

Bat Survey and Assessment

Old Barrack Road Phase 2

Bantry

Co. Cork

Draft Report prepared for Cork County Council

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1 Introduction

This report has been prepared by Karen Banks, Greenleaf Ecology, at the request of Cork County Council. It is proposed to alter existing buildings and demolish outbuildings at Old Barrack Road, Bantry, Co. Cork.

A protected species survey of the proposed site, comprising a bat survey, was undertaken to assess the presence or absence of bats prior to commencement of development.

The site is located in Bantry, as illustrated in Figure 1-1.

Figure 1-1: Site Location Map



1.1 Site Summary and Context

The proposed development is located in the townland of Town Lots, Bantry, Co. Cork. The site comprises 3no. 2 storey buildings, 1no. 3 storey building and several single storey outbuildings. The proposed Phase 2 site covers an area of 0.189ha (0.467 Acres).

1.2 Description of the Proposed Project

The site is located in Bantry within the Barrack Street Architectural Conservation Area. The southern part of the site is defined by Marino Street and Old Barrack Road and the northern boundary abuts a steeply sloping green field which once contained the old railway line and platform. The proposed site has an area of 0.285ha and provides 21 housing units with a mix of one and two bed houses and apartments.

The proposed housing scheme incorporates both new and existing units, retaining the existing buildings in the ACA and developing a new linear terrace to the rear. The new and existing elements are connected by a new pedestrian street allowing free movement through the site.

1.3 Legislative Context

All Irish bats are protected under the Wildlife Acts. Also, the EU Habitats Directive, and Irish implementing legislation, seeks to protect rare species, including bats, and their habitats, and requires that appropriate monitoring of populations be undertaken. Moreover, the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) exists to conserve all bat species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) protects migrant bat species across all European boundaries. Ireland has ratified both these conventions.

All bats are listed in Annex IV to the Habitats Directive (92/43/EC) and the Lesser Horseshoe bat is further listed under Annex II to the same Directive. Article 12 of the Directive requires Member States to establish a system of strict protection for animal species listed in Annex IV. Article 16 provides for derogation from the protection under Article 12 in certain circumstances. Articles 12 and 16 are transposed into Irish law by Regulations 51 and 54, respectively, of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended).

Destruction, alteration or evacuation of a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service (NPWS) before works can commence. Any works interfering with bats and especially their roosts, may only be carried out under a Regulation 54 licence issued by the NPWS. The details with regards to appropriate assessments, the strict parameters within which derogation licences may be issued and the procedures by which and the order in relation to the planning and development regulations such licences should be obtained, are set out in NPWS Guidance Series 2 – *“Strict Protection of Animal Species: Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a Public authority”* (Mullen et al., 2021).

1.4 Objectives

The objectives of the bat survey were to assess:

- The potential suitability of the proposed site for roosting bats;
- Whether or not bats are roosting within the buildings and vegetation present within the site and how many bats these roosts support (i.e. size and importance);
- Make an assessment of the potential impacts of the proposed alteration to the existing buildings and demolition of outbuildings on bats; and
- To provide appropriate mitigation measures to remove or reduce impacts.

2 Methodology

2.1 Desk Study

A pre-survey data search was conducted in order to collate existing information from the footprint of the site and its surrounding area on bat activity, roosts and landscape features that may be used by bats. The data search comprised the following information sources:

- Collation of known bat records from within a 4km radius¹ of the proposed site from the National Bat Database held by the National Biodiversity Data Centre (www.biodiversityireland.ie); and
- Review of Ordnance Survey mapping and aerial photography of the site and its environs.

2.2 Field Survey

This bat survey and assessment was undertaken in accordance with the following guidelines:

- Andrews, H. (2018) *Bat Roosts in Trees. A guide to identification and assessment for tree-care and ecology professionals.* Pelagic Publishing.
- Collins, J. (ed.) (2016) *Bat Surveys for Professional ecologists: Good Practice Guidelines (3rd ed.)*. The Bat Conservation Trust, London.²
- 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.
- Reason, P.F. and Wray, S. (2023). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats.* Chartered Institute of Ecology and Environmental Management, Ampfield.

2.3 Surveyor Information

The survey was undertaken by Karen Banks, MCIEEM.

