1	0	0	0	0	4	57
9	2023	30th April	49	3	6	0	0	0	0	0	0	0	3	61
9	2023	1st May	18	1	2	0	0	1	0	0	0	0	8	30
9	2023	2nd May	0	0	0	0	0	0	0	0	0	0	3	3
9	2023	3rd July	6	0	2	0	0	0	0	0	0	0	1	9
9	2023	4th July	6	1	4	0	0	0	0	0	0	0	0	11
9	2023	5th July	10	2	2	0	0	0	0	0	0	0	0	14
9	2023	6th July	1	0	0	0	0	0	0	0	0	0	0	1
9	2023	7th July	19	0	0	0	0	0	0	0	0	0	0	19
9	2023	8th July	6	6	5	0	0	1	0	0	0	0	1	19
9	2023	9th July	11	0	7	0	0	0	0	0	0	0	1	19
9	2023	10th July	0	0	2	0	0	3	0	0	0	0	0	5
9	2023	11th July	5	0	0	0	0	0	0	0	0	0	1	6
9	2023	12th July	1	0	6	0	0	0	0	0	0	0	1	8
9	2023	13th July	20	2	5	0	0	0	0	0	0	0	1	28
9	2023	14th July	5	0	1	0	0	0	0	0	0	0	0	6
9	2023	15th July	1	0	0	0	0	0	0	0	0	0	0	1
9	2023	16th July	2	1	0	0	0	0	0	0	0	0	0	3

Detector	Year	Date	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Lesser Horseshoe	Natterer's Bat	Whiskered Bat	Daubenton's Bat	Unidentified Myotis	Total
9	2023	17th July	5	0	0	0	0	0	0	0	0	0	1	6
9	2023	22nd August	46	17	25	0	2	6	0	0	0	0	8	104
9	2023	23rd August	13	6	6	0	0	3	0	0	0	0	2	30
9	2023	24th August	8	0	3	0	0	3	0	0	0	0	3	17

1.4 EMERGENCE / TRANSECT DATA

Table 1-5: Weather data for walked surveys

Date	Sunset / sunrise	Start / finish	Temp	Wind speed km/h	Wind direction	Rain
07/07/2022	21:57	21:27	16	21	W	Sunny, no clouds
		00:12	13	10	W	Dry
08/07/2022	05:23	03:44	13	12	W	Light misty
		05:23	14	14	W	Dry
09/08/2022	21:12	20:42	20	16	WNW	Dry
		23:28	16	11	WNW	Dry
10/08/2022	06:06	04:04	11	14	NNW	Dry
		05:57	13	11	NNW	Dry
29/08/2022	20:30	19:59	20	16	SE	Dry
		22:54	13	4	E	Dry
30/08/2022	06:42	04:38	12	5	NE	Dry
		06:42	11	10	N	Dry
29/09/2022	19:16	18:44	13	1	N	Dry
		21:44	11	1	W	Dry
30/09/2022	07:33	05:30	11	5	W	Dry
		07:33	13	7	W	Drizzle
10/08/2023	21:11	21:00	16.7	0	N/A	Dry
		00:52	15.3	0	N/A	Dry
11/08/2023	06:10	04:10	15.6	1.3	S	Dry
		06:10	15	1.4	S	Dry
31/08/2023	20:25	20:15	16.5	0	N/A	Dry
		22:35	15.9	0	N/A	Dry
01/09/2023	06:45	04:45	13.6	0	N/A	Dry
		06:35	13	0	N/A	Dry

Table 1-6. Walked / emergence data

Survey period	Location	Contact number	Date	Time	Species	Details	Lat	Long
1	1	1	07/07/2022	22:26	Leisler's	Possibly	52.384276	-8.670784
1	1	2	07/07/2022	22:30	Leisler's	On detector no bats observed	52.38429	-8.670777
1	1	3	07/07/2022	22:38	Unidentified Pip	Passing	52.384266	-8.670805
1	1	4	07/07/2022	22:38	Unidentified Pip	Passing	52.384216	-8.670833
1	1	5	07/07/2022	22:39	Unidentified Pip	Passing	52.38421	-8.670812
1	T1		07/07/2022			Very little bat activity detected no area of high activity.		
1	T2		07/07/2022			Very little bat activity detected no area of high activity.		
2	T3		08/07/2022			Very little bat activity detected no area of high activity.		
2	2	6	08/07/2022	04:11	Unknown	Bat observed no id on detector	52.385932	-8.668024
2	2	7	08/07/2022	04:27	Unidentified Pip	On detector no bats observed	52.385874	-8.668027
2	2	8	08/07/2022	04:37	Soprano Pip	Commuting/passing over	52.385724	-8.668032
2	2	9	08/07/2022	04:43	Soprano Pip	Commuting/passing over	52.385897	-8.667944
3	3	12	09/08/2022	21:35	Soprano Pip	3 Soprano Pip Number of bats circling trees adjacent to house	52.38753	-8.658531
3	3	13	09/08/2022	21:38	Soprano Pip	1 Soprano Pip Flying around trees in front of house	52.387434	-8.658651
3	3	14	09/08/2022	21:41	Soprano Pip	2 Soprano Pip Flying around trees in front of house	52.387462	-8.658638
3	3	15	09/08/2022	21:42	Soprano Pip	2 Soprano Pip Flying around trees in front of house	52.387579	-8.658554
3	3	16	09/08/2022	21:44	Soprano Pip	1 Soprano Pip Flying around trees in front of house	52.387515	-8.658704
3	3	17	09/08/2022	21:45	Common Pip	1 Common Pip Flying around trees in front of house	52.387353	-8.658553
3	3	18	09/08/2022	21:47	Soprano Pip	1 Soprano Pip Flying around trees in front of house	52.387516	-8.65868
3	3	19	09/08/2022	21:54	Soprano Pip	1 Soprano Pip Flying around trees in front of house	52.387504	-8.658826

