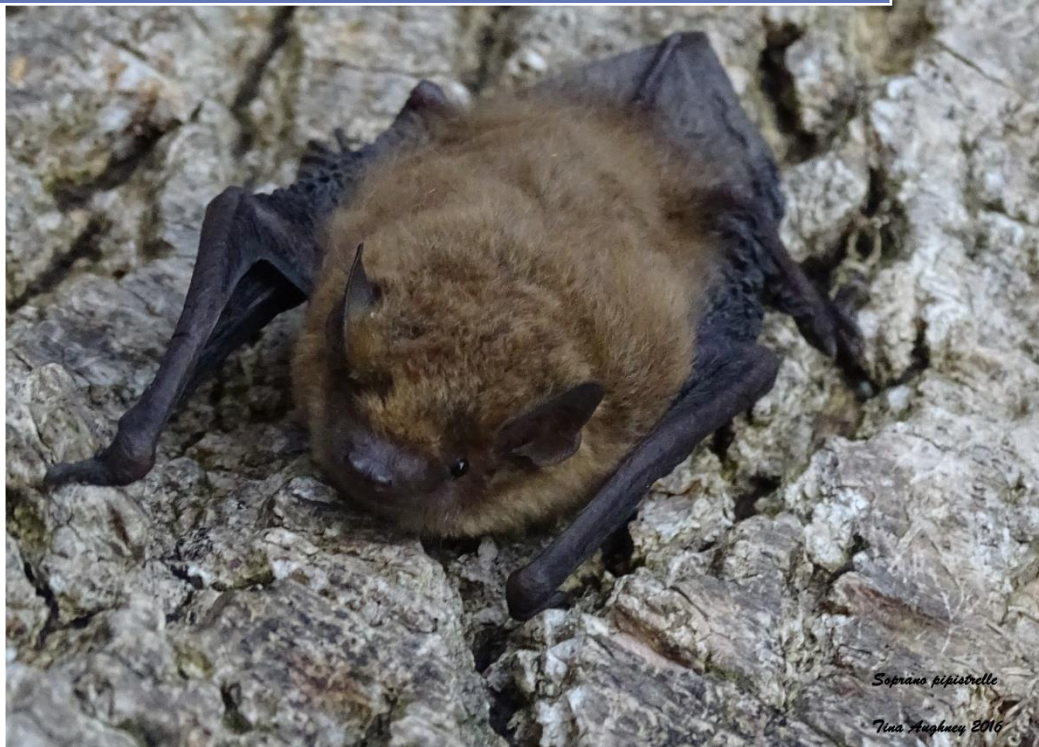


2024

Renovation Works – Interpretive
Centre, Coole Park, Co. Galway



Soprano pipistrelle

Tina Aughney 2016

Dr Tina Aughney
Bat Eco Services

Bat Eco Services, Ulex House, Drumheel, Lisduff, Virginia, Co. Cavan. A82 XW62.

Licensed Bat Specialist: Dr Tina Aughney (tina@batecoservices.com, 086 4049468)
NPWS licence C17/2023 (Licence to handle bats, expires 23rd January 2026);
NPWS licence 27/2023 (Licence to photograph/film bats, expires 31st December 2024);
NPWS licence DER/BAT 2022-36 (Survey licence, expires 24th March 2025).

Statement of Authority: Dr Aughney has worked as a Bat Specialist since 2000 and has undertaken extensive survey work for all Irish bat species including large scale development projects, road schemes, residential developments, wind farm developments and smaller projects in relation to building renovation or habitat enhancement. She is a monitoring co-ordinator and trainer for Bat Conservation Ireland. She is a co-author of the 2014 publication *Irish Bats in the 21st Century*. This book received the 2015 CIEEM award for Information Sharing. Dr Aughney is a contributing author for the Atlas of Mammals in Ireland 2010-2015.

All analysis and reporting is completed by Dr Tina Aughney. Data collected and surveying is completed with the assistance of a trained field assistant.

Mr. Shaun Boyle (Field Assistant) NPWS licence DER/BAT 2022-37 (Survey licence, expires 24th March 2025).

Client: NPWS, Millennium House, Loughrea, Co. Galway.

Project Name & Location: Interpretive Centre, Coole Park, Co. Galway.

Report Revision History

Date of Issue	Draft Number	Issued To (process of issuing)
16 th November 2023	Draft 1	By email to NPWS
29 th July 2024	Final	By email to NPWS

Purpose

This document has been prepared as a Report for NPWS. Only the most up to-date report should be consulted. All previous drafts/reports are deemed redundant in relation to the named site.

Bat Eco Service accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

Carbon Footprint Policy

It is the policy of Bat Eco Services to provide documentation digitally in order to reduce carbon footprint. Printing of reports etc. is avoided, where possible.

Bat Record Submission Policy

It is the policy of Bat Eco Services to submit all bat records to Bat Conservation Ireland database one year post-surveying. This is to ensure that a high level bat database is available for future desktop reviews. This action will be automatically undertaken unless otherwise requested, where there is genuine justification.

Executive Summary

Project Name & Location: Interpretive Centre, Coole Park, Co. Galway.

Proposed work: Re-roofing.

