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2025 Bat Survey Report

For
Whitestown Unauthorised
Landfill,
Co. Wicklow



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DOCUMENT DETAILS

Client: Wicklow County Council

Project Title: Assessment for Annex IV species (bats) for the final draft remediation plan for Whitestown unauthorised landfill to comply with a High Court order made on 17 July 2017 for the remediation of the site. Whitestown unauthorised landfill is 14.5 ha and surrounded by agricultural land. This site originally operated as a quarry prior to the deposition of waste. The site is located approximately 2.6 km southwest of Donard Village along the N81.

Document Title: Bat Survey Report 2025

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Date: 01/04/2026

ABSTRACT:

This report details the results of bat surveys undertaken during 2025 as part of a remediation plan for works for remediation of Whitestown unauthorised landfill.

These surveys updated and were informed by previous bat surveys which were conducted in 2021 and 2023. This bat report is required to assess the impacts of the remediation of the site on bat species within and surrounding the site.

The 2021 surveys found a maternity roost for Common and Soprano Pipistrelle bats roosting in a derelict dwelling house with a garage used as a satellite roost.

The 2023 surveys showed a change in species and roost locations. A disused agricultural building, was now used as a maternity roost for Brown Long-eared bats alongside Natterer's and Whiskered bats, while the garage was used as a roost for Brown Long-eared bats. The derelict dwelling house was still used by smaller numbers of Pipistrelle bats.

Due to the potential requirement for the demolition of existing buildings as part of remediation works a new purpose designed compensatory bat roost building was constructed in the spring of 2025.

This report details results from 2025 Surveys which included winter hibernation, spring and maternity period surveys conducted throughout the year.

Results show the disused agricultural building still has a Brown Long-eared maternity roost with 21 bats confirmed occupying the roost.

The surveys also show the new compensatory bat roost has started to be used by bats with two Soprano Pipistrelle bats and a Leisler's bat emerging from the structure in the July survey.

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1 INTRODUCTION

This report details the findings of a bat survey completed in 2025 as part of an assessment for Annex IV species (bats) for the final remediation plan for Whitestown unauthorised landfill to comply with a High Court order made on 17 July 2017 for the remediation of the site. Whitestown unauthorised landfill is 14.5 ha and surrounded by agricultural land. This site originally operated as a sand and gravel quarry prior to the deposition of waste. The site is located approximately 2.6 km southwest of Donard Village along the N81. This document reports on the findings of bat surveys conducted in 2023 and 2025 within the site.

This report aims to;

- Confirm and identify the species of bats using the site.
- Examine buildings within and surrounding the site for roosting potential.
- Examine feeding and commuting routes.
- Determine if the new compensatory bat roost is in use.
- Potential impacts on bats from the remediation works .

In order to assess the presence and activity of bats within the site the following surveys were undertaken:

- Roost assessment
- Bat activity (emergence surveys, walked transects and static surveys)

1.1 RELEVANT GUIDANCE DOCUMENTS

This survey and report draws on the following guidelines and documents:

- Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland
- CIEEM (2021). Bat Mitigation Guidelines. A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version 1.0.
- NIEA, Natural Environment Division (2021). Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland.
- European Commission (2021). Commission notice. Guidance document on the strict protection of animal species of Community interest under the Habitats Directive
- BTHK (2018). Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals. Pelagic Publishing, Exeter UK.
- Collins, J. (Editor) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust, London
- Aughney, T., Kelleher, C. & Mullen, D. (2008). Bat Survey Guidelines: Traditional Farm Buildings Scheme. The Heritage Council, Áras na hOidhreachta, Church Lane, Kilkenny.
- National Roads Authority (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes
- McAney, K. (2006) A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- The status of EU protected habitats and species in Ireland: Conservation status in Ireland of habitats and species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

- NRA (2006). Guidelines for the Treatment of Bats during the Construction of National Road Schemes. National Roads Authority (now named Transport Infrastructure Ireland), Ireland.

1.2 STATEMENT OF AUTHORITY

The bat surveys were undertaken by Faith Wilson BSc CEnv MCIEEM and John Curtin BSc. Faith is a highly experienced ecologist specialising in flora, badger, otter, bats, deer, ornithological surveys, environmental impact assessment, impact mitigation and habitat creation/restoration, native woodland surveys, cetacean surveys, and public lectures. Faith is an active member of Bat Conservation Ireland (BCI) and previously served on the board of BCI. Faith attended and helped to deliver the BCI Bat Detector and Bat Handling Workshops which are the standard training for the carrying out of bat surveys in Ireland and also authored the guidance for surveying bats in wind farms in Ireland.

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 commercial 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 Bat Conservation Ireland, which monitors bat populations in Ireland, and facilitates the education of bat communities to the public.

Faith holds the following licences

Description	Licence No
Licence to capture protected wild animals for educational, scientific or other purposes (bats)	Licence No. C168/2021
Roost disturbance (bats)	Numerous
Licence to photograph / film wild animals (bats)	125/2021

John holds the following bat licences.

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

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.

2.1.1.1 *The Wildlife Acts 1976 and 2000*

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the wildlife act according to the National Parks and Wildlife Service are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All bat species are protected under the act. The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims.

It is 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

2.1.1.2 *European Communities (Birds and Natural Habitats) Regulations 2011 to 2021*

The EC (Birds and Natural Habitats) Regulations 2011-2021 provide strict protection for all of the Irish species listed on Annex IV of the EU's Habitats Directive. It does this by prohibiting certain activities which could impact on the conservation status of those species. Those activities may only be permitted by way of a derogation licence. 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.

2.2 LANDSCAPE CONTEXT

Whitestown unauthorised landfill site is located in a former quarry site that has since succeeded into a variety of habitats including semi-natural woodland, wetlands, grassland and springs.

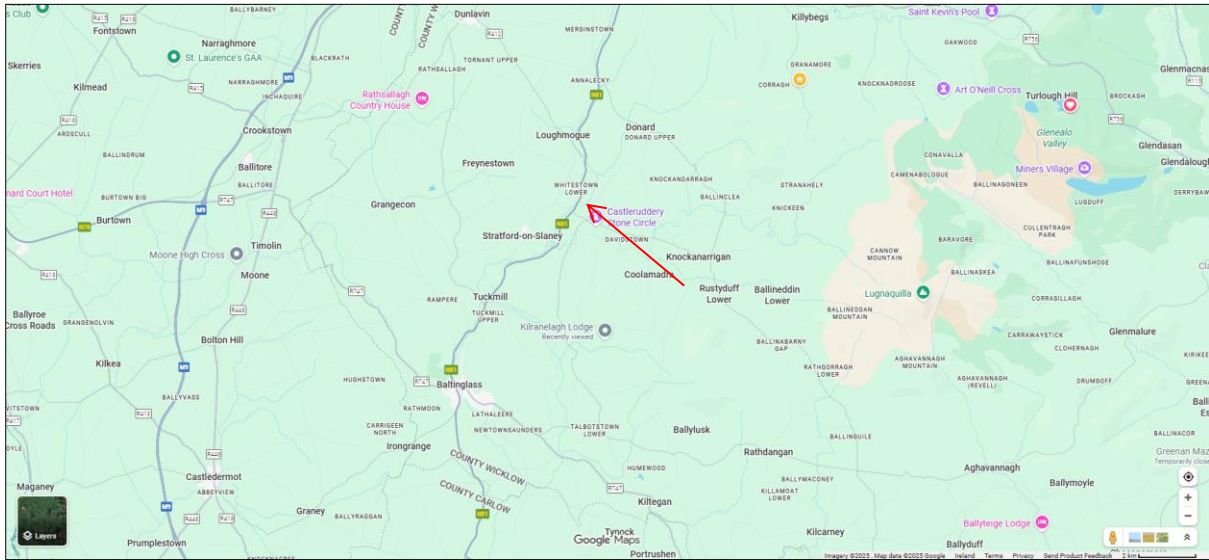


Figure 2-1: Whitestown is located north of Baltinglass adjoining the N81 (Google maps).



Figure 2-2: Whitestown Quarry (Google maps imagery).

2.3 BAT SPECIES RECORDED IN THE SURROUNDING AREA

A data search was conducted in December 2021, January 2024 and again in March 2026 to revise existing information for the site. The following information sources were examined:

- Known bat records within a 10 km radius of the site 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)
- Records of designated sites within a 15 km radius of the site where bats form part or all of the reason for designation (<https://www.npws.ie/protected-sites>)
- Collation of data on known caves within a 4 km radius of the site from the Cave Database for the Republic of Ireland, compiled by Trinity College (http://www.ubss.org.uk/search_irishcaves.php)

2.3.1 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 2-1 shows the projected suitability for the site. Overall, the site is of moderate suitability for bats. Common Pipistrelle bats show high suitability.

Table 2-1: Landscape model of the site

All bats result	Species	Suitability result
22.56 (green)	<i>Pipistrellus pygmaeus</i>	33
	<i>Plecotus auritus</i>	32
	<i>Pipistrellus pipistrellus</i>	41
	<i>Rhinolophus hipposideros</i>	1
	<i>Nyctalus leisleri</i>	34
	<i>Myotis mystacinus</i>	12
	<i>Myotis daubentonii</i>	20
	<i>Pipistrellus nathusii</i>	4
	<i>Myotis nattereri</i>	26

2.3.2 Historical Bat Records

A review of historical bat roosts is provided in **Table 2-2** with general and ad hoc records listed in **Table 2-3**.

Table 2-2: Historical Bat Roosts from within the vicinity of the site.

Species	Distance from site	Date of last record	Details	Potential connectivity with subject site (for roost records)
<i>Pipistrellus pygmaeus</i> & <i>Nyctalus leisleri</i>	600m east	2009	Large maternity roost of Soprano Pipistrelle within derelict dwelling house. Probable Leisler's roost in same building	According to BCT the CSZ * for both species is 3km thus the subject site lies within this zone. Further, (Shiel, 1999) found that the maximum (mean) flight distance recorded for individuals from two Leisler's bat maternity roosts ranged from approximately 4.5 km to 7.5 km. The subject site, containing both edge habitat and semi-natural grassland is likely to be utilised regularly by the bats using this roost, should it still be occupied. There is also potential for both species to utilise the roost buildings within the subject site as satellite roosts.
<i>Pipistrellus species</i>	900m south	1999	Unknown Pipistrelle species observed within house. No details on numbers.	This is an old record with little detail. The site does sit within the CSZ for this species.
<i>Plecotus auritus</i>	1.2km south-east	1998	Droppings found within Church.	The subject site lies inside the CSZ for this species (3km). This is an old record and it is unknown if it is still active however Church bat roosts can persist for a considerable period. There is good connectivity via rivers, treelines and hedgerows.
<i>Pipistrellus pygmaeus</i> , <i>Pipistrellus pipistrellus</i>	1.9km north-east	2007	No other details	The subject site lies inside the CSZ for these species and connectivity exists via river network. Record lacks details on size of roost.
<i>Plecotus auritus</i> , <i>Myotis spp.</i> , <i>Pipistrellus pygmaeus</i> , <i>Pipistrellus pipistrellus</i>	2.5km north-east	2004	House roost. No other details	The subject site lies inside the CSZ for all these species baring Common Pipistrelle and connectivity exists via river network. Record lacks details on size of roost.
Unidentified bat	3.4km	1999	No details	This is an old record with little detail.
Unidentified bat	4.4km	2017	Over stable door	Record lacks details.