Survey period	Location	Contact number	Date	Time	Species	Details	Lat	Long
3	3	20	09/08/2022	21:55	Common Pip	1 Common Pip Flew overhead towards site	52.38742	-8.658849
3	3	21	09/08/2022	22:04	Soprano Pip	Flying around trees at front of house	52.387463	-8.658497
3	T4	22	09/08/2022	22:34	Common Pip	Flying off site	52.386072	-8.662092
3	T4	23	09/08/2022	22:36	Common Pip	Flying off site	52.386016	-8.662205
3	T4	24	09/08/2022	22:37	Leisler's		52.3861	-8.661784
3	T4	25	09/08/2022	23:10	Common Pip	Flying around milking parlour	52.385091	-8.676971
3	T4	26	09/08/2022	23:10	Soprano Pip	Flying around milk parlour	52.385149	-8.67704
3	T4	27	09/08/2022	23:11	Soprano Pip	Feeding at tree	52.385004	-8.677444
3	T4	28	09/08/2022	23:13	Soprano Pip	Flew into my head	52.38494	-8.677684
3	T4	29	09/08/2022	23:17	Leisler's		52.384181	-8.680298
3	T4	30	09/08/2022	23:19	Leisler's		52.383866	-8.681992
3	T4	31	09/08/2022	23:25	Soprano Pip	Multiple bats flying overhead	52.385015	-8.677105
4	4		10/08/2022			No bats	52.384871	-8.68249
5	5	1	29/08/2022	21:14	Soprano Pip	Flying north	52.395679	-8.68513
5	T5	2	29/08/2022	21:45	Soprano Pip	Feeding	52.3963	-8.6802
5	T5	3	29/08/2022	21:45	Leisler's		52.3963	-8.6802
5	T5	4	29/08/2022	21:47	Leisler's		52.396384	-8.679389
5	T5	5	29/08/2022	21:50	Leisler's		52.396578	-8.678388
5	T5	6	29/08/2022	21:55	Soprano Pip	Feeding	52.396186	-8.680013
5	T5	7	29/08/2022	22:05	Common Pip	Feeding	52.397322	-8.676489
5	T5	8	29/08/2022	22:14	Common Pip	on detector not observed	52.397488	-8.673228
5	T5	9	29/08/2022	22:23	Brown long-eared	Possibly check recording	52.399978	-8.671291

