



Environmental Consultants

Bat Survey Report

Demolition of existing building and construction
of new dwelling. Change of use of bar to café at
Crosheen, Co. Galway



Client: Churchfield Decorators Ltd.

Project Title: Demolition of existing building and construction of new dwelling and café at Crosheen, Co. Galway

Planning Ref No.: 20/908

Document Title: Updated Bat Survey Report

Prepared By: John Curtin – Consultant Ecologist

Date: 01/10/2024

TABLE OF CONTENTS

1	INTRODUCTION	4
2	DESKTOP STUDY.....	6
2.1	BATS IN IRELAND – LEGISLATIVE PROTECTION	6
2.2	SITE LOCATION.....	7
2.3	BAT SPECIES RECORDED IN THE SURROUNDING AREA	7
3	SURVEY FINDINGS.....	10
3.1	SURVEY METHODOLOGY.....	10
3.1	SEARCH RESULTS.....	12
3.1	BAT DETECTOR SURVEYS.....	16
4	DISCUSSION	27
5	IMPACT ASSESSMENT PRIOR TO MITIGATION.....	29
6	MITIGATION AND COMPENSATION	31
6.1	DEROGATION LICENCE.....	31
6.2	RETENTION OF TREES.....	31
6.3	PROVISION OF ALTERNATIVE ROOSTING AREA.....	31
6.4	LIGHTING.....	33
6.1	SCHEDULE.....	35
7	IMPACT POST MITIGATION.....	35
8	CONCLUSION.....	36

APPENDIX A –Site Layout

APPENDIX B – Ecobat Analysis

1 INTRODUCTION

This updated report details the findings of a daylight inspection of buildings, static detector and night time bat detector surveys completed as part of a further information request for the following planning application: [1] demolition of existing sub-standard dwellinghouse and replacement of same with a new two storey dwellinghouse. [2] change of use of existing bar / licensed premises to use as a café. Demolition of existing sub-standard extension to licensed premises. The construction of an extension to licensed premises which incorporates a kitchen, toilets and extended seating area. [3] Replacement of existing sub-standard septic tank with a proprietary effluent treatment system. [4] All parking, signage, binstores and ancillary site works. Gross floor space of proposed works: 240.4sqm, Gross floor space of any demolition; 197.60sqm in the townland of Crosheen (Pl. Ref: 20908).'

This report aims to;

- Identify links between the subject site and the Lough Fingall SAC and ascertain whether Lesser Horseshoe bats utilise the site.
- Examine buildings within the site proposed for demolition and renovation for evidence of bats.
- Report on findings of night-time bat detector surveys and static detector survey findings.
- Clarify impacts of bats by the proposed development.

The surveys undertaken are in line with recommendations in Chapter 10 of the Bat Conservation Trust 'Good Practice Guidelines, 2nd edition, 2012' (BCT Guidelines 2012) and The Irish Wildlife Manual No. 25' (Kelleher, C. & Marnell, F. 2006). The survey was designed and carried out by John Curtin B.Sc. (Env.). John has been carrying out bat surveys since 2012 and has completed over 100 surveys during this time. John 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. He follows the Bat Conservation Ireland 'Good Practice Guidelines' (Aughney et al., 2008). In addition, John is an active member of Bat Conservation Ireland, which monitor bat populations in Ireland, 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)	C160/2024
Roost disturbance (bats)	Der/Bat 2023-07
Licence to photograph / film wild animals (bats)	171-2024

The site in question is in the townland of Crosheen, Co. Galway, located in the village of Ballindereen.

In order to assess the presence and activity of bats within the proposed development grounds, a preliminary daylight site inspection was conducted on the 3rd of May 2021. Full night time detector surveys were also conducted on the 4th of May, 13th of May and 21st of May 2021. A static bat detector was erected for seventeen nights from the 04th to the 21st of May. Given the delay in construction and the clients wish to apply for an updated derogation licence an updated bat survey was conducted on the 18th of September 2024.

One aim of the surveys was to examine for the presence of the Annex II listed Lesser Horseshoe bat. While no Lesser Horseshoe bat was recorded during all the 2021 surveys, the bat detector placed to the rear of the site in September did pick up two recordings in the September 2024 surveys. No roosting Lesser Horseshoe bats were found.

This report provides a study of the current bat usage within the site. Measures have been integrated into the design to ensure bat usage will be protected and enhanced once construction is completed. Both the night-time detector survey and the static detector surveys revealed several bat species using the site and the buildings contain three small bat roosts.

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 and 2000

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

The Habitats Regulations 1997-2005

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 Environment Minister 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”.

2.2 SITE LOCATION

The proposed site lies in the townland of Crosheen (Grid Ref. E539236 N715513). The site for the proposed development lies approximately 146m from the Lough Fingall Complex SAC (site code: 000606) (see Figure 2-1 below). This SAC has been designated due to the presence of the Annex II species; Lesser Horseshoe bat (*Rhinolophus hipposideros*) and is the closest designated area for this species to the subject site.



Figure 2-1: Location of proposed development in relation to designated site

2.3 BAT SPECIES RECORDED IN THE SURROUNDING AREA

The NBDC database was consulted for details on bat records held for the site and the surroundings. The database was consulted on the 31/05/2021 and again on the 01/10/2024 for details on historical records from the site, the surrounding 2km (M31X) and the 10km hectad; M31. Results are outlined in Table 2-1. In total, 6 roosts have been recorded within a 6km buffer of the site; 5 of these Lesser Horseshoe bat roosts with another an unidentified Myotis roost. Six of the nine confirmed resident bat species known to occur in Ireland have been recorded within the 2km square the subject site resides in, much of these sightings recorded

from Cloughballymore House; a CO of the Lough Fingal Complex SAC. This roost also contains a substantial Brown Long-eared roost.

Table 2-1: Irish bat species recorded in the M31X 2km grid

Scientific name	Common name	Date of last record	Designation	Distance from site
<i>Myotis nattereri</i>	Natterer's Bat	26/06/2012	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts	1.4km south of the site
<i>Nyctalus leisleri</i>	Lesser Noctule	15/09/2009	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts	1.2km SE and NW of the site
<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle	26/06/2012	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts	1.2km SE and NW of the site
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	09/09/2009	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts	1.2km to the SE
<i>Plecotus auritus</i>	Brown Long-eared Bat	26/06/2012	EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts	1.4km to the South
<i>Rhinolophus hipposideros</i>	Lesser Horseshoe Bat	23/02/2012	EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts	Within vague 1km square within 1km of site

2.3.1 Lesser Horseshoe Bat *Rhinolophus hipposideros*

The Lesser Horseshoe Bat: Wildlife Manuals No. 85 (2015) shows the subject site sits in-between the North Galway / Mayo and the South Galway / Clare ranges. The closest SAC for the species is Cloughballymore House located within the Lough Fingall Complex SAC. This site has shown an increase in summer roosting numbers over the five years preceding 2015 but numbers are low; not exceeding 11.

The Lough Fingall Complex SAC 000606 Conservation Objective document was examined as part of the desktop review. The subject site lies within the Roost ID 244 Foraging Range although given the subject site does not consist of woodland it is less likely it is used as a feeding area.

Two of the Lesser Horseshoe conservation objective attributes are relevant to the subject site; linear features and light pollution given the site lies within the 2km Core Sustainance Zone (CSZ) for this species.

Linear features

This species follows commuting routes from its roost to its foraging grounds. Lesser horseshoe bats will not cross open ground. Consequently, linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5km around each roost.

Light pollution

Lesser horseshoe bats are very sensitive to light pollution and will avoid brightly lit areas. Inappropriate lighting around roosts may cause abandonment; lighting along commuting routes may cause preferred foraging areas to be abandoned, thus increasing energetic costs for bats

2.3.2 Historical review of bat surveys conducted on site.

A previously bat survey conducted by Ash Ecology in September 2021 revealed a Lesser Horseshoe bat outside the house and between the derelict house and shed. No evidence of roosting Lesser horseshoe was found during this survey. In addition, several other species of bat were recorded including roosting Brown Long-eared bat alongside Soprano and Common Pipistrelle. No formal report was compiled at the time, but an email was sent detailing these findings.

3 SURVEY FINDINGS

3.1 SURVEY METHODOLOGY

A detailed inspection of the buildings was undertaken during daylight hours on the 3rd of May 2021 and again in September 2024. The aim was to compile information on actual and potential access points and roosting locations. This was done by searching for evidence of bats including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises.

The exterior of the buildings were inspected first from ground level, with the aid of binoculars. The search included the ground, accessible openings, windowsills, walls, eaves, roof slates, gutters, downspouts and the roof ridge. A systematic search of all accessible interiors was also undertaken. Searches were carried out with the aid of binoculars, torches, an endoscope, thermal imaging device and a ladder and focused on walls, floors, roof beams, windowsills, lintels, shelves, tops of large equipment and furniture, etc.