Bat Survey Results - Summary

Bat Species	Roosts	Foraging	Commuting
Common pipistrelle <i>Pipistrellus pipistrellus</i>		√	√
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	√	√	√
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>			
Leisler's bat <i>Nyctalus leisleri</i>		√	√
Brown long-eared bat <i>Plecotus auritus</i>	√	√	√
Daubenton's bat <i>Myotis daubentonii</i>			
Natterer's bat <i>Myotis nattereri</i>		√	√
Whiskered bat <i>Myotis mystacinus</i>			
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>			

Bat Survey Duties Completed (Indicated by red shading)

Tree PBR Survey	<input type="radio"/>	Daytime Building Inspection	<input checked="" type="checkbox"/>
Static Detector Survey	<input checked="" type="checkbox"/>	Daytime Bridge Inspection	<input type="radio"/>
Dusk Bat Survey	<input checked="" type="checkbox"/>	Dawn Bat Survey	<input type="radio"/>
Walking Transect	<input type="radio"/>	Driving Transect	<input type="radio"/>
Trapping / Mist Netting	<input type="radio"/>	IR Camcorder filming	<input checked="" type="checkbox"/>
Endoscope Inspection	<input type="radio"/>	Other	<input checked="" type="checkbox"/>

Citation: Bat Eco Services (2024) Renovation Works – Interpretive Centre, Coole Park, Co. Galway. Unpublished report prepared for NPWS.

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1. Introduction

Bat Eco Services was commissioned by NPWS to undertake a survey of bat usage of the Interpretive Centre, Coole Park, Gort, Co. Galway. A new roof is required for this structure and such works are planned for Autumn 2024.

1.1 Relevant Legislation & Bat Species Status in Ireland

1.1.1 Irish Statutory Provisions

A small number of animals and plants are protected under Irish legislation (Nelson, *et al.*, 2019). The principal statutory provisions for the protection of animal and plant species are under the Wildlife Act 1976 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. The Flora (Protection) Order 2015 (S.I. no. 356 of 2015) lists the plant species protected by Section 21 of the Wildlife Acts. See www.npws.ie/legislation for further information.

The codes used for national legislation are as follows:

- WA = Wildlife Act, 1976, Wildlife (Amendment) Act, 2000 and other relevant amendments
- FPO = Flora (Protection) Order, 2015 (S.I. No. 356 of 2015)

1.1.2 EU Legislation

The Birds Directive (Directive 2009/147/EC) and Habitats Directive (Council Directive 92/43/EEC) are the legislative instruments which are transposed into Irish law, *inter alia*, by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) ('the 2011' Regulations), as amended.

The codes used for the Habitats Directive (Council Directive 92/43/EEC) are:

- Annex II Animal and plant species listed in Annex II
- Annex IV Animal and plant species listed in Annex IV
- Annex V Animal and plant species listed in Annex V

The main aim of the Habitats Directive is the conservation of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status. These annexes list habitats (Annex I) and species (Annexes II, IV and V) which are considered threatened in the EU territory. The listed habitats and species represent a considerable proportion of biodiversity in Ireland and the Directive itself is one of the most important pieces of legislation governing the conservation of biodiversity in Europe.

Under Article 11 of the Directive, each member state is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive. In April 2019, Ireland submitted the third assessment of conservation status for 59 habitats and 60 species. There are three volumes with the third listing details of the species assessed.

Article 12 of the Habitats Directive requires Member States to take measures for the establishment of a strict protection regime for animal species listed in Annex IV(a) of the Habitats Directive within the whole territory of Member States. Article 16 provides for derogation from these provisions under defined conditions. These provisions are implemented under Regulations 51 and 54 of the 2011 Regulations.

1.1.3 IUCN Red Lists

The International Union for the Conservation of Nature (IUCN) coordinates the Red Listing process at the global level, defining the categories so that they are standardised across all taxa. Red Lists are also produced at regional, national and subnational levels using the same IUCN categories (IUCN 2012, 2019). Since 2009, Red Lists have been produced for the island of Ireland by the National Parks and Wildlife Service (NPWS) and the Northern Ireland Environment Agency (NIEA) using these IUCN categories. To date, 13 Red Lists have been completed. The Red Lists are an assessment of the risk of extinction of each species and not just an assessment of their rarity. Threatened species are those species categorised as Critically Endangered, Endangered or Vulnerable (IUCN, 2019) – also commonly referred to as ‘Red Listed’.

1.1.4 Irish Red List - Mammals

Red Lists in Ireland refer to the whole island, i.e. including Northern Ireland, and so follow the guidelines for regional assessments (IUCN, 2012, 2019). The abbreviations used are as follows:.

- RE Regionally Extinct
- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- NT Near Threatened
- DD Data Deficient
- LC Least Concern
- NA Not Assessed
- NE Not Evaluated

There are 27 terrestrial mammals species in Ireland, which includes the nine resident bat species listed. The terrestrial mammal, according to Marnell *et al.*, 2019, list for Ireland consists of all terrestrial species native to Ireland or naturalised in Ireland before 1500. The IUCN Red List categories and criteria are used to assess that status of wildlife. This was recently completed for the terrestrial mammals of Ireland. Apart from the two following two mammal species (grey wolf *Canis lupus* (regionally extinct) and black rat *Rattus rattus* (Vulnerable)), the remaining 25 species were assessed as least concern in the most recent IUCN Red List publication by NPWS (Marnell *et al.*, 2019).