Karen is an ecologist with 18 years' experience in the field of ecological assessment. She holds a BSc in Environment and Development from Durham University and is a full member of the Chartered Institute of Ecology and Environmental Management. Karen is an experienced and skilled bat surveyor, first gaining a scientific licence to disturb bats from Natural England, UK in 2008. Karen is trained in bat handling and capture methods and currently holds a bat disturbance licence granted by the NPWS (Licence number: DER/BAT 2024-45 (survey licence)). Karen has undertaken bat survey and assessment for numerous projects, including bridge repair and replacement works, domestic dwelling repair and demolition works, wind farm developments and large-scale infrastructure projects such as flood relief schemes, road developments and pipeline schemes. Karen has also represented Cork County Council as an expert witness for bats at an Oral Hearing.

2.4 Consultation

Consultation with Mr Patrick Graham, local NPWS ranger covering the Bantry area, was undertaken on 16th November 2023 via telephone. The results of the survey and proposed mitigation measures were discussed and agreed in principle, with full details to be reviewed by Mr Graham on receipt of this report.

¹ A 4km radius search distance was selected to encompass records of bat roosts within Core Sustenance Zones (CSZ) of the study area for Irish species of bat. A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the conservation status of the colony using the roost (Collins, 2016).

² *Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th ed.* Was published in September 2023, after most of the surveys for this project were completed.

A site visit with Mr Patrick Graham and Ms Clare Heardman was undertaken on 13th December to view the roost and discuss options for a compensatory roost. Clare suggested that further survey work would be a good idea to check use of the roost in winter and late spring/ early summer. A compensatory roost will be required. The difficulty with regards to completing construction of the replacement roost prior to demolition of the existing roost was discussed.

2.5 Bat Roost Inspection Survey

Trees

A detailed inspection of the exterior of trees present at the site was undertaken on 21st September 2023 to look for features that bats could use for roosting (Potential Roost Features, or PRFs) from ground level. The aim of the survey was to determine the actual or potential presence of bats and the need for further survey and/or mitigation.

A detailed inspection of each potential tree roost within the site was undertaken. The inspection was carried out in daylight hours from ground level, and information was compiled on the tree, PRFs and evidence of bats. Where PRFs were recorded, the tree was numbered and marked on a map and a description of each PRF observed was recorded. PRFs that may be used by bats include:

- Rot holes;
- Hazard beams;
- Other horizontal or vertical cracks or splits (e.g. frost cracks) in stems or branches;
- Lifting bark;
- Knotholes arising from naturally shed branches or branches previously pruned back to the branch collar;
- Man-made holes (e.g. flush cuts) or cavities created by branches tearing out from parent stems;
- Cankers in which cavities have developed;
- Other hollows or cavities;
- Double leaders forming compression forks with included bark and potential cavities;
- Gaps between overlapping stems or branches;
- Partially detached ivy with stem diameters in excess of 50mm; and
- Bat or bird boxes.

Signs of a bat roost (excluding the actual presence of bats), include:

- Bat droppings in, around or below a PRF;
- Odour emanating from a PRF;
- Audible squeaking at dusk or in warm weather; and
- Staining below the PRF.

It should be noted that bats or bat droppings are the only conclusive evidence of a roost and many roosts have no external signs. In the current survey, potential roost sites were viewed by a bat specialist working from ground level. Trees were categorised according to the highest suitability PRF present.

Structures

On 21st September 2023 the existing buildings at the site were surveyed in daylight hours for potential roost sites and signs of bats. The survey utilised a high-powered torch, close focussing binoculars and an endoscope (Explorer Premium 8803 with 9mm camera) where required. The external inspection

involved looking for bat droppings on the ground, stuck to walls, windowsills or in crevices in the stonework and recording suitable entry and exit points.

The internal inspection involved looking for features that may be suitable for roosting bats, such as joints and crevices in wood, holes or crevices between stonework in the walls and searching for bat droppings, urine stains and feeding signs on the floor.

The following criteria were used to determine the potential suitability of the site for bats (Table 2-1)³.

Table 2-1: Criteria for Assessing the Potential Suitability of the Site for Bats

Suitability	Description Roosting Habitats	Commuting and Foraging Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only- the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

2.6 Emergence Roost Survey

Dusk surveys of the buildings were undertaken on 21st, 22nd, 28th and 29th September 2023 and 29th June 2024 in order to watch and listen for bats exiting bat roosts to determine the presence or absence

³ Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London

of bats at the time of survey. The surveys were undertaken by two people (Ms. Karen Banks and Mr Cathal MacPartholán) positioned so as to gain a view of both sides of each building. The dusk emergence surveys commenced approximately 15 minutes before sunset and ended approximately 90 minutes after sunset. The surveys were undertaken in suitable weather conditions (avoiding periods of very heavy rain, strong winds (> Beaufort Force 5), mists and dusk temperatures below (10°C)).