The survey also examined the trees within the site in order to assess their potential to contain bat roosts. Trees within the site were examined with reference to the Bat Tree Habitat key (Andrews 2013) for Potential Roost Features (PRF). All trees were assessed from ground level using binoculars and then, where necessary by use of telescopic ladders up to 5m in height. Where ivy was present a Seek RevealXR Fastframe thermal imaging device enabled the examination of trees beyond 5m in height.

Thermal imaging cameras are designed to detect heat (infrared radiation) emitted from objects within a defined field of view. The metabolic heat produced by bats and other animals produces a distinct thermal image against a cooler background. In particular circumstances it will produce a thermal plume that escapes from cavities and cracks.

The ability to detect the heat emitted from an object has several advantages as a survey technique. It is not invasive and does not require artificial illumination. It is particularly advantageous when surveying trees with thick ivy cover which traditionally is difficult to impossible to survey.



Plate 3-1 & Plate 3-2: Image of led torch placed on tree within site; standard and infrared

Evidence of bat usage sought during the surveys include:

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

Examples of crevice features include:

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

3.1.1 Habitats on site

The site consists of a derelict dwelling house with adjoining pub premises and an adjacent stone shed with galvanised roof. The natural stone wall shed is partially covered with Ivy. The site is located within a village with a footpath and road to the front and to the rear is a disused yard with several mature Sycamore and Beech trees. The surrounding lands are well represented with treelines, hedgerows and woodlands. These provide good connectivity for bats within the area.



Figure 3-1: Aerial displaying network of treelines and woodlands surrounding subject site. Note the Lough Fingall Complex SAC is located to the east of the site.

3.1 SEARCH RESULTS

A daytime visual assessment of trees within the proposed development site was undertaken on the 3rd of May 2021 and again on the 18th of September 2024 following guidelines set out in the Bat Tree Habitat Key (Andrews, 2016). Conditions were dry and sunny.

Some trees with Ivy cover showed limited potential to host bat roosts however on closer inspection it was noted that Ivy did not form thick enough stem mats to provide good roost potential features. No evidence of bat or their roosts was found.



Plate 3-3: Mature trees to rear of site



Plate 3-4: Ivy growth on shed



Plate 3-5: Front (SE) view of site



Plate 3-6: Rear (NW) view of site



Plate 3-7: Westside of buildings (green section is pub).



Plate 3-8: Northside of buildings

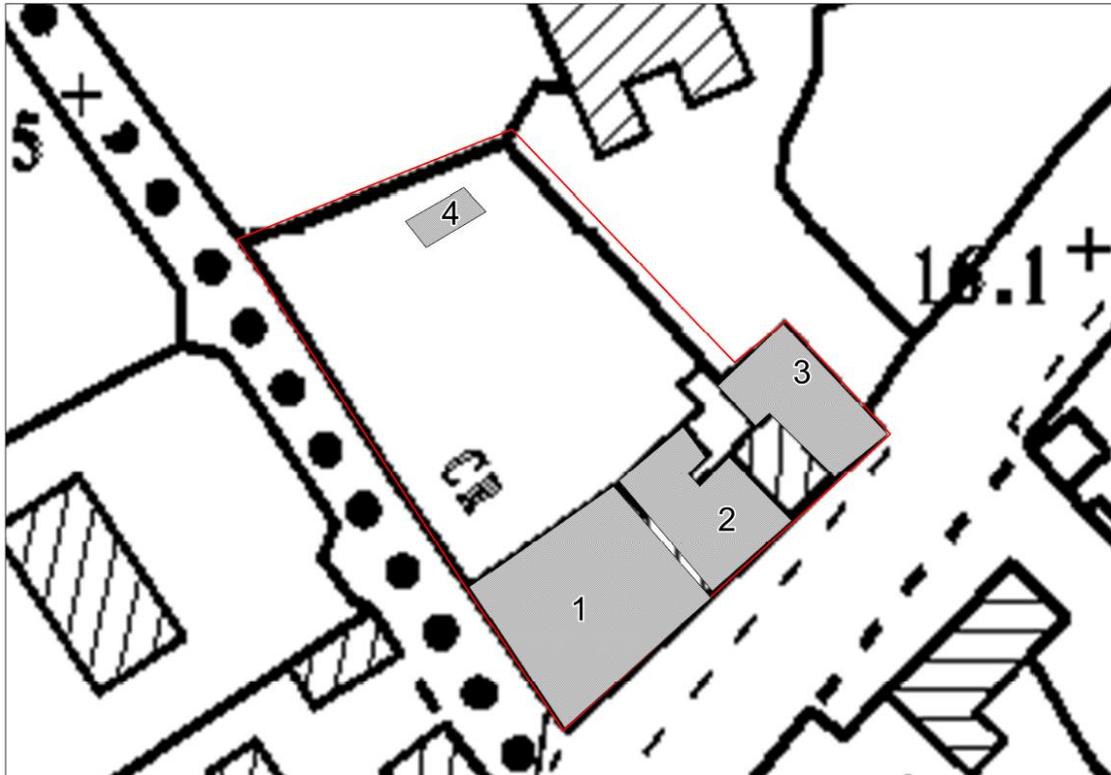


Figure 3-2: Location of structures

Building 1

Building 1 refers to the existing pub. This building is intact and contains a closed pub downstairs. A trapdoor provides access to disused rooms upstairs. Upstairs rooms lack an attic space with tongue and groove timbers attached to rafters. Winds here provide light during daylight hours thus making these rooms unsuitable for bat occupancy. No evidence of bats was found from this building.

Building 2

This building refers to a derelict dwelling. The front roadside aspect appears intact however the roof on a wing to the rear has collapsed providing access into the building. This building was examined and bat droppings were noted scattered on the stairs, downstairs room and a small portion of the attic. The attic space was difficult to access with no attic door. The surveyor had to create an opening by pulling off tongue and groove ceiling boards. This lack of a large entrance precludes the possibility of Lesser Horseshoe bats from roosting here. Bat droppings were collected, combined and sent for DNA analysis with the request of multi species examination. The results were only of Brown Long-eared bats.



Plate 3-9: Inside collapsed wing of dwelling **Plate 3-10: Access from ruined section into main part of dwelling**

Building 3 Natural stone shed

The shed was found to be a construction of natural stone walls which is partially plastered. The shed consists of a single upstairs room and three downstairs sections. There are two openings into the upper shed at either gable. The roof is largely intact and consists of timber trusses with corrugated iron sheeting.



Plate 3-11: Stone shed

Plate 3-12: Access to upstairs room

Building 4

This refers to a small concrete shed (including concrete roof) found to the rear of the development used to store beer kegs. The building has numerous opening with gaps to the rear and an opening without a door. The shed has low potential as a bat roost due to light ingress, low roof and lack of dark gaps for roosting bats.



Plate 3-13: Internal view of building 4

3.1 BAT DETECTOR SURVEYS

Start and finish times alongside environmental data can be found in table 3-1. April and May have been unseasonably cool. Despite this, surveys were completed in acceptable conditions apart from the dawn survey dated 05th of May was at temperatures likely to impede bat activity.

Table 3-1: Bat transect environmental data

Date	Survey start / finish	Sunset	Temp	Wind ms ¹	Rain	Overall conditions
04 th May 2021	20:39	21:09	6.5	0.8	Dry	Cool
	23:39		4	1.2	Short drizzle	Cool
05 th May 2021	03:55	05:55	4	0.3	Dry	Cold
	05:55		1	0	Dry	Cold
13 th May 2021	20:55	21:25	13.5	0	Dry	Good
	23:55		9	0	Dry	Good
14 th May 2021	03:39	05:39	8.5	0.3	Dry	Good
	05:39		4.5	0	Dry	Cool

Date	Survey start / finish	Sunset	Temp	Wind ms ¹	Rain	Overall conditions
26 th May 2021	21:16	21:46	12	0	Dry	Good
27 th May 2021	00:16		12	0	Dry	Good
27 th May 2021	03:20	05:20	8.5	0.3	Dry	Good
	05:20		6	0.5	Dry	Acceptable
18 th Sept 2024	19:13	19:43	15.5	0	Dry	Good
	22:13		12.5	0	Dry	Good

The bat detectors used during the walked surveys was a Wildlife Acoustics Inc. (Massachusetts, USA) Echo Meter EM3 and Echo Meter Touch Pro 2 which are triggered to record when a bat call is emitted louder than 18dB for 1sec. These detectors use full spectrum sampling; detecting all frequencies simultaneously, meaning that multiple bat calls can be recorded at the same time.

A contact as shown below 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. 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. The survey followed the guidelines as set out in bat conservation Ireland's 'Bat Survey Guidelines'.