Survey period	Location	Contact number	Date	Time	Species	Details	Lat	Long
5	T5	10	29/08/2022	22:36	Soprano Pip	Feeding	52.399532	-8.677318
5	T5	11	29/08/2022	22:46	Myotis	on detector not observed	52.398766	-8.681484
6	6	12	30/08/2022	05:21	Unidentified Pip	on detector not observed	52.397201	-8.661511
6	6	13	30/08/2022	05:43	Soprano Pip	Flew through bridge	52.3975	-8.661409
6	6	14	30/08/2022	05:47	Soprano Pip	Circling near bridge but not roosting	52.397476	-8.661513
6	6	15	30/08/2022	05:49	Soprano Pip	Flying under bridge	52.39734	-8.661726
6	6	16	30/08/2022	05:53	Myotis	Flew by following river towards site	52.396977	-8.66182
7	7	1	29/09/2022	19:47	Leisler's Bat	Farmyard. brief unseen contact	52.385354	-8.677051
7	7	2	29/09/2022	19:52	Soprano Pip	brief contact. might be entering from road	52.38493	-8.67723
7	7	3	29/09/2022	20:06	Leisler's Bat	Hunting to south of site high over fields. Can see through thermal scope	52.38493	-8.67723
7	7	4	29/09/2022	20:21	Soprano Pip	Three bats hunting around farmstead.	52.38493	-8.67723
7	7	5	29/09/2022	20:21	Common Pip	Single bat hunting around farmstead	52.38493	-8.67723
7	7	6	29/09/2022	20:29	Brown Long-eared	Single bat briefly recorded by eastern treeline out towards road	52.384548	-8.679037
8	4	1	30/09/2022	05:56	Common Pip	Derelict dwelling. Very brief contact	52.384745	-8.682407
8	4	1	30/09/2022	07:00	Common Pip	Occasional pipistrelle but no evidence of roosting. Quiet	52.384745	-8.682407
9	4	1	10/08/2023	21:27	Leisler's Bat		52.38486	-8.68253
9	4	2	10/08/2023	21:34	Leisler's Bat		52.3849	-8.68244
9	4	3	10/08/2023	21:37	Soprano Pipistrelle		52.382877	-8.68255
9	4	4	10/08/2023	22:45	Leisler's Bat		52.38489	-8.68248
9	4	5	10/08/2023	21:47	Soprano Pipistrelle		52.383489	-8.68248
9	4	6	10/08/2023	21:48	Leisler's Bat	Commuting along treeline	52.38489	-8.68246
9	4	7	10/08/2023	21:57	Soprano Pipistrelle		52.38483	-8.68251
9	4	8	10/08/2023	21:57	Leisler's Bat		52.38483	-8.68251
9	4	9	10/08/2023	22:00	Soprano Pipistrelle	Flying up and down treeline	52.38487	-8.68256
9	4	10	10/08/2023	22:12	Soprano Pipistrelle		52.3849	-8.68237

Survey period	Location	Contact number	Date	Time	Species	Details	Lat	Long
9	4	11	10/08/2023	22:14	Common Pipistrelle		52.38489	-8.68239
9	4	12	10/08/2023	22:16	Leisler's Bat	Flying up and down treeline for about 9 minutes	52.38488	-8.68242
9	4	13	10/08/2023	22:31	Common Pipistrelle		52.38485	-8.68273
9	4	14	10/08/2023	22:32	Leisler's Bat		52.38484	-8.68272
9	4	15	10/08/2023	22:39	Soprano Pipistrelle		52.38484	-8.68243
9	4	16	10/08/2023	22:42	Leisler's Bat		52.38487	-8.68237
9	4	17	10/08/2023	22:47	Soprano Pipistrelle		52.38484	-8.68254
9	4	18	10/08/2023	22:50	Common Pipistrelle		52.38483	-8.68251
9	4	19	10/08/2023	22:53	Soprano Pipistrelle		52.38487	-8.68243
9	4	20	10/08/2023	22:53	Leisler's Bat		52.38487	-8.68243
9	4	21	10/08/2023	22:55	Soprano Pipistrelle		52.38487	-8.68244
9	4	22	10/08/2023	22:55	Common Pipistrelle		52.38487	-8.68244
9	Pt 1	23	10/08/2023	23:37	Daubenton's Myotis		52.39546	-8.68492
9	Pt 1	24	10/08/2023	23:40	Common Pipistrelle		52.395491	-8.6849
9	Pt 2	25	11/08/2023	00:43	Common Pipistrelle		52.39735	-8.66153
9	Pt 2	26	11/08/2023	00:48	Soprano Pipistrelle		52.39726	-8.66152
9	Pt 2	27	11/08/2023	00:50	Common Pipistrelle		52.39728	-8.66152
9	Pt 2	28	11/08/2023	00:50	Soprano Pipistrelle		52.39728	-8.66152
10	8	29	11/08/2023	04:21	Soprano Pipistrelle		52.38318	-8.68508
10	8	30	11/08/2023	04:22	Common Pipistrelle		52.38317	-8.68508
10	8	31	11/08/2023	04:33	Liesler's Bat		52.38305	-8.68567
10	8	32	11/08/2023	04:33	Common Pipistrelle		52.38305	-8.68567
10	8	33	11/08/2023	04:34	Soprano Pipistrelle		52.38303	-8.68577
10	8	34	11/08/2023	04:38	Common Pipistrelle	Flying up and down treeline	52.38307	-8.68566
10	8	35	11/08/2023	04:46	Soprano Pipistrelle	Flying up and down treeline	52.3831	-8.68557
10	8	36	11/08/2023	04:57	Common Pipistrelle	Flying in field north of stone structures	52.38317	-8.68524
10	8	37	11/08/2023	05:13	Liesler's Bat	Flying east along road between treelines for about 8 minutes	52.38316	-8.68523
10	8	38	11/08/2023	05:16	Common Pipistrelle		52.38301	-8.68599
10	8	39	11/08/2023	05:22	Soprano Pipistrelle		52.38291	-8.6867
10	8	40	11/08/2023	05:30	Liesler's Bat		52.3829	-8.68675

Roost in building (structure 2). 2x Natterers bats

Roost in bridge (structure 6). 2 x Soprano Pipistrelle

Bruree Tower House and Church