Anabat Walkabout detectors were utilised for the survey, which record bat echolocation calls directly on to an internal SD memory card. Each time a bat is detected, an individual time-stamped (date and time to the second) file is recorded. Data was then downloaded and all recordings were analysed by the Anabat Insight software analysis programme version 2.0.1.

The survey was aided by the use of the Guide TrackiR Pro 19mm thermal imaging scope.

Passive Monitoring

In order to supplement the information gathered from the emergence surveys, a passive monitoring system of bat detection was also deployed for this survey (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 later analysis). Passive monitoring was completed using an Anabat Swift bat monitor, which was positioned outside of the extension to Building 4. The monitor was set to record from approximately 30 minutes before sunset and was left recording for 12 nights in February 2024 and 12 nights in June 2024.

3 Results

3.1 Existing Bat Data

The review of existing records of bat species in the area of the site indicates that six of the ten known Irish species of bat have been recorded within a 4km radius of the proposed site. These bats include pipistrelle species (*Pipistrellus pipistrellus sensu lato*), soprano pipistrelle (*P. pygmaeus*), Leisler's (*Nyctalus leisleri*), brown long-eared (*Plecotus auritus*), Daubenton's bat (*Myotis daubentonii*) and lesser horseshoe bat (*Rhinolophus hipposideros*) as shown in Table 3-1 below. Of these species, soprano pipistrelle, pipistrelle species, Leisler's, brown long-eared and lesser horseshoe bat have all been recorded roosting in buildings within a 4km radius of the site.

Table 3-1: NBDC and NPWS bat records within a 4km radius of the proposed site

Common Name	Scientific Name	Present (Y/N)	Date of Last Record	Location of Known Roost (to 1km OS Grid Square Resolution)
Pipistrelle spp.	<i>Pipistrellus pipistrellus sensu lato</i>	Y	30/07/2014	V9948
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Y	30/07/2014	V9948
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	N	N/A	N/A
Leisler's Bat	<i>Nyctalus leisleri</i>	Y	30/07/2014	V9948
Brown Long-eared Bat	<i>Plecotus auritus</i>	Y	23/08/2014	V9948, V9848
Daubenton's Bat	<i>Myotis daubentonii</i>	Y	04/09/2008	None
Whiskered Bat	<i>Myotis mystacinus</i>	Y	N/A	N/A
Natterer's Bat	<i>Myotis nattereri</i>	Y	N/A	N/A
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	Y	01/07/2013	V9848, V9748, W0050
Brandt's Bat	<i>Myotis brandtii</i>	Y	N/A	N/A

The bat landscape association model (Lundy *et al*, 2011) suggests that the site is part of a landscape that is of moderate to high suitability for bats including common pipistrelle, soprano pipistrelle, brown long-eared, Leisler's, Daubenton's and natterer's bat. The proposed site and its environs are of low suitability for Nathusius' pipistrelle, whiskered and lesser horseshoe bat.

Lesser horseshoe bat roosts have been recorded in Bantry House and the convent, current numbers are not known (Patrick Graham and Clare Heardman *pers comm*). Bantry House is located c.1km south-west and the convent is located c.0.3km the south-east of the proposed site.

3.2 Habitat Description

The buildings comprise 3no. 2 storey buildings, 1no. 3 storey building and several single storey outbuildings.

Building 1

2-storey disused building constructed of stone with a slate tile roof to the south (Plate 3-1) and corrugated iron to the north. Externally, the walls have been rendered on the southern elevation and partially rendered on the northern elevation; the eastern gable end is unrendered stone. The windows and doors are intact with the exception of one window on the northern elevation, which is missing.

Plate 3-1: Building 1 and partial view of Building 2



Internally, the ceiling has collapsed so that there is no roof space and the roof is unlined (Plate 3-2). Swallows and pigeons nest within the building.

Plate 3-2: Remaining ceiling and roof of building 1



To the rear of the building is what appears to be an old abattoir with rendered walls and a corrugated roof with no roof space internally.

Outbuildings within the yard of Building 1 comprise two flat roof structures with rendered walls. The roof of the easternmost outbuilding (Plate 3-3) is constructed of metal sheeting with wooden beams. There is no roof space internally. The second outbuilding is an old processing room (Plate 3-4) with a flat felt lined roof.