*Core Sustenance Zone (CSZ)

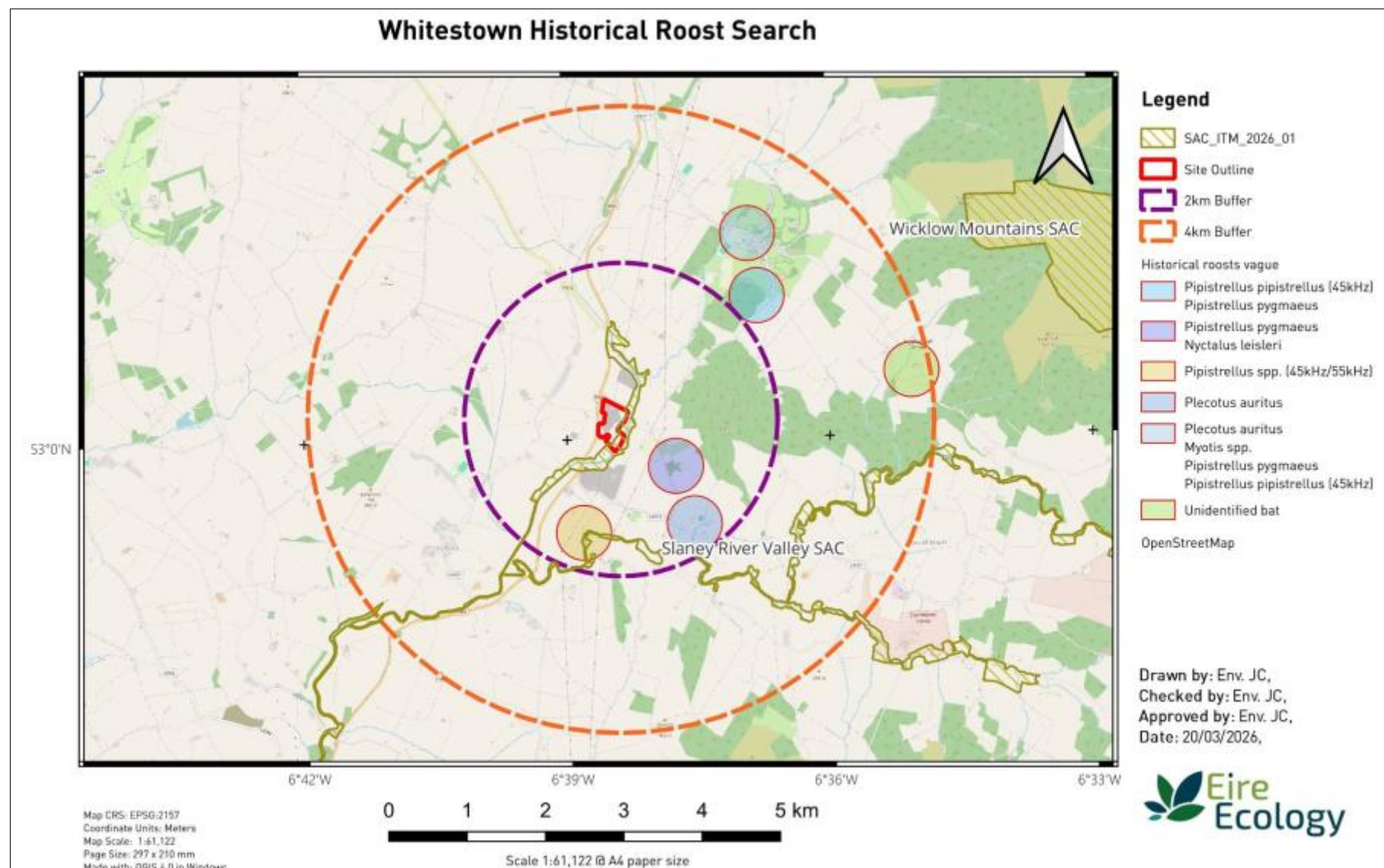


Figure 2-3: Review of bat roosts within Core Zones of Influence for Irish Bats.

The NBDC and Bat Conservation Ireland database was consulted for details on bat records held for the site and the surroundings. The databases were consulted on the 12th April 2024 and again on 20th March 2026 on for details on historical records from the site and up to 4km; the furthest zone of influence for any Irish bat species.

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. (BCT, 2020) estimates distances for UK bats.

Six roosts have been historically recorded within 4km of the site. The closest historical roost, which was recorded in 2009, is located c. 600m from the site. This roost contained a maternity colony of Soprano Pipistrelle and likely Leisler's roost. Given the distance, connectivity and habitats within the site, it should be considered an important habitat for the continued usage of this roost.

In relation to ad hoc records; no bat records have been recorded within the 2km square the site resides in however 7 have been recorded within the S99 Hectad.

Table 2-3: Irish bat species recorded in the S99 Hectad

Common Name	Latin Name	Legal Protection	Conservation Status (Marnell et al. 2019)
Brown Long-eared Bat	<i>Plecotus auritus</i>	EU Habitats Directive (92/43/EEC) Annex IV Wildlife Act 1976, as amended	Least Concern
Daubenton's Bat	<i>Myotis daubentonii</i>		
Lesser Noctule	<i>Nyctalus leisleri</i>		
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>		
Natterer's Bat	<i>Myotis nattereri</i>		
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>		
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>		

3 SURVEY METHODOLOGY

3.1 BAT ACTIVITY AND EMERGENCE SURVEYS

The bat detectors used during the emergence and transect surveys were Wildlife Acoustics Inc. (Massachusetts, USA) Echo Meter Touch Pro 2 which is 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. Several heterodyne detectors (Bat Box 2, Pettersson D100) were also used.

Nighttime surveys combined emergence surveys towards dusk and dawn and walked transects of bat favourable habitats within and surrounding the site were conducted between March and July 2025.

Transects targeted a range of foraging and commuting habitats present within and surrounding the study area, those associated with linear features such as woodland edges, 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. 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.

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 possible. 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 5.6.0).

3.2 STATIC BAT DETECTOR SURVEYS

Passive Static Bat Surveys involve leaving a static bat detector unit (with ultrasonic microphone) in a specific location and set to record for a specified period of time (i.e. a bat detector is left at the site there is no observer present and bats which pass the monitoring unit are recorded and their calls are stored for analysis post surveying). The bat detector is effectively used as a bat activity data logger. This results in a far greater sampling effort over a shorter period of time. Bat detectors with ultrasonic microphones are used as the ultrasonic calls produced by bats cannot be heard by human hearing.

All surveys availed of the use of Song Meter Mini Full spectrum bat recorders which were deployed within the study area. The detector was placed at various locations either outside buildings or within them.

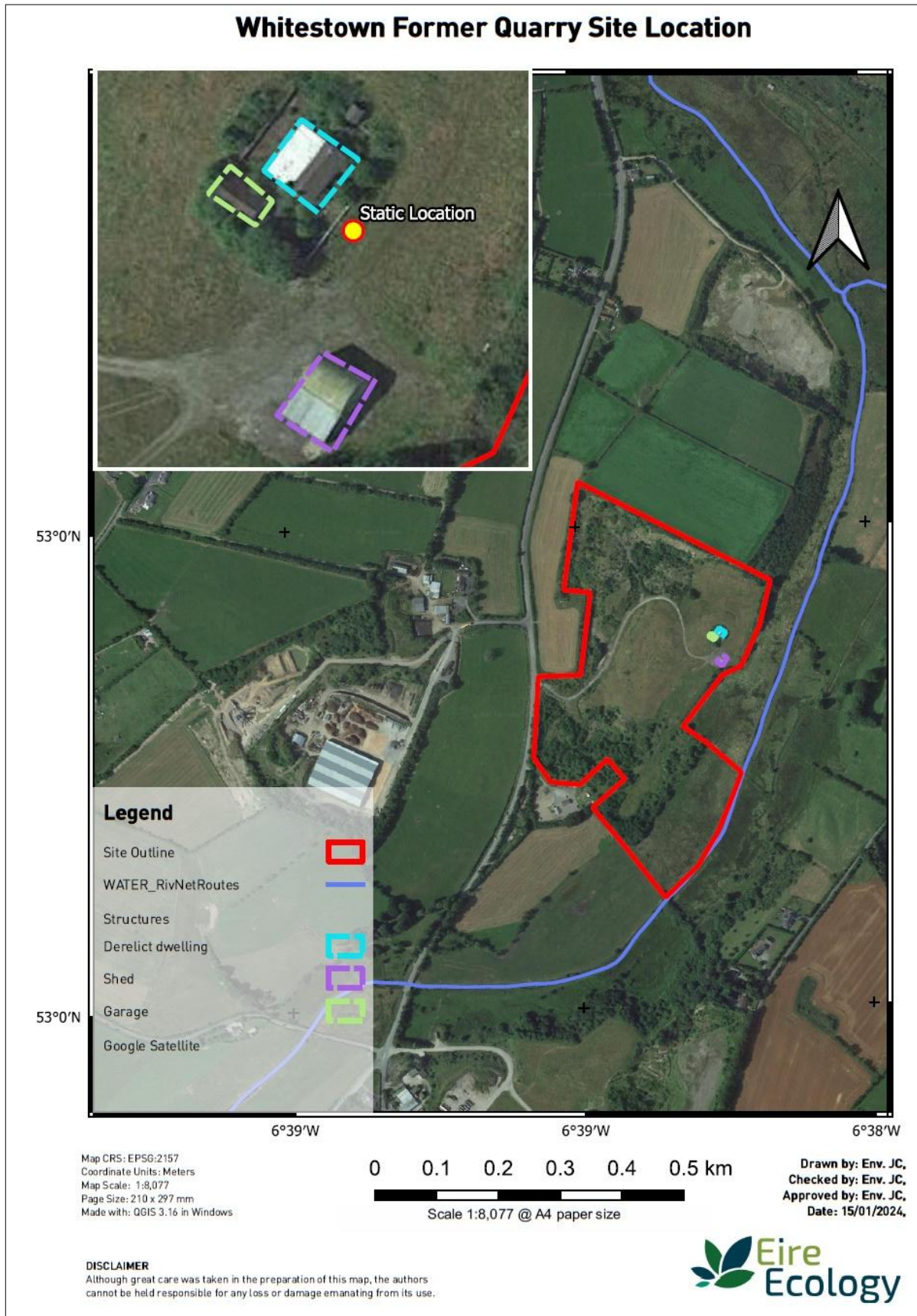


Figure 3-1: Buildings on Site in 2023.