In addition to bat detectors, two-night vision camera setups were utilised through the site. A night vision camera was set with a detector allowing a number of areas to be surveyed at once.

3.1.1 May 04th / 05th 2021

Surveyor was positioned at rear of dwelling looking at fallen roof section. Camcorder and detector was set within upper storey of shed to north. At 21:24 a Common Pipistrelle exited from the upper room of the derelict house where tongue and groove ceiling had collapsed from ridge (providing a gap to the roost). The attic space of this roof has bitumen which

provides an ideal place for a bat roost. By 21:38 Common Pipistrelle bats were observed hunting within the treelined rear field. This species was joined by Soprano Pipistrelle however this species was not observed exiting from any building within the site.

At 22:58 a single Natterer's bat was observed hanging from a light fitting in a lower room of the derelict dwelling (this bat represents the second roosting bat within the site).

The camcorder set within the upper room of the shed showed no bats present.



Plate 3-14: Section where Common Pipistrelle emerged.



Plate 3-15: Natterer's bat

No bats were recorded during the dawn survey. Temperatures at this time likely impeded bat activity.

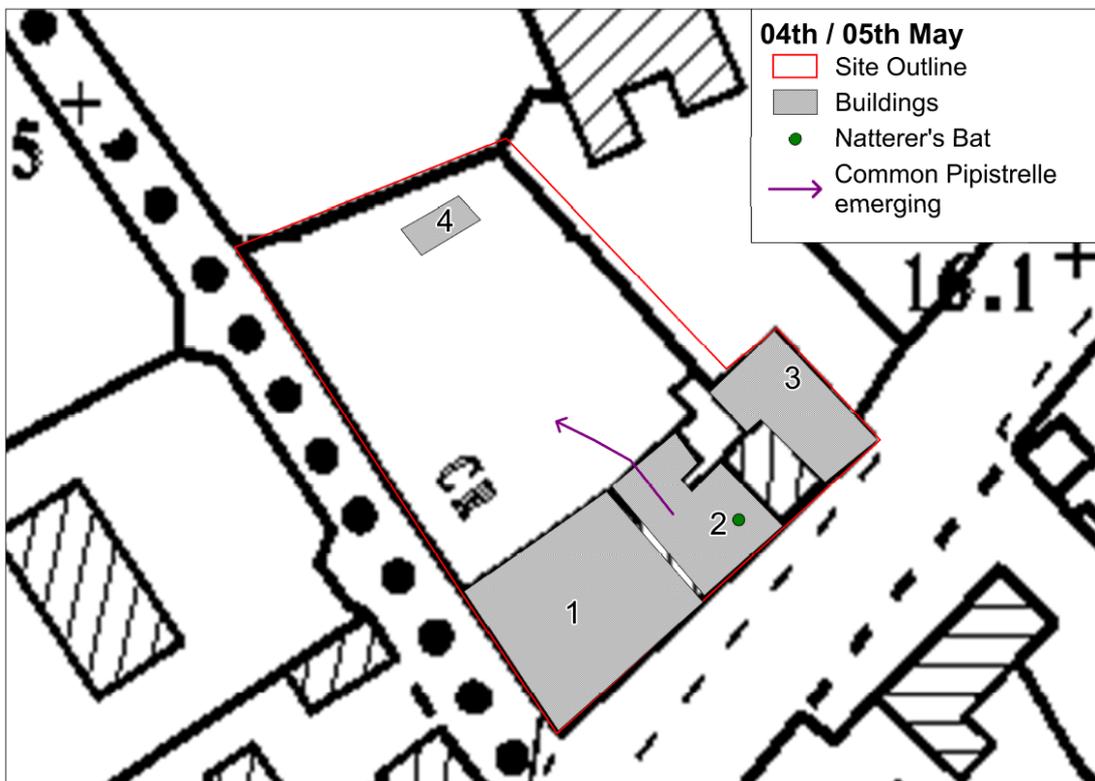


Figure 3-3: Location of roosts

3.1.2 May 13th / 14th 2021

Despite higher temperatures than the previous survey activity was low with no bats observed emerging from any of the buildings. The first bat recorded was an unseen Common Pipistrelle at 21:46 some 21 minutes after sunset. This is the typical emergence time for this species and indicates a roost located closeby. Although this bat was not observed exiting from the derelict dwelling this cannot be discounted. By 22:08 Common Pipistrelle were joined by Soprano Pipistrelle flying amongst the trees to the rear of the site. The first Leisler's bat was recorded at 23:25.

Again, a detector was left in the upper room of the shed throughout the survey as this shed represents the highest potential for roosting Lesser Horseshoe bats. In addition, the surveyor regularly entered the building in order to search for night roosting bats. None were found.

The small shed to the rear was also examined periodically. This has numerous openings to the rear and a doorway opening. The ceiling is low (c. 2m) and no evidence of bats was found within.

During the dawn survey the surveyor was positioned to the rear looking for re-entering bats. At 03:41 a Common Pipistrelle was noted flying to the rear and at 04:42 a Soprano Pipistrelle flew over the pub section flying south over the road. No bats were observed entering a roost.

3.1.3 May 26th / 27th 2021

Five bat species were observed during this survey.

Common and Soprano Pipistrelle, Brown Long-eared bat, Natterer's bat and Leisler's bat.

Again no bats were observed exiting the main derelict dwelling however a brown long eared was found within the same downstairs room as the natterers from the 04th of May. In addition, a brown long eared was found in a downstairs room of shed 3. Natterers were observed at 22:59 to the rear of the site. Towards dawn (04:29) a brown long-eared bat was observed flying into the dwelling from the rear.

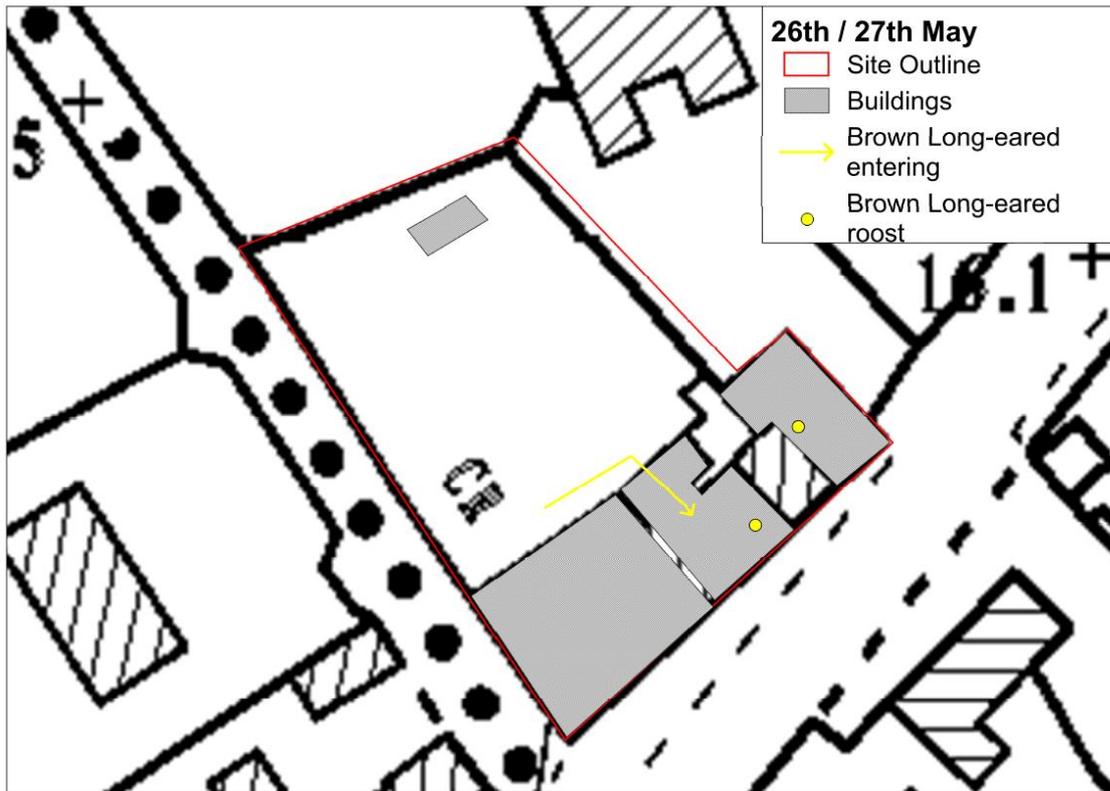


Plate 3-16: Location of roosts

3.1.4 18th September 2024

Six bat species were observed during this survey; Common and Soprano Pipistrelle, Brown Long-eared bat, Natterer’s bat, Leisler’s bat and Lesser Horseshoe bat.