Plate 3-3: Easternmost outbuilding in yard of building 1



Plate 3-4: Processing room in yard of building 1



A small toilet with rendered walls and a corrugated roof is also present.

Building 2

2-storey disused building with rendered walls and a slate tile roof with a single chimney. Internally, the roof space has been converted into a bedroom leaving a very small space between the ceiling and the roof (Plate 3-5). The roof tiles are lined with felt.

Plate 3-5: Roof space within building 2- small and cluttered



Building 3

3-storey disused building oriented so that the southern gable end of the building is facing the N71 (Plate 3-6). The slate tile roof is partially visible from ground level. The walls are rendered, and the windows and doors are intact (Plate 3-7).

Internally, the ceiling is intact and there is a roof space. The roof tiles are unlined and there is a window present within the roof space on the southern elevation.

Plate 3-6: Building 3 and building 4, with a partial view of building 2



Plate 3-7: Rear (northern elevation) of building 3



Building 4

2-storey disused building oriented so that the southern gable end of the building is facing the N71 (Plate 3-6). The walls of the southern gable end and western elevation have been rendered, the eastern elevation is constructed of stone and has not been rendered (Plate 3-8). The roof is constructed of slate tiles and the windows and doors are intact. A block extension is present to the rear (north) of the building and a stone wall is present adjacent to the northern end of the extension (Plate 3-9).

A window is present within the roof space on the southern elevation.

Plate 3-8: Stonewall and slate roof on eastern elevation of building 4



Plate 3-9: Block extension to north of building 4



The northern boundary of the site is predominantly vegetated with Willow, with occasional Sycamore and apple trees.

The site is connected to suitable foraging habitat in the surrounding landscape by scrub and hedgerows/ treelines present to the north of the buildings.

3.3 Bat Roost Survey

Building 1

There are potential access points to the building for bats via a missing window on the northern elevation, holes in the roof and gaps between the stonework on the eastern elevation. There is potential for bats to roost on the wooden beams of the roof. However, the structure would be exposed to wind and rain and would not provide the sheltered conditions required by roosts of high conservation status. This building is considered to be of low suitability for roosting bats.

No potential roosting habitat was observed within the old abattoir.

The easternmost outbuilding supports potential access points under the corrugated roof and gaps around the door. However, there is no roof space and roosting habitat would be limited to the wooden ceiling beams. The structure does not provide the appropriate conditions required by roosts of high conservation status. This building is considered to be of low suitability for roosting bats.

The processing room supports potential access points for bats under the flat roof material. There is potential for bats to roost between the flat roof material and the roof felt, however the thermal properties of the sheet metal roof would be poor (i.e. would get very hot on sunny days but would lose heat rapidly) and the building does not provide the appropriate conditions required by roosts of high conservation status. This building is considered to be of low suitability for roosting bats.

Building 2

No potential entry/ exit points for bats were observed within the roof, however parts of the northern elevation were not visible from ground level. Internally, the roof space is small and cluttered, however the potential for bats to roost between the roof tiles and roof membrane cannot be ruled out. This building is considered to be of moderate suitability for roosting bats.

Building 3

No potential entry/ exit points for bats were observed within the roof, however parts of the roof were not visible from ground level.

Internally, the roof tiles are unlined and there is a window within the roof space on the southern elevation, which increases the light level within the roof space. The building does not provide the appropriate conditions required by roosts of high conservation status and is considered to be of low suitability for roosting bats.

Building 4

There are potential entry/ exit points for bats via raised roof tiles and small gaps between the stonework. Internally, the roof tiles have been lined with plastic sheeting and there is ingress of light via a window on the southern elevation. This building is considered to be of low suitability for roosting bats.

The block outbuilding supports potential entry/ exit points via a missing window and a gap between the outbuilding and a stone wall to the north. Internally, the ceiling is lined by boards and the beams are exposed. This building is considered to be of moderate suitability for roosting bats.

Vegetation

The vegetation within the site comprises a small area of grassland, with garden shrubs and semi-mature Willow and Sycamore. No features of suitability as roosting or resting places for bats were recorded within the vegetation at the site.

The site is linked to other suitable foraging and commuting habitat in the surrounding landscape by the vegetation present at the site and scrub present adjacent to the northern site boundary. Hedgerows, treelines and woodland edge habitat in the environs of the site would provide good foraging habitat. The surrounding habitat is considered to be of moderate suitability for foraging and commuting bats.