1.1.5 Irish Bat Species

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Acts (2000 and 2010). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat *Rhinolophus hipposideros* is further listed under Annex II. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

Also, under existing legislation, the destruction, alteration or evacuation of a known bat roost is an offence. The most recent guidance document is “Guidance document on the strict protection of animal species of Community interest un the Habitats Directive (Brussels, 12.10.2021 C(2021) 7391 final”.

Regulation 51(2) of the 2011 Regulations provides –

“(2) Notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54, a person who in respect of the species referred to in Part 1 of the First Schedule—

(a) deliberately captures or kills any specimen of these species in the wild, (b) deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,

(c) deliberately takes or destroys eggs of those species from the wild,

(d) damages or destroys a breeding site or resting place of such an animal, or

(e) keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive,

shall be guilty of an offence.”

The grant of planning permission does not permit the commission of any of the above acts or render the requirement for a derogation licence unnecessary in respect of any of those acts.

Any works interfering with bats and especially their roosts, may only be carried out under a derogation licence granted by National Parks and Wildlife Service (NPWS) pursuant to Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (which transposed the EU Habitats Directive into Irish law).

There are eleven recorded bat species in Ireland, nine of which are considered resident on the island. Eight resident bat species and one of the vagrant bat species are vesper bats and all vespertilionid bats have a tragus (cartilaginous structure inside the pinna of the ear). Vesper bats are distributed throughout the island. Nathusius' pipistrelle *Pipistrellus nathusii* is a recent addition while the Brandt's bat has only been recorded once to-date (Only record confirmed by DNA testing, all other records has not been genetically confirmed). The ninth resident species is the lesser horseshoe bat *Rhinolophus hipposideros*, which belongs to the Rhinolophidea and has a complex nose leaf structure on the face, distinguishing it from the vesper bats. This species' current distribution is confined to the western seaboard counties of Mayo, Galway, Clare, Limerick, Kerry and Cork. The eleventh bat species, the greater horseshoe bat, was only recorded for the first time in February 2013 in County Wexford and is therefore considered to be a vagrant species. A total of 41 SACs have been designated for the Annex II species lesser horseshoe bat (1303), of which nine have also been selected for the Annex I habitat 'Caves not open to the public' (8310).

Irish bat species list is presented in Table 1a along with their current status.

Table 1a: Status of the Irish bat fauna (Marnell *et al.*, 2019).

Species: Common Name	Irish Status	European Status	Global Status
Resident Bat Species ^			
Daubenton's bat <i>Myotis daubentonii</i>	Least Concern	Least Concern	Least Concern
Whiskered bat <i>Myotis mystacinus</i>	Least Concern	Least Concern	Least Concern
Natterer's bat <i>Myotis nattereri</i>	Least Concern	Least Concern	Least Concern
Leisler's bat <i>Nyctalus leisleri</i>	Least Concern	Least Concern	Least Concern
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Least Concern	Least Concern	Least Concern
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Least Concern	Least Concern	Least Concern
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Least Concern	Least Concern	Least Concern
Brown long-eared bat <i>Plecotus auritus</i>	Least Concern	Least Concern	Least Concern
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Least Concern	Least Concern	Least Concern
Possible Vagrants ^			
Brandt's bat <i>Myotis brandtii</i>	Data deficient	Least Concern	Least Concern
Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>	Data deficient	Near threatened	Near threatened

^ Roche *et al.*, 2014

1.2 Relevant Guidance Documents

This report will draw on guidelines already available in Europe and will use the following documents as part of this report:

- National Roads Authority (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes.
- Collins, J. (Editor) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). Bat Conservation Trust, London. (*Updated in September 2023*)
- 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.
- NPWS & VWT (2022) Lesser Horseshoe Bat Species Action Plan 2022- 2026. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
- 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 (Version 1: Kelleher & Marnell, 2006).
- 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.
- Bat Conservation Trust (2018) Bats and artificial lighting in the UK: bats and the built environment series. Guidance Note 08/2019. BCT, London.

- Guidance document on the strict protection of animal species of Community interest un the Habitats Directive (Brussels, 12.10.2021 C(2021) 7391 final.
- EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports.

Collins (2023) was the principal document used to provide guidance in relation to bat survey effort required but the level of surveying is assessed on a case-by-case basis taking into consideration the historical bat records for the survey area, presence of built, structures and trees potentially suitable for roosting bats and the presence of suitable bat habitats for foraging and commuting. Additional reference is made to this document in relation to determining the value of buildings, trees etc. as bat roosts. The tables referred to from this document are described in the following section and in the section on methodology.

Marnell *et al.* (2022) is referred to for guidance in relation to survey guidance (timing and survey design), derogation licences and mitigation measures.

Reason & Wray (2023) is referred to assessment of the importance of the bat population recorded within the survey area for the local authority area of County Waterford.