Figure 3-2: Buildings on Site in 2025.

While the detectors were often placed close to buildings such as the known roost by the derelict dwelling house, the overall habitats surrounding the buildings are not the best bat habitats found within the site and connectivity at a landscape level for bats was limited.

A section of scrub was found surrounding the derelict dwelling house, but this does not join up with the greater landscape.

In 2023 a treeline of Aspen and Willow occurred to the south of the disused agricultural building running NE-SW and this provided an important link or foraging bats to the river.



Much of the habitat within a 50m buffer of the buildings (derelict dwelling house, garage and disused agricultural building) consists of open grassland.

Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some species such as 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, the static unit was 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. Detectors were left out for 31 nights in total in 2023 and 22 nights in 2025. Data from a previous 2021 static survey (17 nights in August) was also used for comparison. See **Table 4-1** below for further details.

The data was analysed with Wildlife Acoustic's Kaleidoscope Pro; version 5.6.0). This software identifies many of the calls made by Irish bats. All calls not labelled Soprano or Common Pipistrelle Bats were manually verified.

Results presented below show some *Myotis* calls where the surveyor is confident the bats are 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 40 kHz. These calls are lower than expected for Common Pipistrelle but higher than typical for Nathusius's.

The static detectors were typically erected ensuring the microphone height was set at 2m or higher.

3.2.1 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 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 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;

4 RESULTS

4.1 BAT SURVEYS - OVERVIEW

Table 4-1 provides details of bat surveys conducted on the site including summarising those of baseline surveys conducted in 2021, 2023 and 2025.

Table 4-1: Bat Survey Effort Summary

Survey	Date	Survey type	Details	Surveyor
2021 Surveys				
1	01/08/2021 to 19/08/2021	Static Bat Survey	Static set by derelict dwelling house for 17 nights. High Common Pipistrelle (average of 22.8 BP/Hr) ¹ activity recorded.	FW
2	24/08/2021	Daylight inspection, emergence and transect	Three buildings identified as potential roosts; derelict dwelling house (1), garage (2) and disused agricultural building (3). Bats confirmed roosting in derelict dwelling house and garage with no roosting bats recorded from disused agricultural building.	FW
3	10/09/2021	Daylight inspection, emergence and transect	Common / Soprano Pipistrelle maternity roost recorded from derelict dwelling house while Pipistrelles also noted emerging from garage – likely satellite roost. Transect surveys showed good Daubenton's activity to south by Carrigower River and over floodplain, with Leisler's bat, Common and Soprano Pipistrelle recorded throughout site. Unidentified <i>Myotis</i> bats also recorded.	FW
2023 Surveys				
1	04/03/2023 to 23/03/2023	Static Survey	Winter season static survey conducted by derelict dwelling house within site. During the 17 nights 179 registrations were recorded with highest activity recorded from Common Pipistrelle (120 registrations). Overall low activity (average 0.8 BP/Hr), typical for this time of year.	FW
2	16/04/2023	Static Survey	One night of recording in April. Increase in Leisler's activity compared to March. This is typical as Leisler's activity strongly correlates with temperature. Static was set recording for a short period (c.4 hours) over the period of night where activity is highest thus the average BP/Hr (38.4) is higher than typical for this time of year.	FW
3	30/05/2023 to 01/06/2023	Static Survey	Three nights recording in May / June. Soprano Pipistrelle was the highest recorded species with 686 registrations. Overall activity levels are high, averaging 46.9 BP/Hr.	FW
4	03/06/2023	Emergence survey and transect	Up to 40 Pipistrelle bats light sampling in the disused agricultural building. This disused agricultural building did not contain a bat roost in 2021.	FW

¹ Bat passes per hour

Survey	Date	Survey type	Details	Surveyor
			During transects, bats were noted hunting over Newt pond.	
5	30/06/2023	Static Survey	One nights recording with 94 registrations averaging at 11.6 BP/Hr	FW & JC
			Daylight search and Emergence survey.	
			Accumulation of bat droppings in the disused agricultural building both within cavity breeze blocks (crevice dwelling bats), on the floor, and on shelves in the small, enclosed area with the sink (described herewith as the 'office') and on its roof. Droppings were also noted on wooden shelves within the lean-to portion of the disused agricultural building and on the ground alongside butterfly and moth prey remains.	
		Emergence, transect, and re-entry surveys	The garage was also inspected. This building has an attic space with tiles and bitumen felt and while slightly low is still of good bat roosting potential. Scattered Brown Long-eared bat droppings were noted here and the ridge beam was devoid of cobwebs indicating bat activity. Several access points provide access. An attic opening in the NW room of the garage provides good access. In addition, gaps in the NE and by the fascia along the gable end provide access to the attic of the garage. Bat droppings were collected for DNA analysis from both the garage and the disused agricultural building. Emergence survey recorded 16 Brown long-eared bats within both sections of the disused agricultural building (building 3) along with 2 Common Pipistrelles and 1 Soprano Pipistrelle. Canon XA10 camcorder aided emergence count. The thermal scope by the rear of the derelict dwelling house did not find emerging bats however a Leisler's bat was recorded flying inside the building towards dawn.	
6	16/07/2023 to 22/07/2023	Static Survey	1503 registrations recorded over a seven night period. High Brown Long-eared bat activity with multiple social calls and several recordings with more than one bat within the disused agricultural building.	FW
7	31/07/2023	Emergence survey	Brown Long-eared, Common and Soprano Pipistrelle noted in the disused agricultural building (building 3) and Common, Soprano Pipistrelle and Leisler's bat, whiskered bat observed emerging from the derelict dwelling house.	FW
8	16/08/2023	Emergence survey	Surveys again conducted at buildings. 2 x bats recorded roosting in the garage, a single Brown Long-eared and Soprano Pipistrelle. Two non-echo locating bats (probably Brown Long-eared) probably emerged from the derelict dwelling house during emergence period.	FW & JC

Survey	Date	Survey type	Details	Surveyor
		Static Survey	SM Mini placed in the disused agricultural building (building 3) throughout the night. During this survey 526 registrations were recorded with Brown Long-eared represented 72%, Soprano Pipistrelle 14%, Common Pipistrelle 11% and Natterer's bat 2% (11 recordings). Given the amount of bats flying within the disused agricultural building, these Natterer's could easily be missed during typical surveys.	
2025				
9	18/02/2025 – 04/03/2025	Daylight inspection	Hibernation inspection of the disused agricultural building, house and garage and ecological site walkover	FW & JC
		Static Survey	Remote static monitoring	
10	25/03/2025	Daylight inspection	Onsite meeting with Fehily Timoney and arborist regarding creating windrow from cut trees to restore commuting route at the disused agricultural building.	JC
11	26/05/2025	Emergence survey	Emergence survey of the disused agricultural building and inspection of partially constructed compensatory bat roost building.	FW
12	26/06/2025	Daylight inspection	Daylight inspection of completed compensatory bat roost building.	FW
13	16/07/2025	Emergence survey	Surveys conducted throughout site including the disused agricultural building, derelict dwelling house, garage and the new compensatory bat roost building.	FW & JC

Table 4-2 details weather data taken during surveys.

Table 4-2: Weather data

Date	Temp °C	Cloud Cover	Rain	Wind	Sunset / Sunrise	Start	Finish
04/03/2023	6	100%	Dry	F2 to 4	18:08	18:00	19:00
16/04/2023	14	75%	Dry	F2 to 3	20:26	20:37	23:30
30/05/2023	11	80%	Dry	F2 to 4	21:40	21:40	22:40
03/06/2023	14.5	0%	Dry	F1	21:44	21:45	00:45
30/06/2023	14.5	100%	Dry	F4 – 5 gusts	21:56	22:24	00:10
01/07/2023	12.5	100%	Dry	F1	05:01	03:10	05:00

Date	Temp °C	Cloud Cover	Rain	Wind	Sunset / Sunrise	Start	Finish
31/07/2023	16 to 14	0%	Dry	F2 to 4	21:22	21:00	23:17
16/08/2023	16.5 -13.5	10%	Dry	F2 to 3	20:51	18:55	23:55
17/08/2023	15	0%	Dry	F2 to 3	06:07	04:00	06:30
18/02/2025	6	0%	Dry	F3	17:41	09:00	14:00
25/03/2025	11.5	0%	Dry	F1	18:45	09:00	13:00
26/05/2025	13	0%	Dry	F3	21:34	21:00	23:45
16/07/2025	15	0	Dry	F2	21:42	21:10	00:30

4.2 2023 EMERGENCE AND WALKED SURVEY RESULTS

4.2.1 04th March 2023

Survey conducted by Faith Wilson. Fresh bat droppings were noted on the wall of the small room at the rear of the garage. Fresh bat droppings also noted within the derelict house. There are unlimited locations for bats to avail of in these structures. The disused agricultural building was also examined and there was no evidence of a bat using the disused agricultural building. No bat activity was noted at dusk and the static bat detector was deployed.

4.2.2 16th April 2023

Survey conducted by Faith Wilson. The first bat was recorded at 20.58 over the site (a Leisler's bat). Three Soprano Pipistrelles emerged from the garage. Fresh droppings were noted on the wall below holes to the attic for pipework. At 21:09 a single Soprano Pipistrelle emerged from the garage, followed at 21:12 a single Soprano Pipistrelle emerged from the rear of the garage. At 21:14 a Leisler's bat was detected and at 21:19 a possible Brown long-eared bat was heard and a Leisler's bat was recorded overhead and again at 21:26 and at 21:30 when it was joined by a Common Pipistrelle bat. At 21:38 and 21:52 a Soprano Pipistrelle was recorded foraging over the house. At 21:44 a Leisler's bat was recorded and at 21:46 a Soprano Pipistrelle was recorded. A general walkover survey was then completed and Leisler's bat, Common Pipistrelle and Soprano Pipistrelle were recorded throughout the site. There was very good hunting activity over the newly created newt pond. The survey concluded at 11.30 and the static was collected.