3.3.1 Evidence of Bats

The buildings were examined with close focussing binoculars and a high-powered torch (as appropriate). No evidence of bats (e.g. actual sightings, droppings, feeding remains, scratch marks, urine stains) was observed during the inspection of building 1, 2 and 3.

A dead brown long-eared bat was present on the ground within the ground floor of building 4 and a small pile (c.40 no.) of lesser horseshoe bat droppings were present underneath a lip where two ceiling boards meet in the extension to building 4.

No evidence of bats was recorded during the inspection of the trees at the proposed site.

3.4 Bat Activity Survey

Building 1

No emergent bats or bat roosts were identified in Building 1 and its associated outbuildings.

Building 2

No emergent bats or bat roosts were identified in Building 2.

Building 3

No emergent bats or bat roosts were identified in Building 3.

Building 4

No emergent bats or bat roosts were identified in Building 4.

Three lesser horseshoe bats were recorded emerging from the block outbuilding attached to building 4 during the surveys undertaken on 21st and 28th September 2023. The lesser horseshoe bats light sampled under the cover present between building 2 and building 3, foraged briefly in the yard of building 3 and then flew from the site in a northerly direction.

Other species recorded foraging at the site in September 2023 were soprano pipistrelle, common pipistrelle and Natterer’s bat; Leisler’s bat was also recorded commuting overhead.

No lesser horseshoe bat were recorded emerging from the outbuilding during the emergence survey undertaken on 29th June 2024. Other species recorded foraging at the site were common and soprano pipistrelle.

Passive Monitors

The passive monitor recording outside the extension to building 4 in February 2024 recorded at least four species of bat: common pipistrelle, soprano pipistrelle, brown long-eared bat and lesser horseshoe bat; one call from *Myotis* species (unidentifiable to species level) was also recorded. Lesser horseshoe bat was recorded at various times throughout the night during the monitoring period and were recorded c.29 minutes after sunrise on 20th February 2024.

Five species were recorded at this location in June 2024: common pipistrelle, soprano pipistrelle, Leisler’s bat, brown long-eared bat and lesser horseshoe bat. Lesser horseshoe bat was recorded 23 minutes after sunset on 20th June 2024.

The calls recorded on the passive monitor located outside the extension to building 4 are summarised in Table 3-2.

Table 3-2: Bat calls recorded on monitors located outside the extension to Building 4 in February and June 2024

Species	16/02/2024-27/02/2024	18/06/2024-29/06/2024	Total
Common Pipistrelle	43 (38%)	922 (59%)	965 (58%)
Soprano Pipistrelle	23 (21%)	283 (18%)	306 (18%)
Pipistrelle species⁴	2 (2%)	26 (2%)	28 (2%)
Leisler's	0	188 (12%)	188 (11%)
Brown Long-eared	1 (1%)	2 (0%)	3 (0%)
Myotis Species	1 (1%)	0	1 (0%)
Lesser horseshoe bat	42 (38%)	148 (9%)	190 (11%)
Total	112 (100%)	1,569 (100%)	1,681 (100%)

3.5 Significance of the Site for Bats

Building 1 and its associated outbuildings are all considered to be of low suitability for roosting bats as they support one or more potential roosting sites that could potentially be used by individual bats

⁴ *Pipistrellus* spp. which have frequency of maximum energy, FMAXE, of c. 50kHz which cannot reliably be assigned to Common Pipistrelle (typical FMAXE of c. 45kHz) or Soprano Pipistrelle (FMAXE c. 55kHz)

opportunistically, but they do not provide appropriate conditions to be used on a regular basis by larger numbers of bats.

There is potential for bats to roost between the roof tiles and roof membrane within Building 2; this building is considered to be of moderate suitability for roosting bats.

Building 3 is considered to be of low suitability for roosting bats.

Building 4 supports low suitability for bats within the roof space of the main building. The block outbuilding attached to the northern gable of building 4 supports potential roosting habitat on the wooden ceiling beams and the gap between the rear wall of the building and the stone external wall. The outbuilding to building 4 is considered to be of moderate suitability for bats due to the presence of one or more potential roost sites that could be used by bats due to the protection, shelter and conditions they would provide and the presence of a small number of droppings.

The site predominantly comprises built land, however the northern boundary is vegetated by scrub and provides connectivity to other foraging areas in the wide landscape.