During this Night Vision Assisted (NVA) emergence survey, three devices were used to survey the building;

1. A Guide track Pro TK612 thermal scope to rear facing dwelling
2. Canon XA10 with three IR torches facing rear of pub
3. Guide track Pro 19mm thermal scope to front where surveyor was positioned examining if bats were emerging to front.

This resurvey of the site revealed little changes in the condition of buildings. No bats were found using the pub building. The derelict dwelling is still being used as a bat roost.

No bats were observed exiting the main derelict dwelling however a brown long eared was found within the same downstairs room as the natterers from the 04th of May. In addition, a brown long eared was found in a downstairs room of shed 3. Natterers were observed at 22:59 to the rear of the site. Towards dawn (04:29) a brown long-eared bat was observed flying into

the dwelling from the rear. 5 pipistrelle bats emerged from the dwelling (gap in roof tile, fascia and chimney) alongside a single Natterers (emerged from fascia).

The shed (building 3) is not being altered at this time. Surveys primarily focused on the two main buildings however regular checks showed no signs of bats using the shed.

Lesser Horseshoe bats were recorded on the bat detector to the rear during the survey but were not found roosting within the site. These were the first registrations of this species found during all surveys.

18th of September Emergence



Figure 3-4: Emergence directions

Table 3-2: Activity level during emergence survey

Species	Registrations recorded	BpHr
Natterers	6	3
Leisler's bat	8	4
Common Pipistrelle	148	74
Soprano Pipistrelle	219	109.5
Brown Long-eared	1	0.5
Lesser Horseshoe	2	1
Total	384	192



Plate 3-17: Guide TK 612 view



Plate 3-18: Canon view

3.1.5 Fixed site recordings made during May 2021

A Song Meter SM4BAT (Wildlife Acoustics, Inc; Massachusetts, USA) 16-bit full spectrum time-expansion recording bat detector was placed within the study area on the 04th of May to the dawn of the 21st of May 2021. This static detector was installed according to the guidelines as set out in Bat Conservation Ireland's 'Bat Survey Guidelines.'

The detector was erected on a central tree to the rear of the development. The device was set to record from half an hour prior to sunset to half an hour after sunrise and automatically adjusts itself each day. The recorder was thus in position and recording giving a total of 141 hours 10 minutes of recording over the seventeen nights.

Registrations as described below follow the Bat Conservation Trusts definition of a bat pass; 'two or more bat calls in a continuous sequence; each sequence or pass is separated by one second or more in which no calls are recorded. The number of bat passes for each species or species group identified is counted for each' point. (BCT Good Practice Guidelines 2nd Ed 2012).

Sunset temperatures were typically over 7 degrees Celsius however May has been unseasonably cold. The lowest sunset temperature was 4 degrees. Average sunset temperatures were 8 degrees. Wind speeds were typically low to moderate with an average sunset wind speed over the period of 6.8mph. Overall rainfall levels were low with four nights of showers. Overall these conditions were acceptable. Weather information is provided by Met Eireann from the weather station located in Athenry, Co. Galway (<http://www.met.ie/climate/daily-data.asp>).

3.1.6 Results of static detector survey

Analysis of recorded registrations was made using Wildlife Acoustic's Kaleidoscope Pro; version 2.1.0. This software identifies many of the calls made by Irish bats. All calls not labelled Soprano or Common Pipistrelle Bats were also manually verified.

The results of the static detector survey are summarised in **Table 3-5** and displayed in graph form in **Figure 3-4** below. Over the course of seventeen nights a total of 5644 registrations were recorded. Several recordings showed multiple bat species in the one recording thus

were separated per species. The 08th/09th of May showed highest activity with 1002 recordings. Lowest activity occurred on the 04th/05th of May with only 11 registrations.

The most common species recorded was the Common Pipistrelle with 3562 registrations over the survey period (63.11%). Soprano Pipistrelle was the next most common with 1888 (33.45%). All other species showed far lower activity with Myotis Bat (85), Leisler’s Bat (50), Brown Long-eared (48/) and 40kHz Pipistrelle (11) registrations.

It should be noted that a single bat continuously circling a small stand of trees will produce numerous recordings, thus the amount of registrations cannot quantify abundance, rather activity.

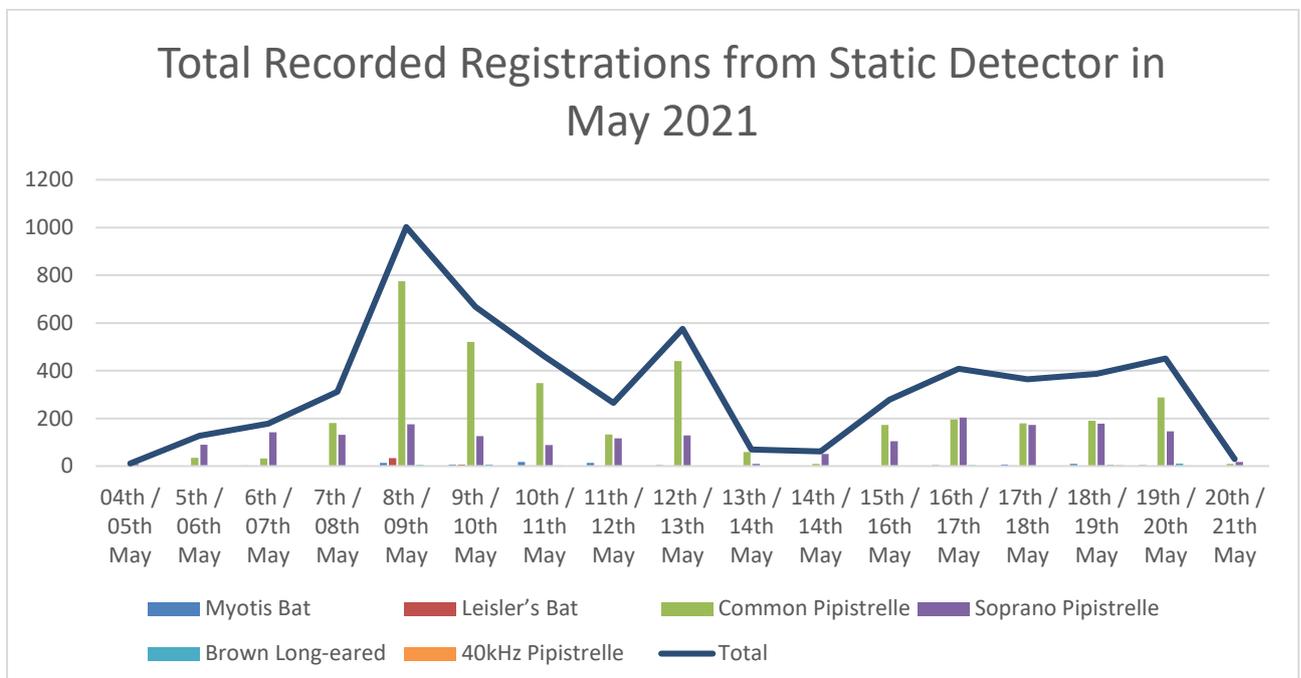


Figure 3-5: Results of static detector

Table 3-3: Results of the SM4 placement

Date	Myotis Bat	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Brown Long-eared	40kHz Pipistrelle	Total
04 th / 05 th May	2	0	0	9	0	0	11
5 th / 06 th May	1	0	35	89	2	0	127
6 th / 07 th May	3	0	32	142	1	0	178
7 th / 08 th May	0	0	180	131	1	0	312

Date	Myotis Bat	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Brown Long-eared	40kHz Pipistrelle	Total
8th / 09th May	13	34	774	175	6	0	1002
9th / 10th May	7	7	520	126	7	0	667
10th / 11th May	17	3	348	88	3	1	460
11th / 12th May	13	2	132	116	2	0	265
12th / 13th May	4	1	440	129	1	0	575
13th / 14th May	0	0	59	10	0	0	69
14th / 14th May	0	0	10	51	0	0	61
15th / 16th May	1	0	172	104	1	0	278
16th / 17th May	4	0	195	204	4	1	408
17th / 18th May	7	3	179	172	1	2	364
18th / 19th May	9	0	190	178	6	4	387
19th / 20th May	4	0	287	146	11	3	451
20th / 21st May	0	0	9	18	2	0	29

4 DISCUSSION

Six species of bat were positively identified during the various bat surveys: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler’s bat (*Nyctalus leisleri*), Brown Long-eared Bat (*Plecotus auritus*), Natterer’s bat (*Myotis nattereri*) and Lesser Horseshoe bat (*Rhinolophus hipposideros*).