1.2.1 NPWS Article 17 Reporting

NPWS (2019) provides details on the conservation status for each of Ireland’s bat species along with distribution maps (See appendices for such maps). The following table summarises the conclusions of Article 17 assessment of conservation status at the end of the most recent reporting period. Additional information for each of the bat species provides some clarifying notes in relation to the conservation status conclusions. Such information, where appropriate to the current project, will be drawn on in the project assessment section.

Table 1b: NPWS Article 17 Conservation Status of Irish Bat Species (Adapted from NPWS, 2022).

	Range	Population	Habitat	Future Prospects	Conservation Status Assessment	Conservation Status Trend
Lesser horseshoe bat	Inadequate	Favourable	Inadequate	Inadequate	Inadequate	Deteriorating
Common pipistrelle	Favourable	Favourable	Favourable	Favourable	Favourable	Improving
Soprano pipistrelle	Favourable	Favourable	Favourable	Favourable	Favourable	Improving
Nathusius’ pipistrelle	Unknown	Unknown	Favourable	Unknown	Unknown	Not applicable
Natterer’s bat	Favourable	Favourable	Favourable	Favourable	Favourable	Stable
Daubenton’s bat	Favourable	Favourable	Favourable	Favourable	Favourable	Improving
Whiskered bat	Favourable	Favourable	Favourable	Favourable	Favourable	Improving

Brown long-eared bat	Favourable	Favourable	Favourable	Favourable	Favourable	Improving
Leisler's bat	Favourable	Favourable	Favourable	Favourable	Favourable	Improving

1.2.2 Irish Bat Monitoring Programme – Population Trends

The Irish Bat Monitoring Programme provides information on monitoring schemes managed by Bat Conservation Ireland:

- Car-Based Bat Monitoring (All Ireland) – monitors common pipistrelle, soprano pipistrelle, Leisler's bats with limited information for Nathusius' pipistrelle and *Myotis* species.
- All Ireland Daubenton's Bat Waterway Monitoring
- Brown Long-eared Bat Roost Monitoring
- Lesser Horseshoe Bat Monitoring

This provides population trend data for seven bat species: common pipistrelle, soprano pipistrelle, Leisler's bat, Nathusius' pipistrelle, Daubenton'bat, brown long-eared bat and lesser horseshoe bat (some limited data for *Myotis* species). There is currently no systematic monitoring surveys for Natterer's bat and whiskered bat.

Annual reporting is undertaken and the most recent report (Aughney *et al.*, 2023) is referenced for this report. In summary, the population trends for each bat species are as follows:

- Trends of the three common bat species (common pipistrelle, soprano pipistrelle and Leisler's bat) continued to increase in 2022, although the yearly estimates of common pipistrelle levelled out a little. Confidence intervals of these three bat species were all above their baseline indices indicating they each show a significantly increasing trend.
- Nathusius' pipistrelle trends are still unclear due to low encounter rates but decreased a little in 2022 compared to previous years.
- The yearly estimate for the *Myotis* spp. group steadied out a little but overall the smoothed trend for this group is still well below the baseline.
- Daubenton's bat numbers trend line appears to be fairly steady from year to year with error bars consistently encompassing the baseline.
- Brown long-eared bat shows a fluctuating trend around the baseline and is considered to be currently stable.
- Lesser horseshoe bat continue to increase in 2022 for the summer counts while low winter counts caused a slight downward trend in 2022. But overall, this species has increased over the last 20 years of monitoring.

2. Survey Area

2.1 Site Area

The Interpretive Centre is located in Coole Park, Gort, Co. Galway, ITM Grid Reference 543789,704941. This is a 2-storey building with a slate roof and attic spaces of varying heights. Due to the poor state of the roof, it is proposed to re-roof the structure. Bat droppings were noted by NPWS staff in the attic space above the audio-visual room (shaded area within the Yellow rectangle).



Figure 1: Location of the Interpretive Centre (Yellow Rectangle) in Coole Park, Gort, Co. Galway.

3. Bat Survey Methodology

In order to document the bat species utilising the Interpretive Centre, a number of different survey methods were undertaken:

- Internal inspection of attics;
- Dusk surveys of the building;
- Static surveillance of the survey area.

This was first undertaken in 2023 with repeat surveys completed in 2024.

3.1 Night-time Bat Detector Surveys

3.1.1 Dusk Bat Survey

Dusk Emergence Surveys were completed from 15 minutes before sunset to 110 minutes post sunset.

The following equipment was used:

Surveyor 1 (Principal surveyor): Anabat Walkabout Full Spectrum Bat Detector and Petersson D200 Heterodyne Bat Detector.

Surveyor 2: BatLogger M2 Full Spectrum Bat Detector and Petersson D200 Heterodyne Bat Detector.

Survey Dates: 4th October 2023, 2nd May 2024 and 10th July 2024

3.1.2 Filming

A Guide TrackIR Pro25 and Pro19 thermal imagery scopes as well as Sony Handycam FDR52 (night-shot capability) coupled with an Infra-red illuminator were also deployed to capture potential emerging bats from potential roosting sites. These were deployed during the same survey periods for Dusk Emergence Surveys.

Survey Dates: 4th October 2023, 2nd May 2024 and 10th July 2024

3.1.3 Passive Static Bat Detector Survey

Passive Static Bat Surveys were completed for ten nights from 24th September to 4th October 2023. Three units were deployed to record potential nightly bat activity during this time period. The units were located in three separate attic spaces.