4.2.3 03rd June 2023

Survey conducted by Faith Wilson. This was the first time the disused agricultural building (building 3) was noted being used as a bat roost. Bat droppings were scattered throughout. The disused agricultural building consists of two parts; the north-eastern section is constructed of corrugated sheeting similar to the traditional rounded hay barn with a rounded roof and a metal frame. The adjoining south-western section is constructed from cavity breeze blocks and has a sloped metal roof forming a lean-to type structure adjoining the curved hay barn. Within this lean-to there is a small internal structure constructed from cavity breeze blocks with door and a plywood roof. This is described in the report as the 'office'. An internal door provides access between the two parts of the disused agricultural building while each section also has an external door. Fresh bat droppings were also noted in the garage building (2).

The night time survey primarily focused on the disused agricultural building. During the survey c. 40 Pipistrelle; both Common and Soprano were noted flying within the disused agricultural building. In addition, unidentified *Myotis* bats were also recorded.

After the emergence period a transect was conducted where four Leisler's bats were noted hunting over the newly constructed newt pond.

4.2.4 30th June 2023 – 1st July 2023

4.2.4.1 Disused Agricultural Building (3)

Survey conducted by Faith Wilson & John Curtin. During the emergence period a surveyor was positioned to the south-west looking at the two doorways of the disused agricultural building; the most likely exit for bats. The surveyor used a Canon CA10 with Infra-red nightfox torches. In total 16 Brown Long-eared bats were recorded in addition to 2 Common Pipistrelle and a Soprano Pipistrelle. Bats light sampled in the curved barn section of the building and the lean-to before emerging through both external doors.



Plate 4-1: BLE flying within the lean-to portion of the disused agricultural building.



Plate 4-2: BLE emerging from the lean-to portion of the disused agricultural building

4.2.4.2 *Derelict Dwelling House (1) and Garage (2)*

While the main survey work was carried out at the disused agricultural building (3) during the emergence period, a Guide track thermal scope was set to the rear of the derelict dwelling house (1) and garage (2) set to record emerging bats from the rear of these buildings. The scope has good range and can record flying bats from several hundred meters.

At 22:39 and 22:40 single bats were recorded emerging from the garage. No bats were found emerging from the derelict dwelling house.



Plate 4-3: Bat emerging from garage

Towards dawn a surveyor was positioned to the front of the derelict dwelling house. A single Leisler's bat was recorded within this building at 03:34.



Plate 4-4 Dawn survey by derelict dwelling house @ 03:34 Leisler's bat flew within building through room

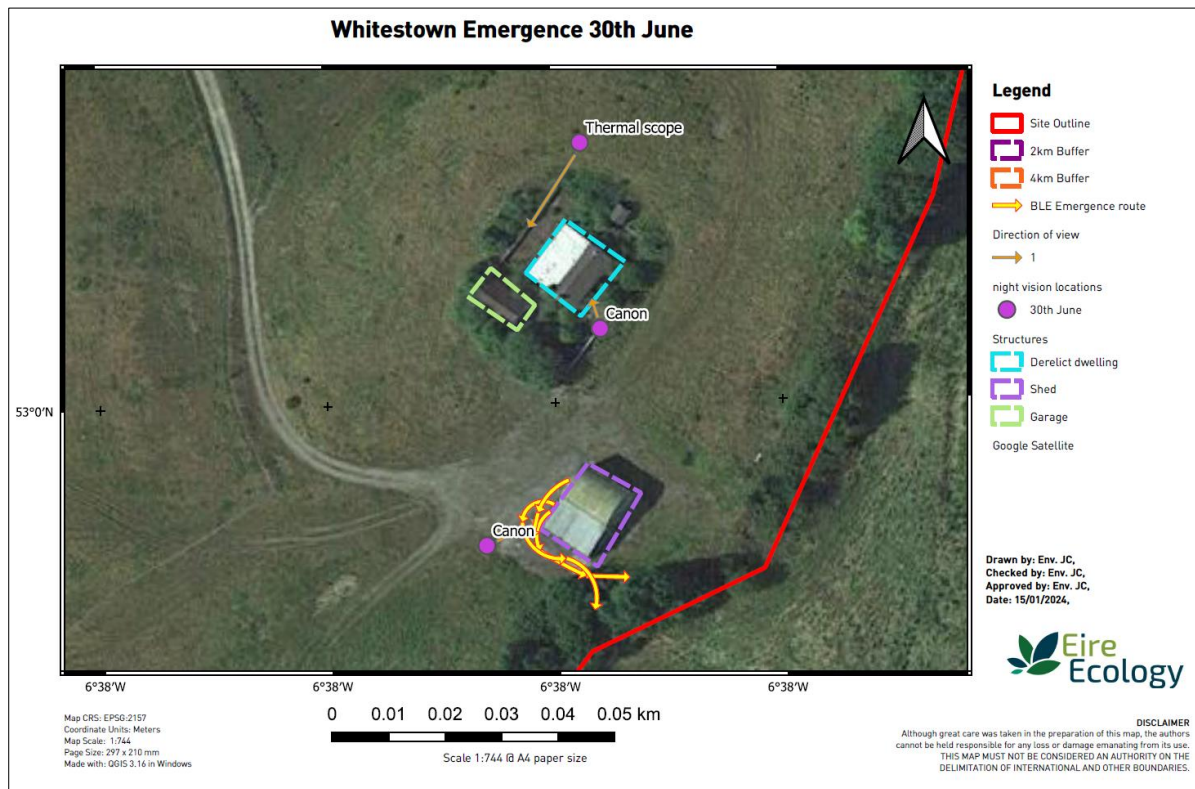


Figure 4-1: Location of bat activity on the 30th June 2023.

4.2.4.3 DNA Analysis

Bat droppings were collected from a variety of locations within the disused agricultural building during the daylight survey including from within the breeze block cavities. Samples were sent for DNA analysis to Swift Ecology who confirmed the presence of Brown Long-eared, Natterer's and Whiskered bat. The latter two species can more regularly be found as crevice dwelling bats.

4.2.5 31st July 2023

Emergence survey conducted by Faith Wilson focusing on the derelict dwelling house and garage. Brown long eared bats were recorded light sampling in the darkened disused agricultural building at dusk. During the survey a Common Pipistrelle, Soprano Pipistrelle, Leisler bat and Whiskered bat were recorded likely emerging from the derelict dwelling house however numbers of bats exiting was low.

Later in the night Common Pipistrelle, Soprano Pipistrelle, and Brown long eared bats were recorded foraging in the curved portion of the disused agricultural building. Wind speed increased and a bright moon deterred bats from emerging after 23.16 and the survey was then concluded as the temperature decreased to 14 degrees.

4.2.6 16th and 17th August 2023

During this survey, surveyors were again positioned by the buildings observing bat activity. Weather conditions were good during the survey. Initially five Brown Long-eared bats were visible in the disused agricultural building, with four seen in the main lean-to section and one in the 'office'. One Brown Long-eared bat was present in the attic of the garage at 21:26. A single Soprano Pipistrelle emerged from the west gable of the garage and also one from the eastern end.

Two possible *Myotis* bats were recorded at the north west corner of the derelict dwelling house between 21:35 and 21:45 and are likely to be roosting there. Leisler's bat was recorded hunting overhead.

Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared bats were all recorded hunting in the vicinity of the disused agricultural building and the treeline of Aspen are used as a commuting route from the disused agricultural building to the remainder of the site and to the river. Daubenton's bats were recorded hunting over the river. 10 Brown Long-eared bats were recorded at dawn in the disused agricultural building and the north west and north eastern corner of the lean-to section of the disused agricultural building were where the main roosting areas identified.

4.2.6.1 Garage (2)

During this survey the Canon Camcorder was set by the garage (building 2) at a northern aspect looking south facing the door from 21:36 for 37 minutes. After 36 minutes while one bat flew in through the door a second bat was recorded leaving. This demonstrates the garage building was actively used as a bat roost.

After this time the camcorder was repositioned into the 'office' section of the disused agricultural building (building 3) aimed at a gap where bat droppings were previously noted. The aim was to record emerging Pipistrelle or *Myotis* bats. The camera was set recording for 55 minutes set from 22:46. After 9 minutes of recording a Brown Long-eared was recorded flying briefly within the 'office'.



Plate 4-5: Bat access point – garage (structure 2)



Plate 4-6: Location of cavities within the 'office' in the disused agricultural building (structure 3)

4.2.7 Transects

Transect surveys were conducted through those sections of the site that could be easily walked in the dark. Daubenton's bats were recorded by the river on the 16th of August while good bat activity of Common Pipistrelle, Soprano Pipistrelle and Leisler's bat was noted by the newly constructed Newt pond to the west during transects in July and August.