Roosts were found from 1 Brown Long-eared bat in shed 3 and 1 Common Pipistrelle bat, a Brown Long-eared bat and a natterer’s bat from the derelict dwelling. DNA results gathered from collecting scattered droppings within the derelict house were all from brown long-eared bat. The 2024 resurvey showed similar results with a confirmed Common Pipistrelle, 4 Pipistrelle bats (either Common or Soprano) and one Natterer’s bat recorded emerging from the dwelling.

The main aim of the activity survey was to examine for the presence of Lesser Horseshoe bats. No Lesser Horseshoe Bat (*Rhinolophus hipposideros*) were recorded during any survey in 2021 however the rear bat detector did pick up two registrations from this species in September. No evidence of roosting Lesser Horseshoe was found during any survey.

Results from the static detector were analysed using Ecobat (University of Exeter); a software package that standardizes and performs interpretation of bat activity data (Summary displayed in **Table 4-1**). It compares static detector data with similar datasets set in similar habitats and ranks activity levels taking into account environmental conditions. Results show highest activity was from Common and Soprano Pipistrelle with high activity.

Table 4-1 Results of Ecobat Analysis

Species	Common Name	Nights				
		High	Medium/High	Medium	Low/Medium	Low
<i>Myotis</i> species		0	6	4	1	6
<i>Nyctalus leisleri</i>	Leisler’s bat	1	1	2	1	12
40kHz Pipistrelle		0	0	2	1	14
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	14	2	0	0	1
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	14	3	0	0	0
<i>Plecotus auritus</i>	Brown Long-eared bat	0	2	4	3	8

The majority of the bat contacts recorded during the bat surveys were of Pipistrelles (96.56% of static detector). These results fall in line with what is expected since common and soprano pipistrelle species are the two most commonly encountered in Ireland and they have widespread distributions (although it should also be remembered that they are also amongst the species that produce calls that are the most likely to be captured by bat detectors).

The static detector was in place recording for a total of 141 hours 10 minutes (8470 minutes) and recorded 5644 registrations in this time. This equates to an average rate of 40 registrations per hour. This figure shows high bat activity typical for lowland sites with good bat potential and is comparative to a lowland woodland edge. For comparison a similar detector recorded 88.23 registrations per hour when set on a site along the River Dodder.

5 IMPACT ASSESSMENT PRIOR TO MITIGATION

The survey above provides a study of bat usage of a number of derelict buildings and trees on a site in the village of Ballindereen. Four bat roosts were located during the surveys: Two Brown Long-eared bats roost are on site, one in the shed and one in the main house. In addition, a Common Pipistrelle, unidentified Pipistrelle and Natterers bat roost is in the derelict house. All roosts found contain small numbers of bats thus not maternity roosts.

No evidence was found of Lesser Horseshoe bats using any of the buildings on site and the surveyor found no evidence to suggest this species roosts onsite. The 2024 survey did register two recordings however this was a low level of activity in comparison to other species. Based on these results in-combination with communications with Ash ecology and following the precautionary approach given the proximity of the site to the Lough Fingal SAC, robust mitigation has been established in order to allow this species to use the site going forward.

- Disturbance

Works associated with development or building work are likely to lead to an increase in human presence at the site, extra noise and changes in the site layout and local environment.

- Loss of Roosts

The redevelopment of this site involves the demolition of existing sub-standard dwellinghouse and replacement of same and demolition of extension and construction of new extension and the addition of a car park to the rear of the building. This will result in the permanent loss of the dwelling building as a roost. A Brown Long-eared roost in the shed will remain untouched however an additional Brown Log-eared and a Natterers roost in the house will also be removed. All roosts are small and therefore not maternity roosts.

The proposed development may result in a considerable increase in artificial lighting of the site.

Guidance on lighting has been based on Bats and artificial lighting in the UK, Guidance Note 08/18 (BCT, 2018), EUROBATS; *Guidelines for consideration of bats in lighting projects*. (Voigt, 2018) and BCI; Bats & Lighting document; (BCI, 2010). Lighting can alter the behaviour of bats and the insects they prey on. Night flying insects can be attracted to lights particularly sources that emit an ultraviolet component or have a high blue spectral content. Whilst some species of bat such as Leisler's and Pipistrelle species can take advantage of this occurrence, other species such as Daubenton's bat and brown long-eared avoid such areas. Lighting can create barriers for bat species both entering roosts and using commuting routes such as rivers, treelined roads and woodland edges.

Effects of lighting on bats

BCI's Bats & Lighting document (BCI, 2010) states 'Brown Long-eared bats (*Plecotus auritus*) and *Myotis* species, commute and forage along dark wildlife corridors such as treelines and consequently shies away from highly illuminated sections. Therefore, illumination can impede their flight to suitable feeding areas. Consideration should be given to ensure that dark wildlife corridors remain in the landscape to allow bats and other wildlife to travel safely to and from feeding habitats.' The report also states 'each species of bat has an optimum level of light for emergence. For example, Daubenton's bats prefer a light level of less than 1 lux.' While the BCT guidelines do not give a recommended level of acceptable lux levels on commuting habitats it notes 'significant effects (on bat activity) have been recorded from as low as 3.6 lux'. Eurobats guidelines state *Myotis daubentonii* and *M. mystacinus*/*M. brandtii* consistently avoided their preferred habitats, i.e. lakes and forest gaps, in response to the brightness of the Nordic midsummer nights.

At present the site itself has no artificial lighting to the rear although streetlights illuminate the front of the building and to the side. There is minimal light spillage to the rear of the buildings.

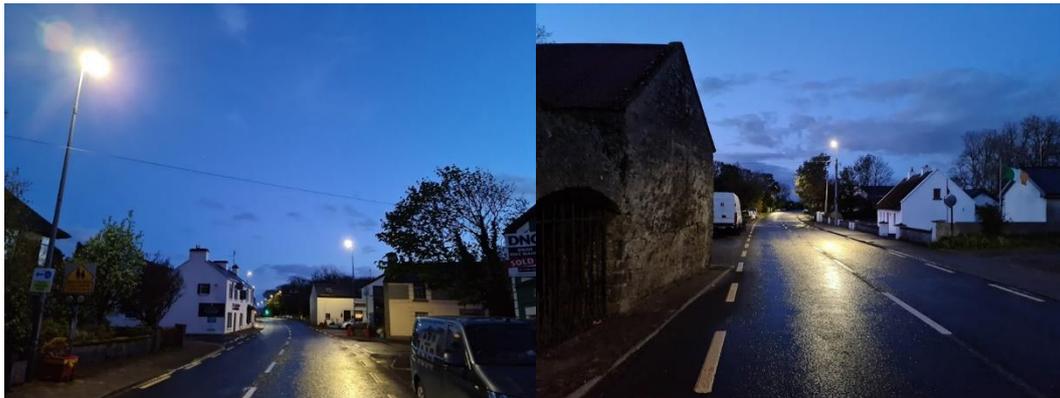


Plate 5-1 & Plate 5-2 : Street lighting to front of buildings.

- Changes to rear of building with the planned instillation of new car park.

As part of the proposal a car park will be placed to the rear of the buildings. This will entail the addition of lighting to the area and has the potential to disturb bats using this area.

6 MITIGATION AND COMPENSATION

Mitigation measures have been devised under guidance from the Irish Wildlife Manuals, No. 25, (Kelleher & Marnell 2006) and a review of the success of bat boxes in houses (BCT 2006).

6.1 DEROGATION LICENCE

A derogation license will be requested from the National Parks and Wildlife Service before the proposed works commence. Any additional measures requested will be implemented in full.

6.2 RETENTION OF TREES

The site layout for the proposed development has been revised and more trees have been retained to the rear of the site. The proposed car park will now sit within trees and treelines at the edge of the site will allow bats to commute as before.