One static unit was located in the attic, where brown long-eared bats were recorded roosting in 2023, for 7 nights from 2nd to 10th May 2024.

A Passive Static Bat Surveys involves 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 in the field, there is no observer present and bats which pass near enough to 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 and the habitat type of where the bat detector is location is noted to allow interpretation of the results (e.g. Open verses Edge verses Closed habitat types – see table below). Static surveillance 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.

The microphone of the unit was positioned horizontally to reduce potential damage from rain. Wildlife Acoustics Song Meter SM4 Bat FS Platform Units use Real Time recording as a technique to record bat echolocation calls and using specific software, the recorded calls are identified. It is these sonograms (2-d sound pictures) that are digitally stored on the SD card (or micro SD cards depending on the model) and downloaded for analysis.

The recordings are analysed using Wildlife Acoustics Kaleidoscope Pro. The Auto-Id function is used for all sound files but manual verification is used to ensure the auto-id function is accurate. This is particularly important for less common bat species and cryptic bat species such as *Myotis* species. In addition, “Noise” and “Unidentified” sound files are also checked. Each sequence of bat pulses are noted as a bat pass to indicate level of bat activity for each species recorded. This was either expressed as number of bat passes per survey night for bat species recorded with additional analysis in relation to Lesser horseshoe bat activity.

Audio files are a maximum of 15 seconds long and each audio file is taken as a bat pass for each bat species recorded within the audio file. Each bat pass does not equate to the number of individuals of bats flying in vicinity of the recording device 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 (i.e. separate audio files within a small 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 of echolocation calls or bat pass is more likely to be indicative of individual bats.

The following static units were deployed during this static bat detector survey:

Table 2: Static Bat Detectors deployed during Static Bat Detector Surveys.

Static Unit Code	Bat Detector Type	Recording Function	Microphone
Mini Bat	Wildlife Acoustics SongMeter Mini Bat FS	Passive Full Spectrum	SMM-U2

4. Bat Survey Results

A bat survey is comprised of a number of different elements. The results of these different types of surveys are presented below in a step-wise fashion and summarised at the end of the section. It is important that the whole section is read in order to gain a full impression of the potential bat value of the survey area.

4.1 Daytime Inspection

The attic spaces were checked on 4th October 2023. Bat droppings were noted in the attic space above the audio-video room. These droppings were identified as brown long-eared bat droppings and were principally located along the floor of the attic below the apex of the roof. It was noted that there was some light entering the attic space towards the gable end, particularly along the fascia/soffit area facing the rear courtyard of the building. No droppings were recorded in the other attics inspected. It was also noted that there are some gaps in the apex of the internal “fire” walls between attics but it was not possible to confirm if bats could move between the attics via these gaps.

4.2 Night-time Bat Detector Surveys 2023

4.2.1 Dusk Bat Survey

A dusk survey (weather conditions: Full cloud cover, occasional drizzle rain, light wind, 12oC) was undertaken 4th October 2023 (2 surveyors and 2 thermal imagery scopes).



Plate 1: Screenshot of thermal image filming of rear of structure.

Brown long-eared bats and soprano pipistrelles were recorded exiting from 8 different points while a ninth bat emerged but the exact location was not determined. These exit points coincide with the attic of the audio-visual room (section facing rear courtyard). An additional soprano pipistrelle roost was also recorded in the 3-storey structure attached to the Interpretive Centre. No bats were recorded emerging from the gable or roof front elevation of the building.



Plate 2: Rear of Interpretive Centre depicting the location of exit points recorded on 4th October 2023.

4.2.2 Passive Static Bat Detector Survey

Bats were only recorded on the static unit located in the attic space above the audio-visual room. Over the 10 night surveillance period >800 brown long-eared bat passes were recorded and nightly level of activity is presented in the graph below. This represents brown long-eared bats flying internally, which this species frequently does in large attic spaces prior to emergence and on return at dawn.