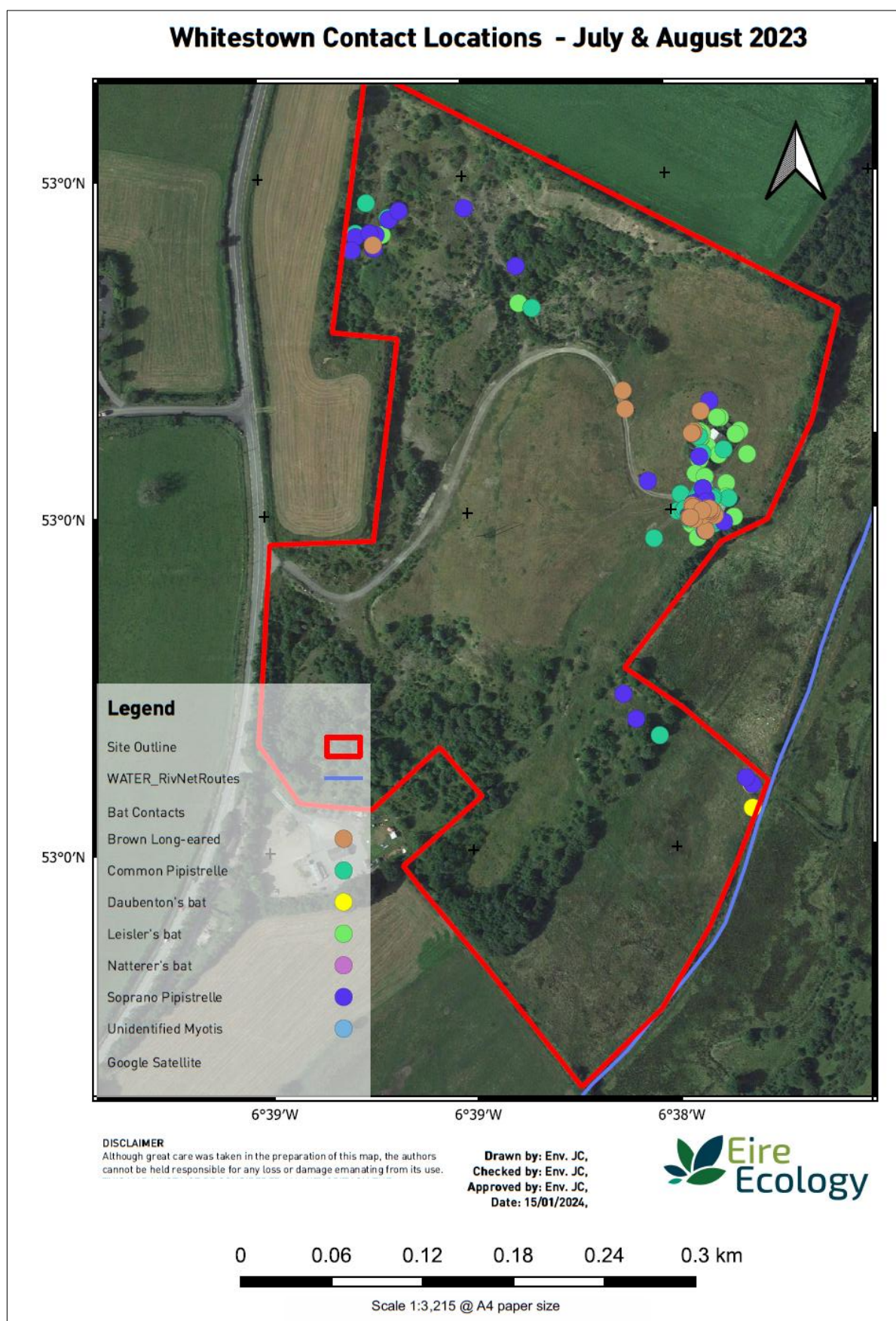


Figure 4-2: Location of bat contacts during July and August 2023.

4.3 2025 DAYLIGHT AND EMERGENCE SURVEY RESULTS

4.3.1 18th February 2025

A daylight inspection was conducted of the various buildings and surrounds.

A few fresh droppings were noted on the floor of the disused agricultural building and in the cavity in the 'office' within the lean-to portion of the structure. A fresh piece of plastic was laid on the ground in both the lean-to and curved barn parts of the disused agricultural building to be inspected at a later date for fresh droppings.

Holes and gaps throughout each building were checked using an inspection camera (Rigid 350). No bats were found during the daylight inspection in any building.

The attic space of the garage was examined and scatt from a pine martin was noted. Overall, the condition of the derelict dwelling house and garage shows further weather damage with timbers falling, leaking and signs of rot. The disused agricultural building was still in reasonable condition.

Three static bat detectors were placed inside each of the three buildings from the 18th of February to 04th of March. On the 04th March 2025 the statics were collected. The plastic sheets within the disused agricultural building were inspected with scattered fresh bat droppings recorded demonstrating occupancy.

All detectors recorded for 15 nights. Results show that the disused agricultural building , showed the highest levels of activity of the three detectors and had 73 Brown Long-Eared bat and 7 Soprano Pipistrelle recordings over the 15 nights (Bp/Hr: 0.4).

Brown Long-Eared bats and Soprano Pipistrelle were also found in lower numbers in the garage adjacent to the derelict dwelling house on site (11 and 4 individuals respectively).

Only a single Brown Long-Eared bat was recorded at the house during the 15-night survey (Bp/Hr: 0.0). Details are provided in **Table 4-6** .

4.3.2 25th March 2025

A site visit was completed to discuss making a windrow from cut material as a commuting route at the disused agricultural building and to check the location of the new compensatory bat roost building.

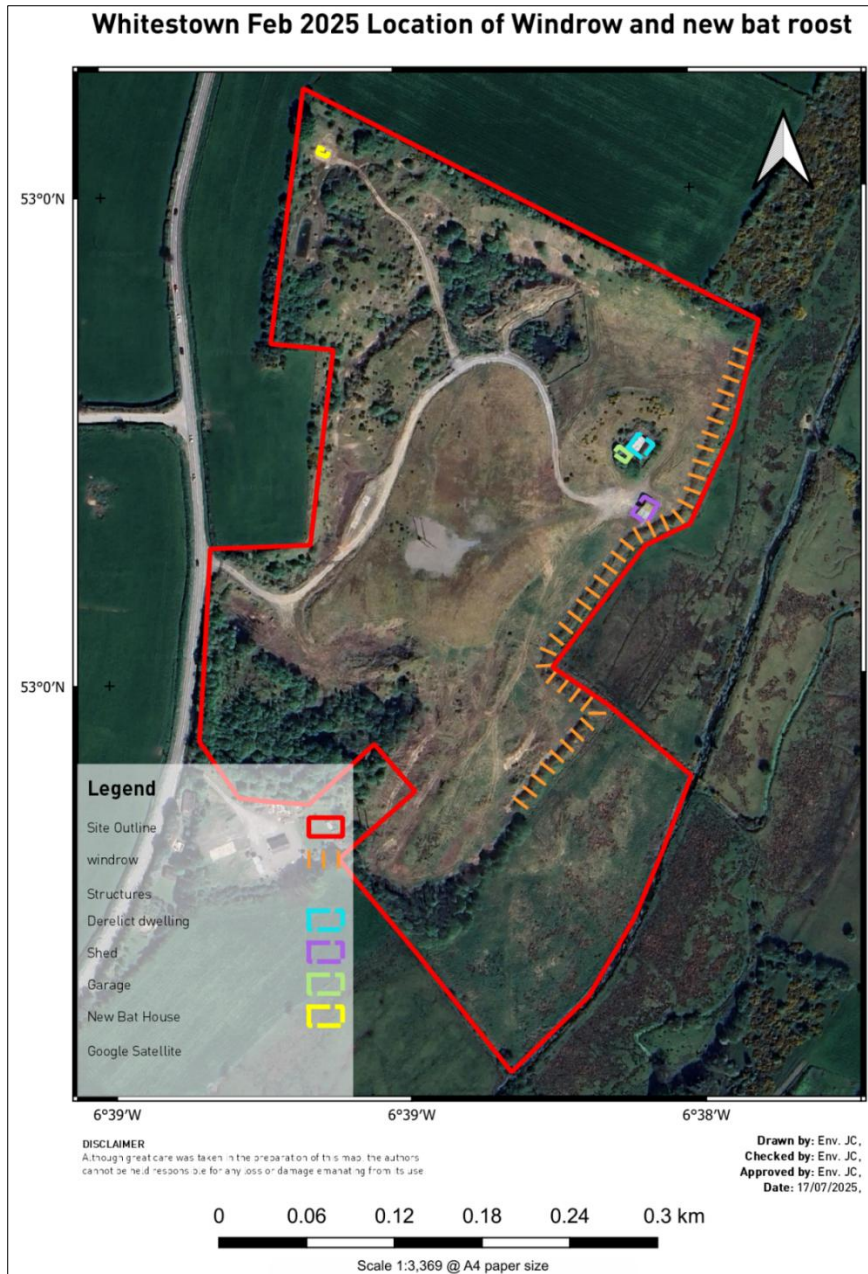


Figure 4-3: Location of windrow and new bat roost building 2025.

4.3.3 26th May 2025

An emergence survey was conducted within the disused agricultural building - which is the location of the main roost. Three statics were placed at the windrow behind the disused agricultural building, and in proximity to the garage and derelict dwelling house for just over 3 hours. Leisler's Bat, Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared and Unidentified Myotis were recorded with highest activity by the derelict dwelling house (see **Table 4-4** for details).

Table 4-3: Statics placed during entire night 26th May 2025

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Brown Long-eared	Unidentified Myotis	Total	Minutes recorded	BpHr
Garage	6	23	0	7	7	43	206	12.5
House	14	44	3	0	2	63	206	16.4
Disused Agricultural Building	4	23	1	1	0	29	206	8.4
Handheld	2	0	1	0	2	5	206	1.5
Total	26	90	5	8	11			
BpHr	1.9	6.6	0.4	0.6	0.8	140	824	10.2

Up to eight Brown Long-eared bats were visible in the 'office' structure within the lean-to section of the disused agricultural building during the emergence survey. A transect was also completed up to the newt pond towards the north western corner of the site.



Figure 4-4: Emergence survey activity level based on 3 statics set recording during night

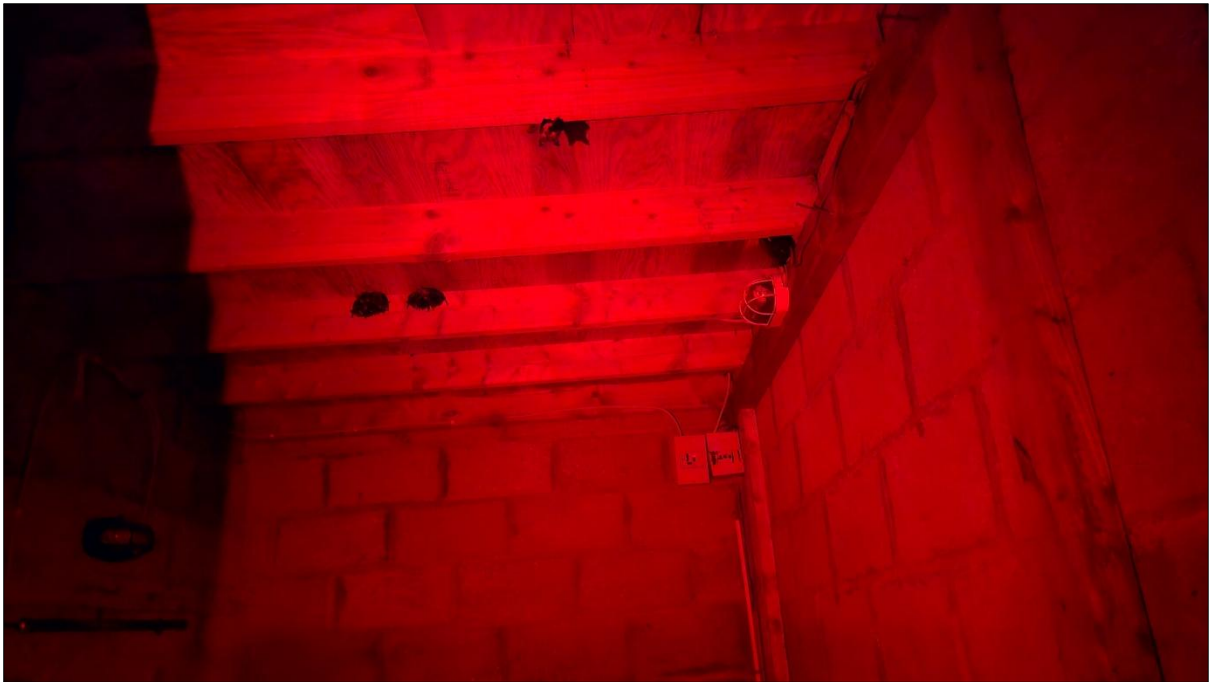


Plate 4-7: Roosting Brown Long-eared bats in the 'office' within the lean-to portion of the disused agricultural building.