6.3 PROVISION OF ALTERNATIVE ROOSTING AREA.

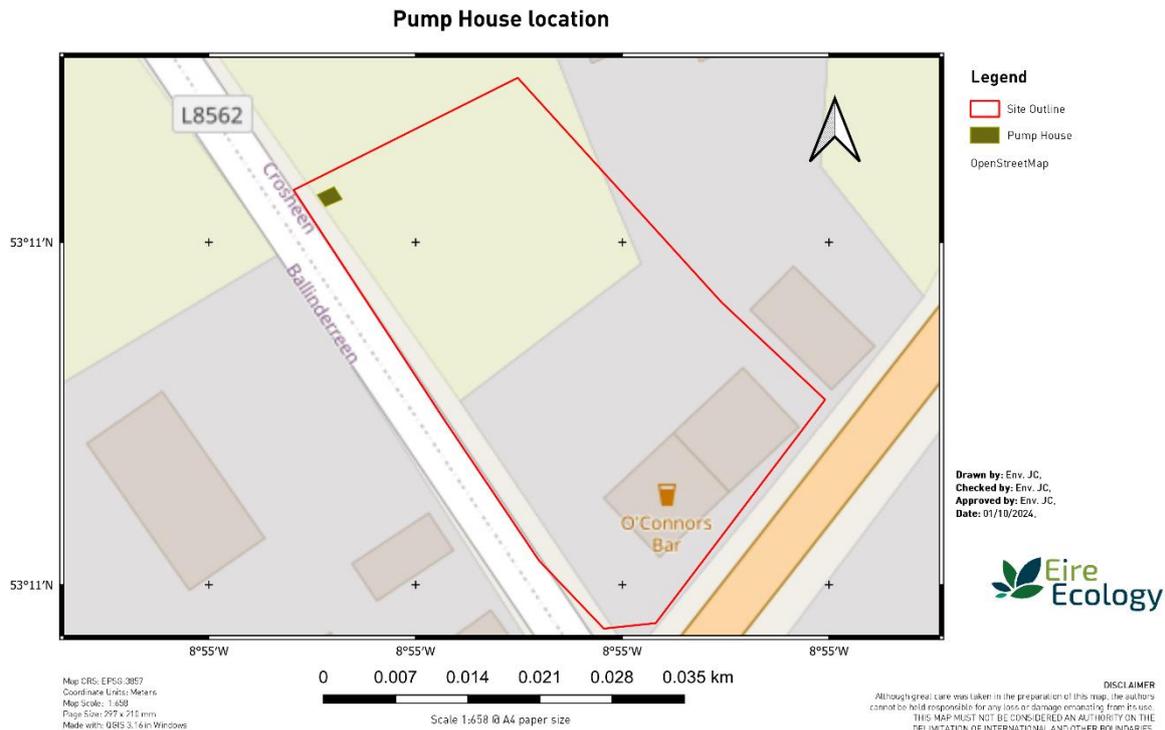
To mitigate against the loss of the roost it is proposed to erect bat boxes located towards the rear of the development. Roosting Natterers, Brown Long-eared bats and Common Pipistrelle were found roosting both crevice type and hollow type boxes are required (Bat Mitigation Guidelines 2004 – English Nature).

Since the initial survey, Lesser Horseshoe have been recorded on the site although no evidence was found of them roosting.

It is proposed to construct a pump house type roost following VWT design see Appendix C. The structure will be located to the rear of the property in a dark zone and consist of a 2.76 x 2.76m building 3.36m in height.

Within the roof, two baffles will be installed consisting of timbers with a depth of 100mm and a gap of 51mm wide. This will provide space for crevice dwelling bats.

The bat entrance will consist of a 460 x 225 opening with a predator tilt tray or similar. This structure will remain unlit throughout the night.



6.3.1 DEMOLITION OF BUILDINGS

Demolition of the existing dwelling house and extension should occur during the winter months from 01st of February to 31st March 2025 inclusive. A suitably qualified ecologist with bat handling training should be on hand to complete a pre-demolition daylight survey and oversee demolition works. Should bats be found the ecologist will remove and place into the pre-erected bat boxes.

The following procedure will be undertaken when construction work commences.

- A night time bat survey will be completed the night prior to the start of construction in order to examine for roosting bats.
- The roof of the dwelling will be checked and slates removed by hand.
- Once half the roof is removed the building will be left for 48 hours to pressurize bats vacate the property.

Once these works are complete the building will be unsuitable for roosting bats given the light ingress and lack of roosting spaces. After this time demolition works can commence.

6.4 LIGHTING

A lighting plan has been designed as part of the proposal which will act as way marking purposes for people exiting and entering the car park yet allow bats to also utilise this area. This can be achieved by the instillation of bollard lighting fitted with 2700K colour temperature LEDs (see Sabre Lighting report and diagram for further details).

Table 5-1 provides a site-specific response to the 2018 BCT flowchart which provides best practice guidance when considering effects of lighting schemes on bats.

Table 5-1: Application of BCT, 2018 Flowchart

Step	Query	Response
1	Could bats be present on site?	Yes.
2	Determine the presence of roosting / commuting / feeding habitats	The site is used by roosting Brown Long-eared, Common Pipistrelle and Natterers bats alongside feeding and commuting Soprano Pipistrelle and Leisler's bats. Low level activity was recorded from Natterer's bat, brown long-eared bat, possible Nathusius's Pipistrelle and unidentified Myotis species.
3	Avoid lighting on key habitats and features all together.	The subject development will result in changes to the site including demolition and reconstruction of buildings and the construction of a car park. Given the nature of the site; avoidance of lighting is not possible.
4	In other locations of value to bats apply mitigation measures to reduce lighting to a minimum.	The treeline to the north-east will have no illumination thus allowing bats occupying bat boxes positioned on the gable wall of the shed unimpeded access to the wider landscape.
5	Demonstrate compliance with lux levels and buffers	A lighting plan including a lux diagram has been produced by Sabre Ltd for the proposed development. This plan has been produced with cognisance of protecting landscape features for bat usage. Dark zone will be established on the entrance driveway, woodland carpark and boundary treelines where lux levels of 1 or below are proposed.

6.1 SCHEDULE

Time of year	Works to be Completed
1 st October 2024 – 31 st of March 2025	Building of bat shed.
1 st October 2024 – 31 st of March 2025	Demolition of building 2 can occur with presence of bat worker. If there is a lag between the shed being built and demolition works,
Post 1 st April	Completion of building works.

Please note these times are subject to receiving permission and any works relating to bat mitigation, falling outside of this schedule will be referenced to the overseeing NPWS ranger beforehand.

7 IMPACT POST MITIGATION

The surveyor is confident that the impacts to bats (including Lesser Horseshoe) will be minimal as long as all mitigation measures are enacted in full

8 CONCLUSION

This report details the findings of bat surveys completed as part of a planning application for [1] demolition of existing sub-standard dwellinghouse and replacement of same with a new two storey dwellinghouse.

[2] change of use of existing bar / licensed premises to use as a café. Demolition of existing sub-standard extension to licensed premises. The construction of an extension to licensed premises which incorporates a kitchen, toilets and extended seating area.

[3] Replacement of existing sub-standard septic tank with a proprietary effluent treatment system.

[4] All parking, signage, binstores and allancillary site works.

Gross floor space of proposed works: 240.4sqm, Gross floor space of any demolition; 197.60sqm.

Surveys were conducted during the bat active season 2021 and again in 2024. Four bat roosts (Natterers, Common Pipistrelle, Unidentified Pipistrelle and Brown long-eared) were found within the main building and one Brown long-eared bat was found roosting in a lower room of the shed. The application involves large scale changes to the site including demolition and rebuilding of buildings and car parking and instillation of lighting. Mitigation measures designed to protect roosting, feeding and commuting bats have been integrated into the design process including a lighting plan that dramatically reduces light spillage onto bat landscape features. In addition, mature trees will be retained on site and bat boxes will be installed. The demolition will be completed in the winter months with an ecologist on site.

The surveyor is confident that the proposed development will not have a negative effect on the local bat populations.

Appendix B Ecobat Bat Activity Analysis

Site Name: Ballindereen Pub

John Curtin

03/06/2021

8.1.1 Summary

Bat surveys were conducted at NA, for 17 nights between 2021-05-04 and 2021-05-20, using Wildlife Acoustics static bat detectors. The maximum of passes recorded in a single night was 774 passes, and 6 species were recorded.

The reference range dataset was stratified to include:

- Records from any time of year.
- Only records from within 200km² of the survey location.
- Records using any make of bat detector.

Table 1

Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Location	Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
NA	<i>Myotis</i>	0	6	4	1	6
NA	<i>Nyctalus leisleri</i>	1	1	2	1	12
NA	<i>Pipistrellus nathusii</i>	0	0	2	1	14
NA	<i>Pipistrellus pipistrellus</i>	14	2	0	0	1
NA	<i>Pipistrellus pygmaeus</i>	14	3	0	0	0
NA	<i>Plecotus auritus</i>	0	2	4	3	8

Table 2

Summary table showing key metrics for each species recorded.