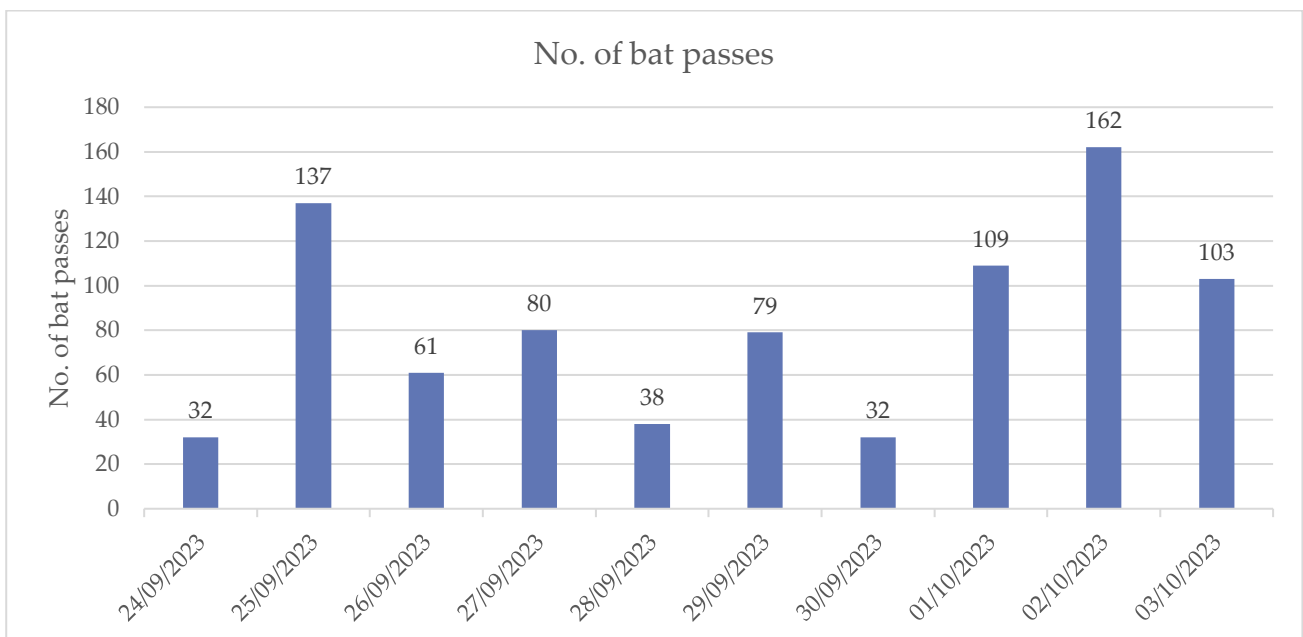


Figure 2: Number of brown long-eared bat passes recorded on the static unit located in the attic of the audio visual room during the 2023 surveillance.

4.3 Night-time Bat Detector Surveys 2024

4.3.1 Dusk Survey 2nd May 2024

A dusk survey (weather conditions: Full cloud cover, occasional drizzle rain, calm, 9oC – Sunset 21:06 hrs) was undertaken 2nd May 2024 (2 surveyors and 2 thermal imagery scopes).

First bat was recorded at 21:13 hrs and this was identified as a soprano pipistrelle. A total of six soprano pipistrelles were recorded emerging from the rear of the structure and is marked with a red arrow on Plate 3.

No brown long-eared bats were recorded emerging from any point of the structure and this may have been due to the poor weather conditions of the survey night.



Plate 2: Screenshot of thermal image filming of front and gable of structure.



Plate 3: Screenshot of thermal image filming of rear of structure (red arrow – exit point for soprano pipistrelles).

4.3.2 Dusk Survey 10th July 2024

A dusk survey (weather conditions: clear sky, dry, calm, 13oC – Sunset 21:58 hrs) was undertaken 10th July 2024 (2 surveyors and one infra-red camera).



Plate 4: Screenshot of infra-red filming of rear of structure.

During this survey, a total of 36 brown long-eared bats exited the roost. Contrary to the exit points used during the 4th October 2023 survey, a new set of exit points was recorded. Therefore, between

the three dusk surveys, 12 different exit points were recorded. This emphasises the porous nature of the existing roof.



Plate 5: Exit points recorded on the 10th July 2024 (Red arrows).

4.3.3 Passive Static Bat Detector Survey

A static unit located was only placed in the attic space above the audio-visual room during the 2024 surveillance. The number of brown long-eared bat passes recorded per night of surveillance is presented below. This is a similar level of activity to that recorded on the unit in October 2023. Therefore, it is likely that a small number of brown long-eared bats are present for much of the year in the attic space of the interpretative centre.