4.3.4 24th of June 2025

A daylight inspection of the new compensatory bat roost building was undertaken.



Plate 4-8. Compensatory bat roost under construction.

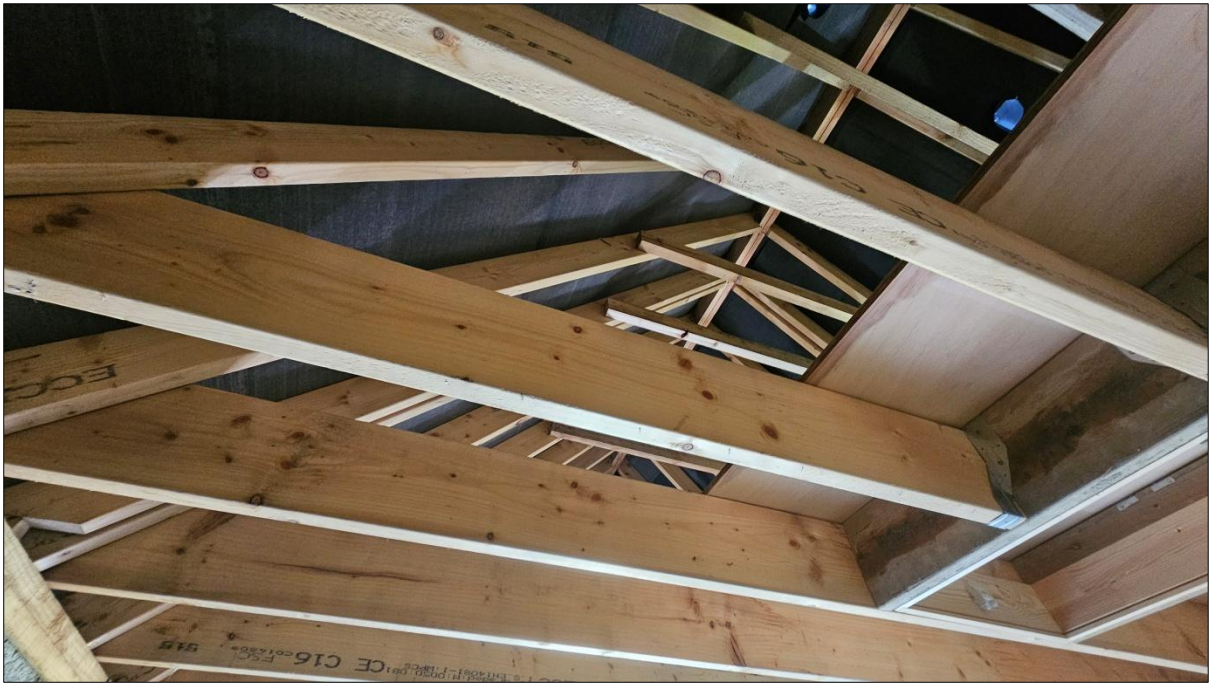


Plate 4-9. Boarding out of the attic in preparation for insulation.



Plate 4-10. Mesh provided to ensure access to the compensatory bat roost at the roof tiles.



Plate 4-11. Doubling up of roof timbers to provide crevices within the attic of the bat roost.



Plate 4-12. Access points to crevices within the block walls of the bat roost – providing potential hibernation sites.



Plate 4-13. The compensatory bat roost near the newt pond

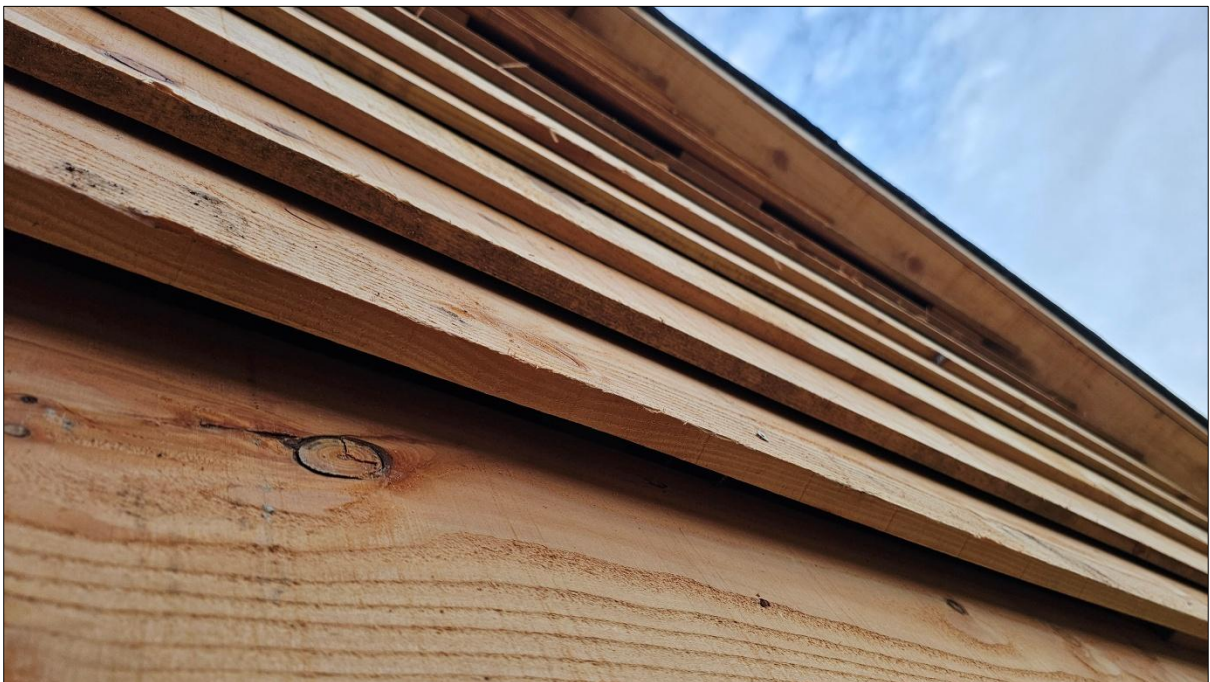


Plate 4-14. Roosting opportunities and access points within the external cladding.



Plate 4-15. Access point to the attic space in the gable wall.



Plate 4-16. Mesh on the access point to the attic space from the roof tiles.

4.3.5 16th of July 2025

An emergence survey was conducted at multiple locations throughout the site. **Figure 4-5** shows the location of NVAs;

- Disused agricultural building; a Cannon camera recorded activity within the maternity roost while a Guide TK612 was positioned outside.
- Derelict dwelling house; a Pixfra A613 examined a portion of the derelict dwelling house and disused agricultural building.
- New compensatory roost building; a Guide 19mm and a Guide TK612 was positioned here.



Figure 4-5: Emergence Survey Locations - July 2025

The emergence survey showed the disused agricultural building is still used as a maternity roost with between 15 and 20 Brown Long-eared bats noted by surveyors at any one time. A single Common Pipistrelle was also observed within the disused agricultural building during the survey.

In addition, a single Brown Long-eared bat was noted in the derelict dwelling house, while a Leisler's was also recorded flying out one of the windows. A Common Pipistrelle is also suspected of emerged from the back (NW) gable wall of the garage.

Compensatory Roost Building

After the emergence period, a short transect was conducted to the new compensatory roost building and the Newt Pond to the NW of the Maternity roost (disused agricultural building) (**Figure 4-6**). During the survey, Leisler's bat, Common and Soprano Pipistrelle were recorded emerging from this structure. An internal inspection of the new compensatory roost building showed a single bat dropping was noted in this new structure.



Figure 4-6: Transect from the Brown Long-eared Maternity roost (within the disused agricultural building) to the Newt Pond and the new Compensatory Roost.

Details on the emergence results are provided below.

4.3.5.1 *Derelict Dwelling House*

A Pixfra A613 was set to examine the derelict dwelling house for bats roosting or using the building. Common Pipistrelle (46%), Soprano Pipistrelle (26%) and Leisler's Bat (17%) were the most recorded species here.

Additionally, six calls were identified as *Myotis* bats. Due to the lack of distinguishing social calls, these species are classified to the genus level.

No bats were seen emerging from the dwelling, though a Common Pipistrelle was noted entering the building and immediately leaving.



Plate 4-17: Derelict dwelling house; no bats recorded emerging

4.3.5.2 *Exterior of the disused agricultural building*

A thermal scope was positioned outside the disused agricultural building, which contains the Brown Long-eared maternity roost, with an ultrasonic bat detector next to it. This location had the highest level of emerging bats, with 39 individuals seen emerging during the night. 21 individuals were confirmed Brown Long-Eared bats emerging mostly from the open external door of the barn section of the disused agricultural building.

8 Soprano Pipistrelle and 5 Common Pipistrelle were also recorded emerging, again primarily emerging from the open barn door of the disused agricultural building.

Additionally, 5 bats were seen emerging that were not echolocating and thus could not be identified by species. It is likely, given behaviour of the bats on thermal imaging, that these are Brown Long-Eared bats.



Plate 4-18: The disused agricultural building, which contains the Brown Long-eared maternity roost had 39 bats emerging from 4 locations

4.3.5.3 Interior of the Disused Agricultural Building

The infrared camera was positioned within the disused agricultural building where Brown long Eared bats were recorded swarming in the lean-to portion of the building. Bats were observed roosting in crevices between the central wall of the lean-to shed/curved barn and the timber rafters in the lean-to portion of the building and were observed moving back and forth between the lean-to and the curved roof barn section of the building for a long time before they began emerging.



Plate 4-19: Interior of the lean-to part of the disused agricultural building; the Red circle shows crevices where bats were observed appearing from.

Activity increased an hour after sunset, with 9 – 12 bats in flight in the disused agricultural building at once, though bats were constantly moving between the interior of these buildings, so this is a conservative estimate.

4.3.5.4 *Compensatory Roost Building*

Two thermal Scopes, a Guide TK612 and Guide 19mm, were positioned at opposite corners of the compensatory roost building. Common and Soprano Pipistrelle were most commonly recorded flying, though no bats were seen emerging from the SW view. Three bats were recorded emerging from the compensatory roost building, two Soprano Pipistrelle from individual tiles on the northern side of the roof and a single Leisler's bat emerged from beneath the fascia on the East gable end. Bats were observed all night from 22:00 and were primarily seen hunting around the new compensatory roost building.