Location	Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded	Reference Range
NA	<i>Myotis</i>	51	38 - 64	76	17	10380
NA	<i>Nyctalus leisleri</i>	0	29 - 64	84	17	12845
NA	<i>Pipistrellus nathusii</i>	0	14 - 44	51	17	3121
NA	<i>Pipistrellus pipistrellus</i>	95	83.5 - 97	99	17	14993

NA	<i>Pipistrellus pygmaeus</i>	94	82.5 - 94.5	96	17	14788
NA	<i>Plecotus auritus</i>	34	24 - 51.5	70	17	6118

8.1.2 Figures

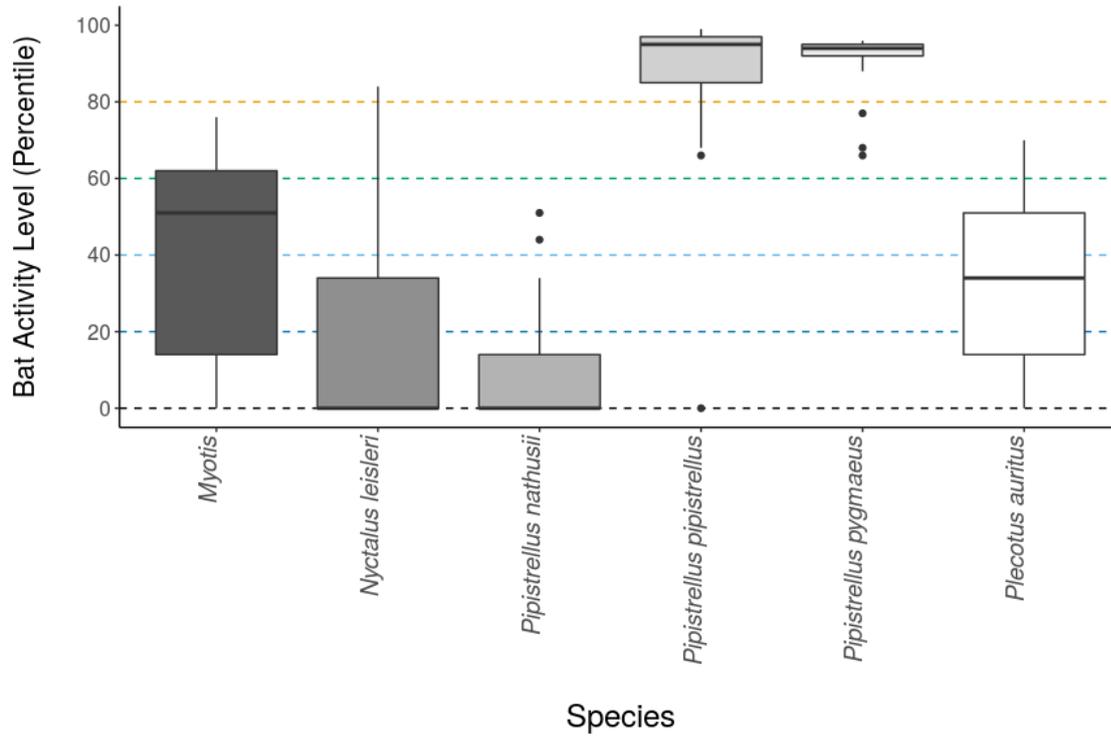
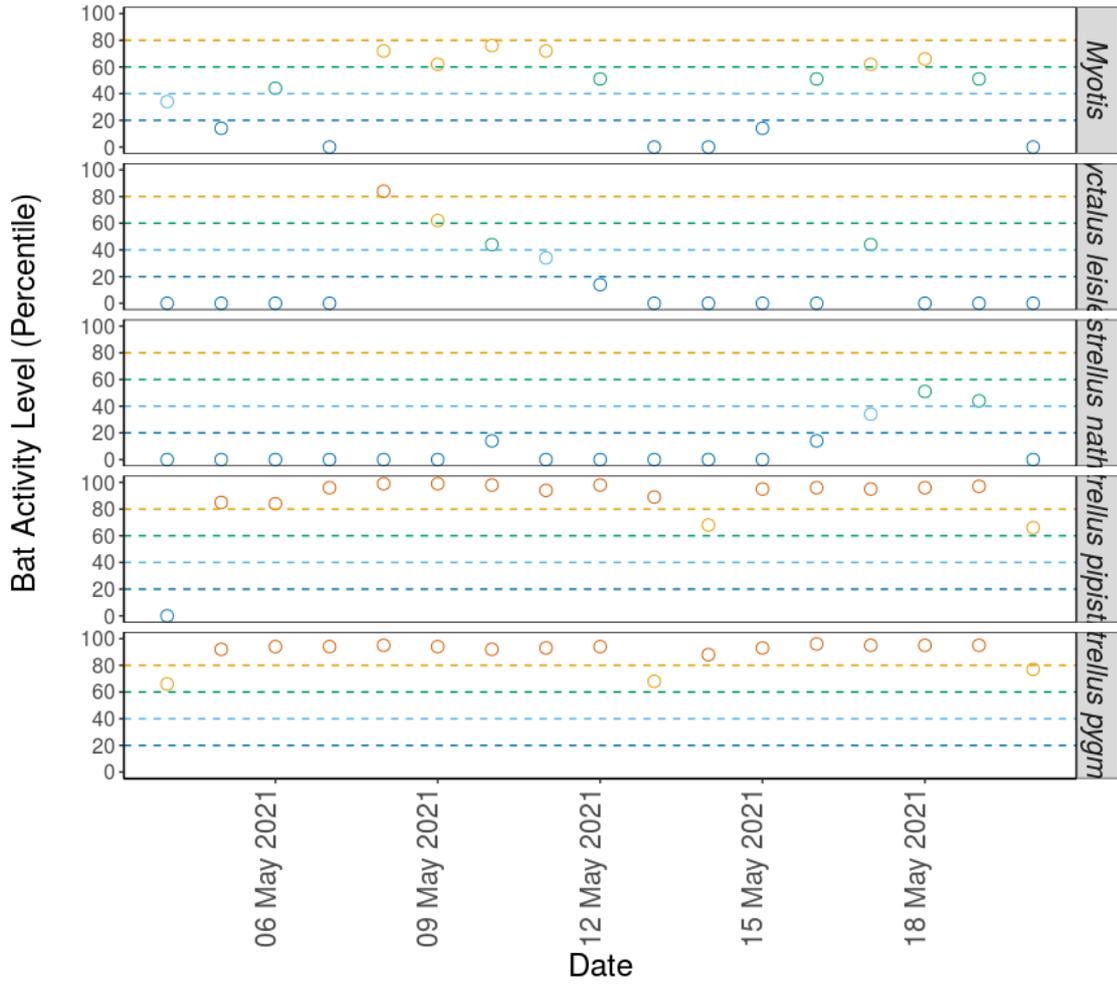


Figure 1. The recorded activity of bats during the survey. The centre line indicates the median activity level whereas the box represents the interquartile range (the spread of the middle 50% of nights of activity)



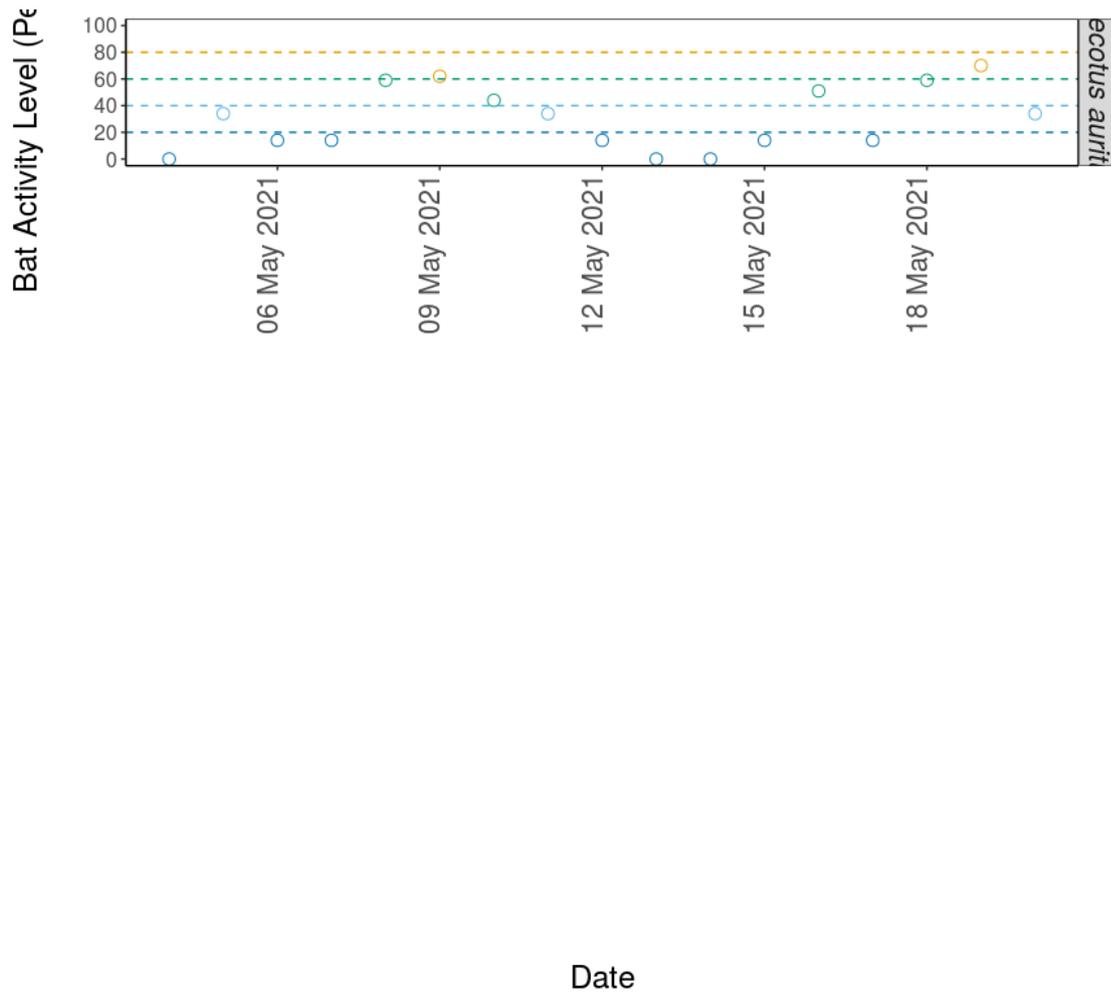


Figure 2. The activity level (percentile) of bats recorded across each night of the bat survey, split by species.