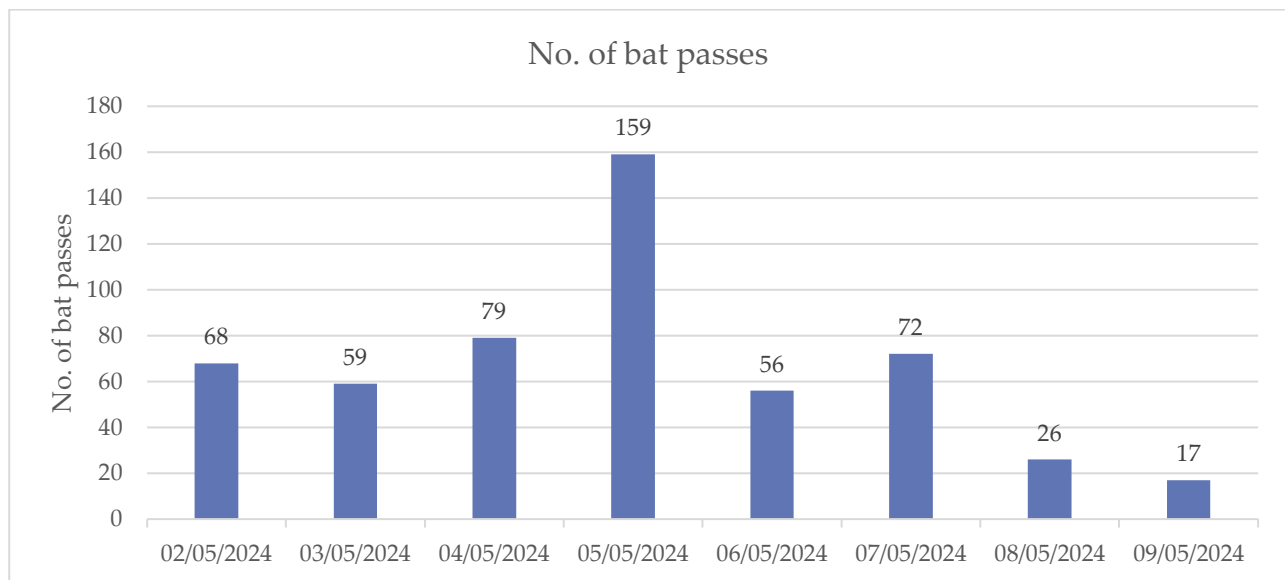


Figure 3: Total number of bat passes recorded per night on static unit location in attic space during 2024 surveillance.

4.4 Survey Effort, Constraints & Survey Assessment

The following table details any Survey Constraints encountered and a summary of Scientific Assessment completed.

Table 3: Survey Effort, Constraints & Survey Assessment Results.

Category	Discussion																								
Timing of surveys	September & October 2023 – The surveys were undertaken outside the preferred survey period of May to August and therefore does not meet the survey guidelines to determine the full extent of the bat usage of the building surveyed. May and July 2024 – These surveys were completed in the appropriate survey months and meet Collins (2023).																								
Survey Type	Bat Survey Duties Completed (Indicated by red shading) <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Tree PBR Survey</td> <td style="width: 10%; text-align: center;">○</td> <td style="width: 50%;">Daytime Building Inspection</td> <td style="width: 10%; text-align: center;">■</td> </tr> <tr> <td>Static Detector Survey</td> <td style="text-align: center;">■</td> <td>Daytime Bridge Inspection</td> <td style="text-align: center;">○</td> </tr> <tr> <td>Dusk Bat Survey</td> <td style="text-align: center;">■</td> <td>Dawn Bat Survey</td> <td style="text-align: center;">○</td> </tr> <tr> <td>Walking Transect</td> <td style="text-align: center;">○</td> <td>Driving Transect</td> <td style="text-align: center;">○</td> </tr> <tr> <td>Trapping/Mist Netting</td> <td style="text-align: center;">○</td> <td>IR Camcorder filming</td> <td style="text-align: center;">■</td> </tr> <tr> <td>Endoscope Inspection</td> <td style="text-align: center;">○</td> <td>Other (Thermal imagery)</td> <td style="text-align: center;">■</td> </tr> </table>	Tree PBR Survey	○	Daytime Building Inspection	■	Static Detector Survey	■	Daytime Bridge Inspection	○	Dusk Bat Survey	■	Dawn Bat Survey	○	Walking Transect	○	Driving Transect	○	Trapping/Mist Netting	○	IR Camcorder filming	■	Endoscope Inspection	○	Other (Thermal imagery)	■
Tree PBR Survey	○	Daytime Building Inspection	■																						
Static Detector Survey	■	Daytime Bridge Inspection	○																						
Dusk Bat Survey	■	Dawn Bat Survey	○																						
Walking Transect	○	Driving Transect	○																						
Trapping/Mist Netting	○	IR Camcorder filming	■																						
Endoscope Inspection	○	Other (Thermal imagery)	■																						
Weather conditions	Mixed weather conditions during dusk survey and for the majority of the static surveillance period in 2023. Poor weather conditions for the first dusk survey of 2024 but ideal weather conditions during the 2 nd dusk survey of 2024.																								
Survey Constraints	Weather and survey period.																								
Survey effort TOTAL = 444 hrs	2023 - Daytime inspection (1 hour), dusk survey + filming (8 hours) and static surveillance (363 hours) = TOTAL 372 hrs 2024 – “ dusk surveys + filming (16 hrs) and static surveillance (56 hours) – TOTAL 72 hrs																								
Extent of survey area	Interpretive Centre only																								
Equipment	All in good working order																								

The extent of the surveys undertaken has achieved to determine:

- Presence / absence of bat within the survey area;
- A bat species list for the survey area;
- Extent and pattern of usage by bats within the survey area.

Surveying was completed according Collins (2023) and, while, the timing does not meet the guidelines, sufficient data was gathered to inform steps required.

5. Bat Ecological Evaluation

The bat surveys undertaken confirmed that two species of bat are roosting in the attic space above the audio-visual room. The timing of the bat survey means that it is not possible to determine the type of bat roost present (i.e. maternity etc). As a consequence, the author will err on the side of caution and presume that the roost, particularly for brown long-eared bats, is a maternity roost. No bats were recorded roosting in other attic spaces surveyed.

Soprano pipistrelle

- Soprano pipistrelle is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The national soprano pipistrelle population is considered to be significantly increasing (Aughney *et al.*, 2023).
- The modelled Core Area for soprano pipistrelle is a relatively large area that covers much of the island of Ireland (62,020km²). The Bat Conservation Ireland Irish Landscape Model indicated that the soprano pipistrelle selects areas with broadleaf woodland, riparian habitats and low density urbanisation (Roche *et al.*, 2014).