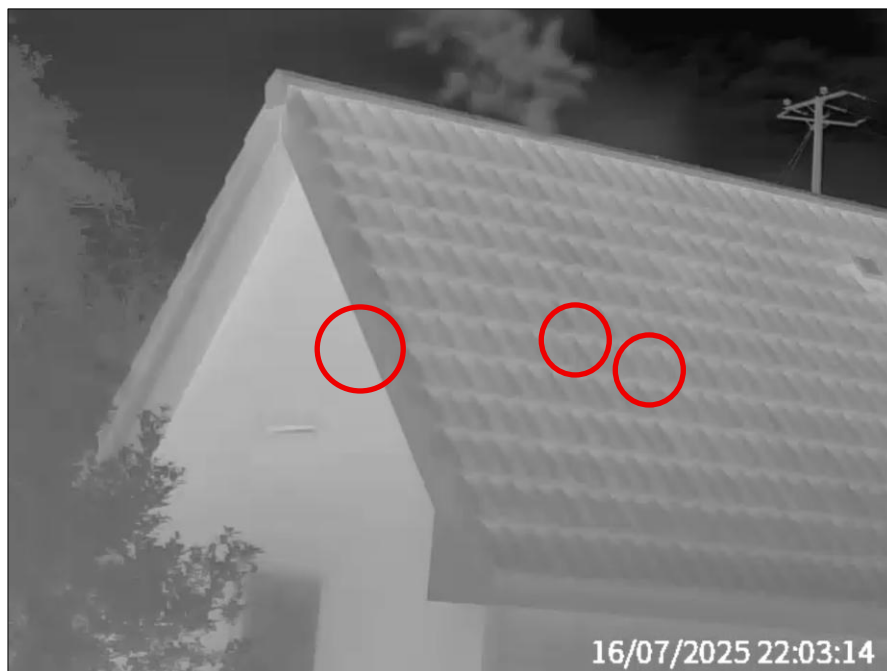


Plate 4-10: Three bats were seen emerging from the new compensatory roost building, Two Soprano Pipistrelle from the roof and a Leisler's Bat from the gable end fascia

4.4 STATIC DETECTOR SURVEYS – 2023 & 2025

Six species of bats have been recorded during the surveys completed to date. An individual bat can pass a particular feature on several occasions while foraging. It is therefore not possible to estimate the number of individual bats. In accordance with best practice guidance (Collins, 2016) an activity index is used; calculated from bat records per hour which allows analysis of bat activity to estimate abundance and/ or activity. The calculation is as follows: BAI (Bat Activity Index) = Total number of bat records / number of hours of record.

Highest overall activity was recorded on the 31st of May 2023 where 431 bat registrations were recorded. Soprano Pipistrelle was the most commonly recorded species with 1201 registration (39 %), followed by Common Pipistrelle 830 (27%), Leisler's bat 585 (19%) and Brown Long-eared 431 (14%). Other species were recorded in low numbers.

As expected activity in March 2023 (representing winter / early spring) levels were lowest with an average of 0.8 Bat passes per Hour (BP/Hr). Activity peaked between the 29th of May to the 01st of June 2023 with an average of 46.9 BP/Hr.

The 2023 July data saw an increase in Brown Long-eared activity with a substantial number of social calls. During this seven-night period Brown Long-eared were the most recorded bat species (26%).

The 2025 winter / spring static survey took place with detectors set inside roost buildings. These showed low activity as is typical for this hibernation period. The shed again had highest activity with 73 brown long - eared recordings as well as registrations from Soprano Pipistrelle. This confirms the structure is utilised as a winter roost hibernaculum. The garage also had some Brown Long - eared recordings however the dwelling appears to be becoming less favoured with only a single confirmed recording.

Table 4-4: Static results 2023 combined data

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	Bat passes per hour
Total	585	830	1201	2	431	14	6	38	3107	15412	12.1
Bat passes per hour	2.3	3.2	4.7	0.01	1.7	0.1	0.02	0.1			
% proportion of calls	19	27	39	0	14	0	0.2	1			

Table 4-5: Static results 2023

March 2023 - 17 nights											
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	Bat passes per hour
Total	2	120	41	0	3	6	0	7	179	13667	0.8
Bat passes per hour	0.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0			
April 2023 - 1 night											
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	Bat passes per hour
Total	41	19	82	0	3	0	0	1	146	228	38.4
Bat passes per hour	10.8	5.0	21.6	0.0	0.8	0.0	0.0	0.3			

May / June 2023 - 3 nights											
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BpHr
Total	121	341	686	2	23	2	1	9	1185	1517	46.9
Bat passes per hour	4.8	13.5	27.1	0.1	0.9	0.1	0.0	0.4			
30th June - 1 night											
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	BpHr
Total	41	7	27	0	18	0	0	1	94	486	11.6
Bat passes per hour	5.1	0.9	3.3	0	2.2	0.0	0.0	0.1			
16th to 22nd July - 7 nights											
Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Daubenton's Bat	Unidentified Myotis	Total	Minutes recorded	Bat passes per hour
Total	380	343	365	0	384	6	5	20	1503	3670	24.6
Bat passes per hour	6.2	5.6	6.0	0	6.3	0.1	0.1	0.3			

Table 4-6: 2025 Hibernation Study and Emergence Results

18th February to 4th March					
Detector	Soprano Pipistrelle	Brown Long-eared	Total	Minutes recorded	BpHr
Garage	4	11	15	11,451	0.1
Disused Agricultural Building	7	73	80	12,274	0.4
House	0	1	1	12,194	0.0
Total	11	85	96	35,919	0.2
Bat passes per hour	0.0	0.1			

5 DISCUSSION

During the 2023 surveys, 3 buildings containing bat roosts were confirmed on the site. These are the derelict dwelling house, the adjoining garage and the disused agricultural building.

Since 2021 the condition of the roof of the derelict dwelling house has degraded with loss of tiles and increased air movement and as a result the maternity, Pipistrelle roost was reduced to a satellite roost used by low numbers.

Between 2024 and 2025 a new purpose-built compensatory bat roost was constructed to the north-west of the site. Bat occupancy was confirmed in July 2025 with both Soprano Pipistrelle and Leisler's confirmed roosting.

During 2025 surveys, bats were found to roost in 3 buildings, the new compensatory bat roost, the disused agricultural building and the garage adjoining the derelict dwelling house.

- The garage remains in good condition and is used by low numbers of bats. A single observation of Common Pipistrelle emerging from the rear of the Garage was made in July 2025.
- The disused agricultural building is still used as a maternity roost for Brown Long-eared and a satellite roost for Common and Soprano Pipistrelle. No *Myotis* were recorded within the disused agricultural building in the 2025 surveys.
- *Myotis* species were only recorded on audio equipment placed within the derelict dwelling house, though none were seen emerging from this building.
- Thermal footage has revealed the new compensatory bat roost is being used as a satellite roost for Soprano Pipistrelle and Leisler's bats.

Table 5-1 provides details on each roost.

Table 5-1: Roost results

Structure	Species (2023 to 2025)	Max No observed?	Roost type	Details of roost
New Compensatory Bat roost	Soprano Pipistrelle	2	Satellite	July 2025 footage shows two Soprano Pipistrelle emerging from the main roof area.
	Leisler's bat	1		July 2025 footage shows a single bat emerging from the gable
Derelict dwelling house (1)	Soprano Pipistrelle	1	Satellite	Roost is losing value over time. In 2021 this building was a Common Pipistrelle maternity roost. In 2025, the dwelling had further degraded, and no bats were seen emerging from the building. Despite this, bats were seen entering the building at night before leaving again.
	Common Pipistrelle	1		
	Leisler's bat	1		
	Whiskered bat	1		
	Unidentified bat	2		

Structure	Species (2023 to 2025)	Max No observed?	Roost type	Details of roost
Garage (2)	Brown Long-eared bat	2	Satellite	Building is in good condition although attic space is somewhat low thus reducing potential for large roost. Scattered droppings within and bats observed exiting. 2023 surveys showed regular usage by low numbers.
	Soprano Pipistrelle	1		August 2023 survey revealed Soprano Pip emerging from NW corner.
	Common Pipistrelle	1		Surveys in 2025 did not confirm roosting bats on thermal equipment, but a Common Pipistrelle was noted emerging from here by surveyor.
Disused Agricultural Building (3)	Brown Long-eared	21	Maternity roost & Hibernation site	Building is in good condition with an internal 'office' type structure within providing a sheltered location for bats.
	Pipistrelle (Soprano and Common)	40	Satellite	Surveys consistently show multiple Brown Long-eared bats using the disused agricultural building. On the 03 rd June 2023 c. 40 Pipistrelle bats were noted using the disused agricultural building. Numbers dropped through the season with lower numbers of Soprano and Common Pipistrelle recorded on the 30 th of June and recordings noted on static from the 16 th of August. By 2025 numbers of Pipistrelle using the disused agricultural building maxed at 13.
	Natterer's bat	Droppings and recorded on static		A plastic sheet lain in February 2025 was inspected in March and revealed fresh droppings demonstrating the disused agricultural building is used as a hibernaculum.
	Whiskered bat	Droppings		Fresh droppings noted in breeze block cavity within the 'office' section within the disused agricultural building. Identification confirmed via DNA testing. Static placed within disused agricultural building on the 16 th of August 2023 recorded Natterer's bats. No Myotis were observed emerging in 2025.

In total, seven species of bat have been 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*),
- Daubenton's Bat (*Myotis daubentonii*) and
- Whiskered Bat (*Myotis mystacinus*).

Several contacts have been labelled as 40 kHz Pipistrelle. This recording had a peak frequency of 40.0 kHz. This frequency is lower than usual for a Common Pipistrelle whilst a *Nathusius* typical peak frequency is 39.3 kHz.

5.1.1 Comparison to the baseline year of 2021

Table 5-2 shows a summary of the 2021 static survey. During this period the majority of bats recorded were Common Pipistrelle. This corresponds with the emergence survey carried out at the time where a maternity roost of Common Pipistrelle was recorded at the derelict house.

Table 5-2: 2021 Static Summary

Detector	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Pipistrelle 40 kHz	Brown Long-eared	Natterer's Bat	Unidentified Myotis	Total	Minutes recorded	Bat passes per hour
Total	726	3453	271	0	15	4	37	4506	9088	29.7
Bat passes per hour	4.8	22.8	1.8	0.0	0.1	0.01	0.2			

During the 2023 surveys this maternity roost was not present with low levels of roosting bats recorded. It is likely the derelict dwelling house is falling into such a state of disrepair that has forced this roost to relocate.