Three lesser horseshoe bats were recorded emerging from the outbuilding attached to building 4 during the emergence survey undertaken on 21st and 28th September 2023. Lesser horseshoe bat activity was recorded outside the outbuilding to building 4 on the passive monitors recording in February 2024 and June 2024. It is recognised that calls recorded on monitors located outside a building without a direct observer may potentially be recording bats foraging past the building rather than emerging/ re-entering the building. However, in this instance, lesser horseshoe bat calls were recorded close to sunset and after sunrise (as detailed in Section 3.4); therefore, it is reasonable to assume that the lesser horseshoe bats were recorded echolocating on emergence/ re-entry from the roost.

In summary, lesser horseshoe bat have been recorded at the extension to building 4 during the winter, summer and autumn seasons indicating that the building supports a hibernation and summer roost for small numbers of this species.

Lesser horseshoe bat is an Annex II species under the EU Habitats Directive.

In accordance with Marnell *et al* (2022), the status of the roost at the proposed site is “*small numbers of rarer species, not a maternity site*”. As such, the roost for a lesser horseshoe bat at the site is considered to be of moderate conservation significance and is of Local Importance.

The status of Irish bat species (Marnell *et al.*, 2019) is summarised in Table 3-3. The bat species recorded roosting and foraging at the site are all of Least Concern.

The conservation status of all the bats recorded at the site is Favourable, with the exception of lesser horseshoe bat, which is categorised as being of Inadequate conservation status (NPWS, 2019).

Table 3-3: Status of 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

Species: Common Name	Irish Status	European Status	Global Status
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	Near threatened	Least Concern
Possible Vagrants			
Brandt's bat (<i>Myotis brandtii</i>)	Not Assessed	Least Concern	Least Concern
Greater horseshoe bat (<i>Rhinolophus ferrumequinum</i>)	Not Assessed	Near threatened	Least Concern

4 Potential Impacts

Planning permission is being sought for the provision of 21 housing units at the proposed site, requiring the alteration to the existing buildings and demolition of outbuildings. The results of surveys undertaken between September 2023 and June 2024 indicate that the existing outbuilding attached to the northern gable end of building 4 at the west of the site supports a roost for a small number of lesser horseshoe bat all year round.

4.1 Loss of Roosting Habitat

There is potential for the proposed development to result in the loss of a roost for a small number of lesser horseshoe bat.

The proposed development includes for the demolition of the outbuilding supporting the lesser horseshoe bat roost. There is potential for direct impacts on lesser horseshoe bat should the works be timed inappropriately. In the absence of mitigation, this would be an adverse effect which would be significant at the local geographic level. This impact assessment is based on the assessment of the type of roost recorded (i.e. small numbers of rarer species), which are of less conservation significance than other roost types (e.g. maternity roosts or major hibernation roosts) (Marnell, 2022).

4.2 Disturbance

There is also potential for disturbance as a result of lighting during the construction and operational phase. When bats emerge from roosts they tend not to echolocate but rely on eyesight to fly from the roost to adjoining treelines or hedgerows. Various studies have shown that bats' eyesight works best in dim light conditions; where there is too much luminance bats' vision can be reduced resulting in disorientation. Too much luminance at bat roosts may cause bats to desert a roost. Light falling on a roost exit point can delay bats from emerging and miss peak levels of insect activity at dusk and any delays of emergence can reduce feeding periods.⁵ In the absence of mitigation, disturbance of bats due to lighting would have an indirect, significant adverse impact at the local geographic level.

⁵ Stone E.L. (2013) Bats and Lighting: Overview of current evidence and mitigation.

5 Mitigation Measures

5.1 Bats

Bats utilise the outbuilding to building 4 at the west of the site for roosting, therefore, safeguards are required to ensure the safety of these animals during works.

Application for a derogation licence

NB: Work on a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service before works on the roost can commence. Such a licence is required for the proposed works to the outbuilding and no works should be undertaken on the outbuilding before the licence is granted by the NPWS.

In accordance with Marnell *et al* (2022), the outbuilding supports a bat roost considered to be of moderate conservation significance. As stated in Figure 20, page 46, this necessitates:

“the provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species’ requirements. Minimal timing constraints or monitoring requirements”

Measure 1: timing of works

In accordance with the *Bat Mitigation Guidelines for Ireland*, the optimum time for undertaking works to a building supporting roosting bats throughout the year is likely to lie outside the main breeding season, to avoid times when non-flying pups may be present, and the main hibernation season, to avoid times when disturbance may impact on survival or bats may not be sufficiently active to get out of the way. Spring and autumn generally provide the optimum period for such operations.