The overall trend for the national population of soprano pipistrelle in Article 17 reporting (NPWS, 2019) is as follows:

- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Improving

Brown long-eared bat

- Brown long-eared bat is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The national brown long-eared bat population is considered to be stable (Aughney *et al.*, 2023).
- The modelled Core Area for brown long-eared bat is a relatively large area that covers much of the island of Ireland (49,929 km²). The Bat Conservation Ireland Irish Landscape Model indicated that the brown long-eared bat habitat preference is for areas with broadleaf woodland and riparian habitats on a small scale of 0.5km emphasising the importance of local landscape features for this species (Roche *et al.*, 2014).
- *al.*, 2014).

The overall trend for the national population of brown long-eared bat in Article 17 reporting (NPWS, 2019) is as follows:

- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Improving

6. Bat Mitigation Measures

The bat mitigation measures described below take into consideration Marnell *et al.* (2022) as well as best practice guidelines from Collins (2023) and BCT (2023). The measures described are those considered to be practical and effective based on past experience of the principal bat specialist, for the proposed development site. Measures are also reflective to published scientific research, where available and applicable to Irish bat populations. As stated by Marnell *et. Al.* (2022) “Any mitigation intended to ensure that there is no impact or minimal impact on the bats must be clearly described in detail, giving examples of how it worked in other places”.

Consultation is required with a conservation architect and contractor in relation to the proposed bat mitigation measures and to determine if additional bat mitigation measures are required.

6.1 Re-roofing

The proposed re-roofing of the building is to be undertaken in Autumn 2024. It is recommended that works are undertaken on the section of the roof over the audio-visual room first (early Autumn) and completed by mid-April. In discussion with NPWS staff, it is intended to ensure that the attic space remains accessible to local bat populations post works. Therefore, completing works prior to the maternity season and providing new exit points post-works will result in minimal disturbance to roosting bats. If works are delayed, then the section of the roof over the audio-visual can not be worked on during the maternity season (no works during the months of May to August).

- Bat Box Scheme

A bat box scheme is required and these could be erected on mature trees adjacent to the building. Two bat boxes are required (Schwegler woodcrete bat boxes 1FF). These should be erected prior to any proposed works.

- Supervision

The removal of ridge tiles and slates of the section of the roof over the audio-visual room will require supervision by a bat specialist to ensure that no bats are harmed in the process. Tiles and slates will be removed by hand and checked to potentially roosting bats. Any bats encountered will be removed safely and place in the bat box scheme erected on-site.

- Additional Exit Points

The majority of the exit points recorded were associated with gaps along the fascia soffit and gaps under exiting tiles. The latter exit point will be lost as a result of a new roof while the former exit points may be impacted on, but this depends on the natural gaps along the lintel of the walls. As a precaution, new alternative exit points are recommended.

Consultation is required with the contractor to ensure that the following is put into place.

a) Louvre

There is a louvre (currently blocked) at the gable of the building. It is recommended that this is opened (sections of it) to provided an exit point for bats. Depending on the degree of light entering the attic space, a timber partition box may be required to be fitted internally around the louvre window to reduce the amount of light entering the attic.

b) Ridge Tiles / Bat Slates

Four bat slates should be fitted as part of the new roof (ensuring that there is a gap in the felt directly underneath the slate exit to allow bats to move freely. Two slates should be fitted on either side of the roof, at a half way point from the ridge tile. While four ridge tile slates should be fitted along the ridge of the roof.



Plate 3: Bat slate (habibat bat access slate – www.nhbs.com)

Please note that the bat slate requires a minimum of 3 months to order for delivery from the UK. An alternative is the Morris bat slate which can be constructed following the instructions in this link: [Fabrication and fitting of a Batslate in a Plain tile roof \(vincentwildlife.ie\)](http://vincentwildlife.ie).

Using the design above, the four bat slates should be erected along the ridge tiles providing additional exit points. Again, please see link for the details with regards to this.

- Roof felt

As this attic is used by bats, modern breathable felt is not recommended. Bituminous IF non-breathable felt should be used in the roof of the attic space of the audio-visual room.

6.2 Derogation Licence

A derogation licence should be applied for due to the fact that brown long-eared bats were recorded in October 2023 and that the level of activity in the attic space was similar to that recorded in early May 2024. This is a precautionary measure and should be applied for asap.

6.3 Monitoring

Additional bat surveys may be required, depending on the timing of works. Supervision of the removal of tiles and slates over the attic space of the audio-visual room will be required. The exact details of this section is dependent on the timing of works and requires further consultation with NPWS staff.

7. Survey Conclusions

Two species of bat was recorded roosting in the attic space above the audio-visual room: brown long-eared bat and soprano pipistrelle. No bats were recorded roosting in the other attic spaces surveyed.

The proposed re-roofing of the Interpretive Centre will impact on local bat populations. However, it is proposed to completed the roof works in a manner to provide roosting post-works. In order to minimise disturbance, the proposed roof works over the audio-visual room should be undertaken outside the maternity months of May to August. Alternative exit points are required post-roof works.

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9. Appendices

9.1 Appendix 1 – Alternative Bat Roosts

Bat Boxes

Examples of bat box design (self-cleaning boxes i.e. opened at the bottom to allow bat droppings to fall out).

- a) Woodcrete 2F (Potential supplier - www.veldshop.nl)