In 2021, Brown Long-eared bats were rarely recorded; averaging 0.1 BP/Hr compared to a rate of 6.3 for the July 2023 static survey period.

The Hibernation Study in 2025 showed Brown Long-Eared bat to be the most commonly recorded species, particularly at the disused agricultural building. Additionally, this survey recorded Soprano Pipistrelle in the Garage and the disused agricultural building. These were the only two species recorded during the Wintering Static survey.

6 POTENTIAL IMPACTS

6.1 REMEDIATION PLAN

The remediation plan phasing is designed to conduct the works in an order that delivers the remediation objectives for the site in the most efficient and environmentally sound manner.



Figure 6-1: Remediation Zones (The original bat roost structures are located in zone A and the compensatory bat roost is located in zone D).

The remediation plan has been developed on a phased basis. Works associated with each phase, for the most part, will be undertaken sequentially.

- Phase 1B - Installation of environmental protection measures;
 - surface water management;
 - silt fence installation;
 - installation of additional or replacement monitoring infrastructure;
- Phase 2 - Remediation of Zone C;
 - staged waste excavation and removal of waste and potentially contaminated soil;
 - reprofiling works;
- Phase 3 - Remediation of Zone B;
 - staged excavation and removal of waste and potentially contaminated soil;
 - reprofiling works;
- Phase 4 - Remediation of Zone A;
 - staged excavation and removal of waste and potentially contaminated soil;
 - reprofiling works;
- Phase 5 - Landscaping and Fencing;
 - Landscaping;

- Fencing;
- Biodiversity Enhancement Measures;
- Phase 6 – Demobilisation;
- Phase 7 – Post Remediation Monitoring;
 - Validation Monitoring Period and Reporting;
 - Handover and Maintenance.

6.2 IMPACTS

Investigations are ongoing/planned on whether contaminated soils encroach under or surrounding the bat roost buildings. There is the potential therefore that all buildings may need to be demolished to allow excavation of same.

Impacts on bats by the remediation works can be considered under the following headings;

■ Disturbance

Works associated with the remediation will lead to an increase in human presence at the site, extra noise and significant changes in the site topography and local environment as the waste is removed. Given the restricted nature of the site, the site compound will be set up next to the disused agricultural building. This compound will require numerous infrastructure including storage containers and temporary offices.

- Physical structures will change the landscape surrounding the three bat roosts and have a risk of blocking bat exit points.
- There will be an increase in human activity and substantial increase of noise. (Finch, 2020) demonstrated that traffic noise impacted bat activity at least 20m away from the noise source. (Allen, 2021) corroborates this finding.
- There is the potential for bats to be disturbed should people start using the disused agricultural building (or the garage and derelict dwelling house) as a storage space.
- Construction & Operational phase lighting may impact emerging bats commuting routes and use of commuting routes

■ Loss of roosts

- As mentioned above, pending investigation, there is the potential some or all of the buildings may need to be demolished as part of the remediation works. This would result in the loss of a Brown Long-eared maternity roost and a hibernation roost as well as the other satellite roosts (see **Table 5-1**) used by seven bat species.

The calculation of the scale of impact this proposal will have on bats is based on the results presented above. The destruction and / or fragmentation of a maternity roost is high on the scale of impacts at a site level for bat populations. These potential impacts are characterised as **Negative, irreversible, long-term, Significant effect in a county context** in the absence of mitigation.

Regarding the conservation significance, Brown Long-eared bats are a moderately common bat species (3rd most common bat in Ireland after Soprano and Common Pipistrelle), while Natterer's and Whiskered bats are considered rare.

Leisler's bat are relatively widespread, however the Irish population is considered a stronghold for the species in Europe.

Seven species is a very rich diversity of bat species on a single site and highlight its importance for bats. Sites such as Avondale in East County Wicklow have a similar diversity of bat species recorded but there would be few sites known from West Wicklow to have such a rich bat component.

7 MITIGATION AND COMPENSATION

7.1 APPLICATION FOR A BAT DEROGATION LICENCE

Even if the bat roosts can be retained without modification, the loss of commuting route and disturbance triggers the requirement for a bat derogation licence for the remediation works.

The process for receiving a bat derogation licence from the National Parks and Wildlife Service has changed and bat derogation licences are not issued for longer than a year and an annual application is now required.

An annual derogation licence will need to be obtained from the National Parks and Wildlife Service before work progresses in zone A and for the duration of the works.

7.2 LIGHTING

7.2.1 Construction phase lighting

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. Lighting will not be directed at the new compensatory bat roost or areas of retained habitat utilised by bats for the full duration of works onsite.

7.2.2 Operational phase lighting

No lighting is proposed for the site post remediation works.

7.3 DESTRUCTION OF BAT ROOSTS

There is the potential that one or all of the three confirmed bat roost structures (the derelict dwelling house, the garage and the disused agricultural building) may have to be demolished, recognising that there is potential for contamination of the soils with leachate below the buildings on the site to be found. The requirement for demolition and the exact timing of this work thus remains unclear.

Should the demolition and removal of the buildings be required the following procedure and timing of works will be followed once the annual bat derogation licence is secured;

- The demolition works are seasonally constrained and recognise the variations in the bat year and the nature of the roosts and buildings present.

Disused Agricultural Building

- For the disused agricultural building, which is both a confirmed maternity roost and a hibernation roost for Brown Long-eared bats (as well as a satellite roost for other species), the works must take place between either the 1st of September to mid-October (to avoid the maternity period) or between mid-March and April (once the bats have emerged from hibernation). Note that these dates are weather dependent and may vary depending on frosts and cold night temperatures – the bat specialist will advise.

- This will ensure that the most sensitive times of the bat year (hibernation and breeding) are avoided and that bats should be active at the time of demolition and have a chance to become awake and safely exit the structures of their own volition.
- A suitably qualified bat specialist team with bat handling training will complete a pre-demolition dusk and dawn survey of the disused agricultural building immediately prior to the works, coupled with visual inspections during daylight and will also be on hand to oversee all of the demolition works.
- Prior to works commencing temporary bat boxes will be pre-erected close to the disused agricultural building (if the derelict dwelling house and garage remain extant they could be erected here but if these structures have been demolished then the boxes will need to be erected at height on a pole (such as the ESB pole outside the dwelling house))
- The disused agricultural building will then be carefully dismantled. It is likely that a safe working platform with the use of scaffolding will need to be erected to allow same.
- Removal of the roof sheeting of half the disused agricultural building will be completed by hand (half the sheeting on both the barrel shaped barn structure and half the sheeting on the lean-to) under the supervision of the bat specialist. Should bats be found the bat specialist will remove and place into the pre-erected temporary bat boxes. The plywood roof in the inner 'office' portion of the disused agricultural building will also be removed at this point.
- Once portions of the roof have been removed from both parts of the disused agricultural building, works will halt for one week allowing the bats to vacate the disused agricultural building due to its lowered suitability.
- The small 'office' within the lean-to part of the building is constructed of cavity breeze blocks. Bats have been recorded roosting within these cavity blocks and the removal of the roof may not sufficiently alter the roosting potential of the cavity blocks. It is unclear if the main walls and internal partition wall of the disused agricultural building is also of similar construction and this needs to be determined.
- The removal of all cavity breeze blocks in the disused agricultural building will be completed by hand with the oversight of the bat specialist who can check cavities with an endoscope during the works.
- The disused agricultural building will be dismantled manually and will not be demolished by machine. A safe working approach to same will need to be considered and developed to ensure the walls remain stable during the works.

In line with best practice the disused agricultural building in particular should be permanently retained on site if at all possible.

House and Garage

It is recommended that the ESB pole outside the dwelling house is retained to provide a location for the erection of temporary bat boxes during building demolition, if feasible.

The derelict dwelling house and garage have been used as a satellite roost for a number of species but previously supported large numbers of pipistrelles. Demolition works here should be completed to avoid the bat active season and be completed between the 1st of September to mid-October or between mid-March and April.

This will ensure that the most sensitive times of the bat year (hibernation and breeding) are avoided and that bats should be active at the time of demolition and have a chance to become active and safely exit the structures.

The derelict dwelling house and garage have been used by crevice roosting species thus the nature of the walls need to be determined to check if they are cavity breeze block or contain a constructed cavity.

A suitably qualified bat specialist team with bat handling training will complete a pre-demolition dusk and dawn survey of the buildings immediately prior to the works, coupled with visual inspections during

daylight and will also be on hand to oversee all of the demolition works. The buildings will then be carefully dismantled. It is likely that a safe working platform with the use of scaffolding will need to be erected to allow same.

The tiles on one side of the roof of both structures will be removed by hand under the supervision of the bat specialist. Bats often roost under tiles on felt and the roof of the flat roof extension will need to be stripped and removed to expose the structure.

The buildings will then be left for one week allowing the bats to vacate the buildings due to their lowered suitability. Any loft insulation in the derelict dwelling house or garage also needs to be checked by hand for roosting bats.

Depending on the nature of the wall construction a similar approach to the dismantling and removal of the walls may also be required as detailed above.

The two buildings will be dismantled manually and will not be demolished by machine. A safe working approach to same will need to be considered and developed to ensure the walls remain stable during the works.

7.4 CONSTRUCTION ACTIVITY IN ZONE A

While construction activity is unavoidable in Zone A the following measures will be implemented to reduce impacts on bats using the structures until they are demolished due to disturbance.

- The buildings will be hoarded off to avoid access by construction workers. Hoarding should be a minimum of 2m from the doorways of the disused agricultural building.
- Buildings should not be used for storage or accessible except by bat workers.
- Efforts should be made to reduce construction activity based on sunset and sunrise times during the bat active season. No works should occur within 30 minutes of sunset to 30 minutes after sunrise.

7.5 MONITORING

It is recommended that static monitoring should commence by the pond area in 2026 along with continued surveillance of the new compensatory bat roost.

Surveillance will continue on the new compensatory bat roost and any retained buildings for the duration of the works and for a minimum of three years post completion.

8 RESIDUAL IMPACTS AFTER MITIGATION

Although several aspects of the remediation plan (such as the depth of excavation) are as yet unclear, and specifically what impacts will occur to the bat roost structures, the overall remediation works should result in a net positive for the local bat populations.

Of particular importance is the retention of the areas of semi natural grasslands, woodland and ponds. These all contribute to an increase in invertebrate prey for bats.

The Slaney River SAC to the east acts as an ecological corridor for bats in the surroundings, enabling access to the site for bats using this linear feature.