The proposed development includes the demolition of the outbuilding. Prior to demolition works, the outbuilding will be re-examined immediately prior to the commencement of works to assess whether bats are present. An internal building inspection and a dusk or dawn emergence/re-entry survey for evidence of bat usage immediately prior to the commencement of works will be undertaken and a passive monitor will be left recording within the outbuilding all night. In the event that no evidence of bat usage is found during the survey, works can commence with no timing restrictions. Should bats be found within the building, demolition of the extension shall occur between 1st September and 31st October or 1st March and 30th April to avoid disturbance to bats.

Alteration and demolition works shall only proceed under licence.

Measure 2: demolition works

Prior to demolition works, the outbuilding will be re-examined immediately prior to the commencement of works to assess whether bats are present. An internal building inspection and a dusk or dawn emergence/re-entry survey for evidence of bat usage immediately prior to the commencement of works will be undertaken and a passive monitor will be left recording within the outbuilding all night. In the event that no evidence of bat usage is found during the survey, works can commence.

Should bats be found within the building, it will be necessary to exclude the bats. This can be achieved by altering the roosting environment to encourage the bats to leave, for example partially stripping the roof to alter temperature and airflow. The disturbance should not be so great as to force bats to emerge in daylight or unsuitable weather conditions. Alternatively, bats can be excluded by blocking access points once all bats have been recorded as leaving; there must be confidence that all bats have emerged to avoid entrapment. The latter type of exclusion can only be undertaken during the bats

active period (late March/ April depending on weather conditions or September and October, avoiding the maternity and hibernation periods).

Once bats have flown from the building/ been excluded, the roof of the outbuilding shall be removed by hand and under supervision by a bat specialist. Prior to commencement of works the bat specialist will brief the contractors on the possible presence of bats on the site, the subsequent need to take appropriate care and attention whilst carrying out the works and the steps to take should bats be discovered at the site at any time (i.e. stop works and inform the bat specialist). Active bats will usually keep out of the way of any operations, but torpid bats may need to be gently temporarily placed in a box until dusk and released on site.

Measure 3: provision of new roost facilities

The outbuilding to Building 4 supports a roost for a small number of lesser horseshoe bat all year round. The proposed development includes the demolition of the extension, which is on poor condition. An alternative roost for lesser horseshoe bat will be incorporated into the design of Building 4. The new alternative roost will be constructed in advance of the demolition of the outbuilding, subject to consultation with NPWS.

As described in *Bat Mitigation Guidelines Ireland* (Marnell, 2022):

“Lesser horseshoe bat requires a large roost area unobstructed by timbers with flight access into them, where they hang free; they also normally require a light-sampling area where they can fly in and out before finally emerging. Based on a sample of known roosts, it is unlikely that a void height (floor to ridge board) of less than 2 m will provide sufficient volume or that an apex length or width of less than 4 m will provide sufficient area. An ideal roof void would have an apex height in excess of 2.8 m and a length and width of 5 m or more. Wherever possible, it is preferable to maintain entrances in their original position so the bats will have no difficulty finding them. External lighting, such as security lights or road or path lighting, close to roost entrances must be avoided”.

The above requirements shall be achieved by the provision of a dedicated area of the roof space in Building 4 for bats, to incorporate the following features:

1. The roof space will be portioned off with a plywood sheet fixed to the rafters to leave a dedicated area for the bats in the northernmost portion of the roof space. This area of the roof space will be uncluttered by timbers, with a width of 5.9m, length of 7m and a height of 2.4-2.5m to apex.
2. An entry/ exit point for lesser horseshoe will be created in the northern gable end of the building. The entry/ exit point should not be positioned directly above domestic windows and doors to avoid issues with droppings and light spill onto the roost entrance. The entrance should measure approximately 300 x 200mm.
3. A baffle will be installed across the entrance to reduce light spillage and to reduce heat loss. The baffle will be painted black.
4. Underfelt to be installed under the roof tiles shall be bituminous and should not contain non-woven spunbonded polypropylene filaments.
5. The boundary wall at the west of the site shall incorporate wall plants to act as a vegetated flight line to the scrub present at the northern site boundary, which connects to foraging habitat within the wider landscape.
6. There shall be no external lighting close to the roost entrance.

Schofield (2008) suggests measures that help ensure that bats and humans can share a resource without conflict:

- Locate roost entrances away from windows and doors.
- Ensure flight lines direct bats away from areas of human activity.
- Include insulation to reduce noise from human activities (and vice versa).
- Out of season access to the roof space may be required to remove droppings.