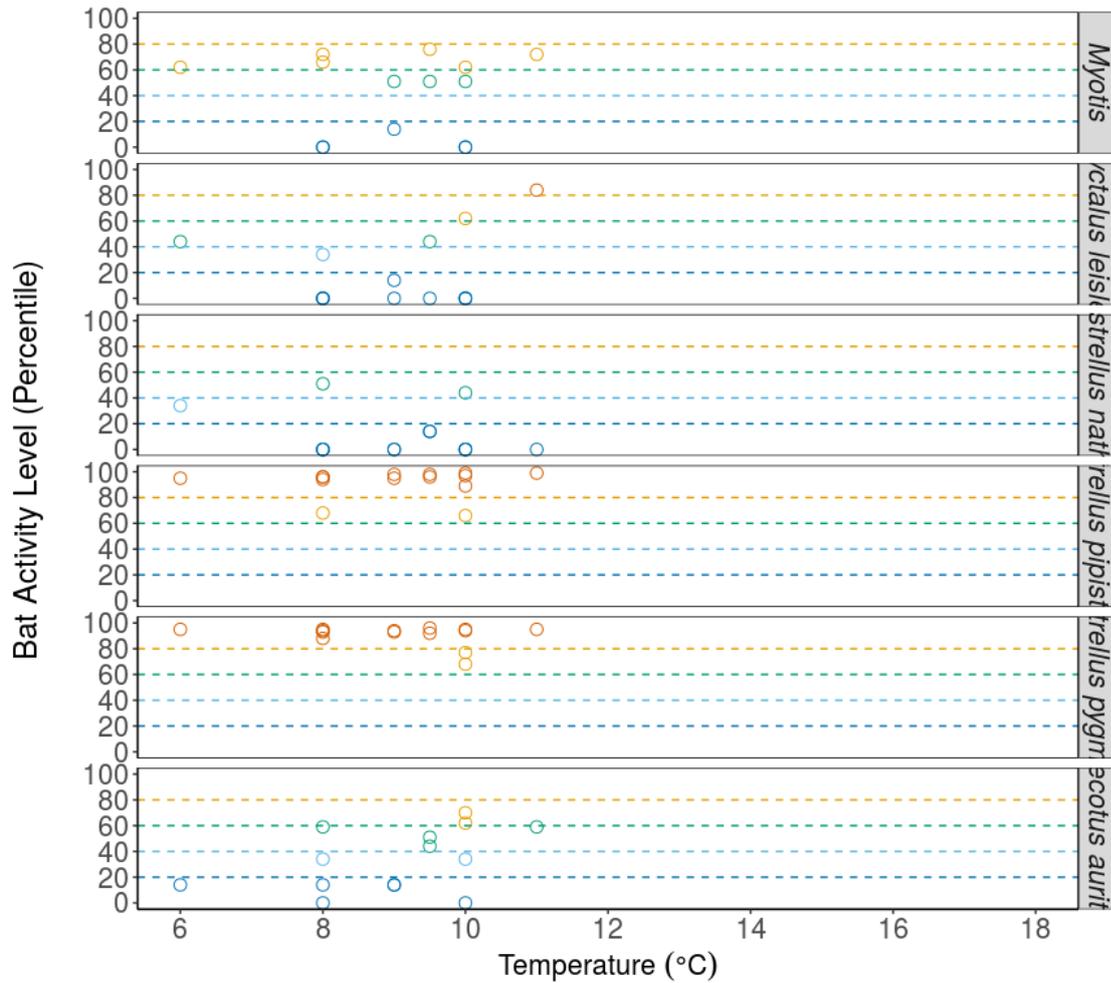


Figure 3. The relationship between recorded bat activity (percentile) and the temperature at sunset, split by species.

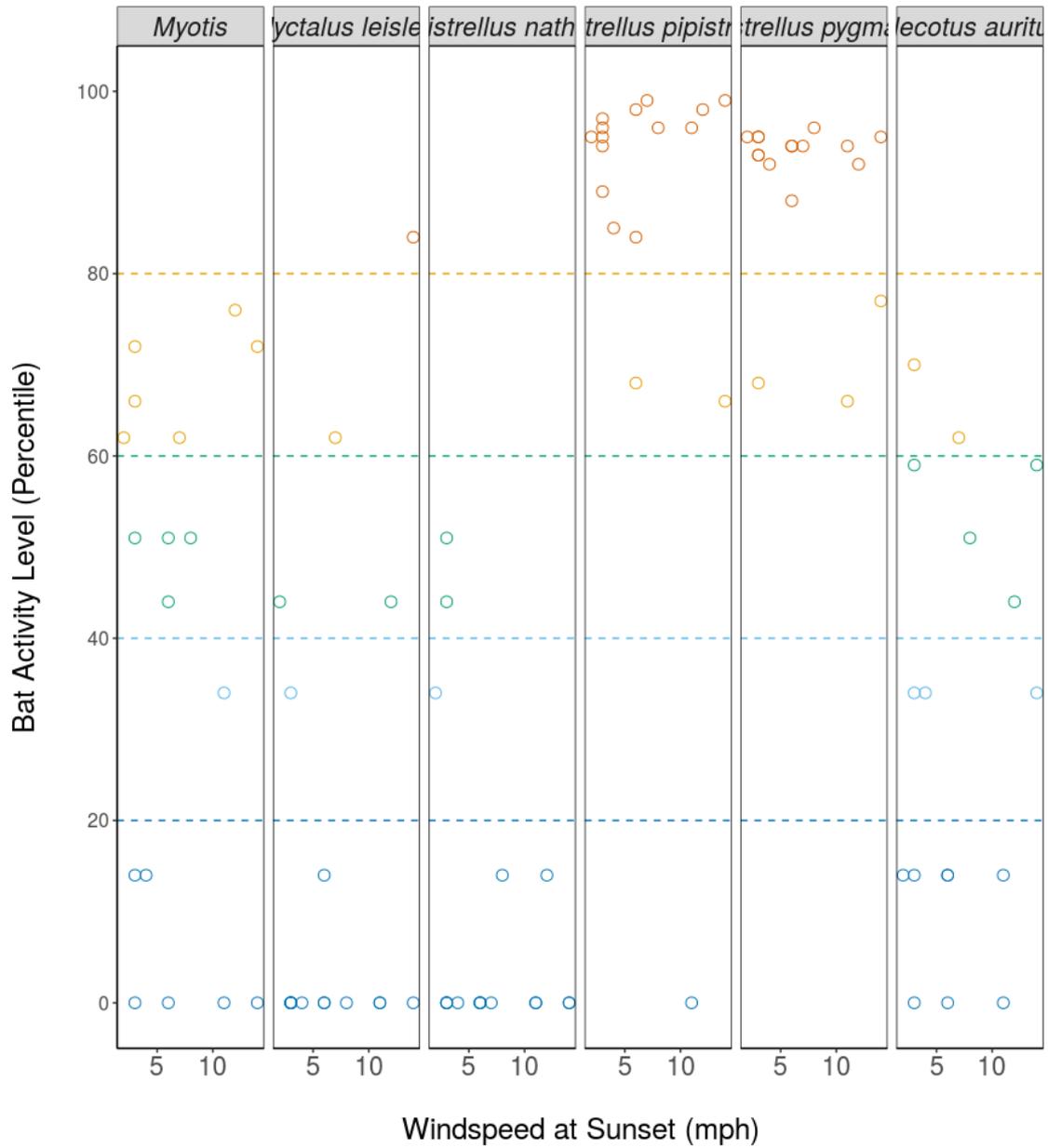


Figure 4. The relationship between recorded bat activity (percentile) and the temperature at sunset, split by species.

Appendix C – Pump House Design