Measure 5: Lighting

Lighting within the site shall be installed with sensitivity for local wildlife while still providing the necessary lighting for human usage.

The following general principals will be followed in relation to the overall lighting plan for the site:

- Lighting design will be flexible and be able to fully take into account the presence of protected species. Therefore, appropriate lighting shall be used within the proposed development and adjacent areas with more sensitive lighting regimes deployed in wildlife sensitive areas.
- Dark buffer zones will be used to separate habitats or features from lighting by forming a dark perimeter around them. This shall be used for habitat features noted as foraging areas for bats, for example the vegetation present on the northern site boundary and the proposed wall planting on the western site boundary. As noted previously, it is essential that no external lighting is installed close to the roost entrance.
- Buffer zones will be used to protect key bat habitat and rely on ensuring light levels (levels of illuminance measured in lux) within a certain distance of a feature do not exceed certain defined limits. The buffer zone can be further subdivided into zones of increasing illuminance limit radiating away from the feature or habitat that requires to be protected.

Luminaire design is extremely important to achieve an appropriate lighting regime. Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following will be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2023).

- All luminaires used will lack UV elements to reduce impact.
- LED luminaires will be used due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins) is recommended to reduce the blue light component.
- Light sources shall feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
- Column heights shall be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01.
- Luminaires shall always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting shall be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination

efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.

- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

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Appendix A: Description of Irish Bat Species

Ireland has ten known bat species from two distinct families. Each is briefly described below. For a more comprehensive overview see Roche *et al* (2014). The conservation status of each species is derived from NPWS (2019).

Vespertilionidae:

Common pipistrelle (*Pipistrellus pipistrellus*)

This species was only recently separated from its sibling, the soprano or brown pipistrelle *P. pygmaeus*, which is detailed below (Barratt et al, 1997). The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland. The conservation status of this species is Favourable.

Soprano pipistrelle (*Pipistrellus pygmaeus*)

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer. The conservation status of this species is Favourable.

Nathusius' pipistrelle (*Pipistrellus nathusii*)

Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down (Richardson, 2000) and also in Fermanagh, Longford and Cavan. It has also been recorded in Counties Cork and Kerry (Kelleher, 2005). However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The conservation status of this species is Favourable.

Leisler's bat (*Nyctalus leisleri*)

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddis-flies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. The conservation status of this species is Favourable.

Brown long-eared bat (*Plecotus auritus*)

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings. The conservation status of this species is Favourable.

Natterer's bat (*Myotis nattereri*)

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddis-flies and spiders. Known roosts are usually in old stone buildings but they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland. The conservation status of this species is Favourable.

Daubenton's bat (*Myotis daubentonii*)

This bat species prefers feeding close to the surface of smooth water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees. The conservation status of this species is Favourable.

Whiskered bat (*Myotis mystacinus*)

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The conservation status of this species is Favourable.

Brandt's bat (*Myotis brandtii*)

According to NPWS (2013), whiskered and Brandt's bats are cryptic species and can only be told apart using DNA techniques. Brandt's bat has been confirmed only once from Ireland; a single specimen found in 2003 in Wicklow (Mullen, 2006). Following this discovery, an intensive re-survey, involving DNA testing, was undertaken of all known whiskered bat roosts in Ireland, by the Centre for Irish Bat Research. Woodland mist-netting was also conducted for the species. Despite the extensive survey-work, no further Brandt's bats were identified. The most recent Red Data List for Irish Mammals (Marnell *et al.* 2009) lists Brandt's bat as data deficient. There is no evidence of any roosts for this species in the country and at present the single record for the species is considered an anomaly. Boston *et al* (2010) concluded that "M. brandtii cannot currently be considered a resident species. This species is now considered a vagrant to the country and consequently, a detailed assessment has not been carried out.

Rhinolophidae:

Lesser horseshoe bat (*Rhinolophus hipposideros*)

This species is the only representative of the Rhinolophidae or horseshoe bat family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. It often carries its prey to a perch to consume, leaving the remains beneath as an indication of its presence. The echolocation call of this species is of constant frequency and, on a heterodyne bat detector, sounds like a melodious warble. The species is confined to six counties along the Atlantic seaboard: Mayo, Galway, Clare, Limerick, Kerry and Cork. The current Irish national population is estimated at 12,500 animals. This species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of

Conservation have been designated in Ireland for its protection. Where it occurs, it is often found roosting within farm buildings. The conservation status of this species is Inadequate.