Bat Roost Survey and Assessment

Dwelling at Fermoyle West

Fanore

Co. Clare

Report prepared for Petr and Rachel Luksan

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Contents

Appendices

List of Figures

List of Plates

List of Tables

1 Introduction

This report has been prepared by Karen Banks, Greenleaf Ecology, at the request of Petr and Rachel Luksan. It is proposed to renovate and extend a dwelling at Fermoyle West, Fanore, Co. Clare. The dwelling is known to support lesser horseshoe bat (*Rhinolophus hipposideros*), therefore a protected species survey of the dwelling, comprising a bat survey, was undertaken to inform the development plans and a derogation application for the works.

The dwelling is located in Fermoyle West, as illustrated in Figure 1.1.

Figure 1-1: Location Map

1.1 Description of the Proposed Development

The proposed development is to renovate and extend an existing derelict cottage at Fermoyle West, Fanore, Co. Clare.

Drawings of the proposed development are enclosed in Appendix B.

1.2 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.

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 licence to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) 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 Circular Letter NPWS 2/07 "*Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 - strict protection of certain species/applications for derogation licences*".

1.3 Objectives

The objectives of the bat survey were to assess:

- The suitability of the existing dwelling for roosting bats;
- Whether or not bats are roosting within the existing dwelling and how many bats these roosts support (i.e. size and importance);
- Make an assessment of the potential impacts of the proposed works to the existing dwelling 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 dwelling 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 the National Bat Database held by the National Biodiversity Data Centre (www.biodiversityireland.ie);
- Collation of known bat records from National Parks and Wildlife Service; and
- Review of Ordnance Survey mapping and aerial photography of the dwelling and its environs.

2.2 Field Survey

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

- Bat Conservation Ireland, (2010). Guidance notes for Planners, Engineers, Architects, and Developers;
- Collins, J. (ed.) (2023). Bat Surveys for Professional ecologists: Good Practice Guidelines (4th ed.). The Bat Conservation Trust, London; and
- 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.

2.3 Surveyor Information

The survey was undertaken by Karen Banks, MCIEEM.

Karen is an ecologist with 19 years' experience in the field of ecological assessment. 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. 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.

2.4 Bat Roost Inspection Survey

On 26th October 2023, 11th May 2024 and 28th June 2025 the dwelling was surveyed 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 dwelling and its environs for bats (Table 2-1)[1].

[1] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London

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

Suitability	Description Roosting habitats in structures	Potential flight paths and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/ suitable shelter at all ground/ underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/ protection for flight-lines, or generate/ shelter insect populations available to foraging bats).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. 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 and not a classic cool/stable hibernation site, but could be used by individual hibernating bats).	Habitat that could be used by small numbers of bats as flight-paths such as a 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 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, such as maternity and hibernation- the categorisation described 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 flight paths 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 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. These structures have the potential to support high conservation status roosts e.g. maternity or classic cool/ stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight paths 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.

2.5 Emergence Roost Survey

Dusk surveys of the building were undertaken by two people (Ms Karen Banks and Mr Cathal MacPartholan) on 11th May 2024, 18th May 2024 and 16th August 2025 in order to watch and listen for bats exiting bat roosts to determine the presence or absence of bats at the time of survey. The dusk emergence surveys commenced approximately 15 minutes before sunset and ended approximately

90 minutes after sunset. The surveys were undertaken within suitable weather conditions (avoiding periods of very heavy rain, strong winds (> Beaufort Force 5), mists and dusk temperatures below 10°C).

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

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 were then downloaded and all recordings were analysed by the Anabat Insight software analysis programme (version 2.0.1 and version 2.1.6).

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 2 no. Anabat Swift bat monitors, which were positioned within hedgerows to the east and northwest of the dwelling (Figure 2-1). The monitors were set to record from approximately 30 minutes before sunset and were left recording for 7 nights in May 2024.

Figure 2-1: Location of passive monitors recording at the dwelling in May 2024

A passive monitor was also deployed inside the dwelling between 13th March and 18th April 2025 to gather data on activity levels at the site within the late winter and spring seasons (a total of 37 nights).

3 Results

3.1 Existing Bat Data

The review of existing records of bat species in the area of the dwelling indicates that at least four of the ten known Irish species of bat have been recorded within a 4km radius of the dwelling: pipistrelle species, soprano pipistrelle, Daubenton's bat and lesser horseshoe bat. Of these species, pipistrelle species has been recorded roosting in the environs of the dwelling, and lesser horseshoe bat potentially roosts in the environs of the dwelling (roost not specified on the NBDC database), as summarised in Table 3-1 below.

Table 3-1: NBDC bat records within a 4km radius of the dwelling

Common Name	Scientific Name	Present (Y/N)	Date of Last Record	Location of Known Roost (to 1km OS Grid Square Resolution)
Pipistrelle spp.	*Pipistrellus pipistrellus sensu lato*	Y	23/07/2019	M1705
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Y	23/07/2019	None
Nathusius's Pipistrelle	*Pipistrellus nathusii*	N	N/A	N/A
Leisler's Bat	*Nyctalus leisleri*	N	N/A	N/A
Brown Long-eared Bat	*Plecotus auritus*	N	N/A	N/A
Daubenton's Bat	*Myotis daubentonii*	Y	27/08/2021	None
Whiskered Bat	*Myotis mystacinus*	N	N/A	N/A
Natterer's Bat	*Myotis nattereri*	N	N/A	N/A
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	Y	19/05/2019	Potential roost at M1705
Brandt's Bat	*Myotis brandtii*	N	N/A	N/A

The National Parks and Wildlife Service Lesser Horseshoe Bat Database includes records of lesser horseshoe bat from 3 locations within a 5km radius of the dwelling at 1km OS Grid Squares M1603, M1802 and M2003. A lesser horseshoe bat roost is also known to be present within a stone outbuilding located c.130m to the south-west of the dwelling. A data request for lesser horseshoe bat records for the 10km OS Grid Square within which the dwelling is located (M10) was submitted to National Parks & Wildlife Service Scientific Unit on 2nd June 2025, no response had been received at the time of writing.

The dwelling is known to support lesser horseshoe bat and is included within the annual count undertaken by National Parks and Wildlife Service (NPWS). In July 2024, 29 lesser horseshoe bat were counted emerging from the dwelling by NPWS ranger Penny Bartlett[2].

The dwelling is located within Black Head-Poulsallagh Complex SAC. Lesser horseshoe bat is not a qualifying interest species for this SAC.

The bat landscape association model (Lundy *et al,* 2011) suggests that the dwelling is located within a landscape that is of moderate suitability for common pipistrelle and whiskered bat; low to moderate

[2] Penny Bartlett *pers comm* 15/07/2024.

suitability for soprano pipistrelle, lesser horseshoe bat, Leisler's bat and Daubenton's bat; and is thought to be unsuitable for brown long-eared bat, Nathusius' pipistrelle and Natterer's bat.

3.2 Habitat Description

The site comprises a disused dwelling with fields of grassland bound by hedgerows adjacent to the dwelling; a hedgerow is present adjacent to the dwelling to the south and east (Plate 3-1).

Plate 3-1: Dwelling with adjacent hedgerows

The dwelling is a single storey building constructed of stone with rendered walls and a slate tile roof with wooden fascia boards (Plate 3-1). Windows with no glass or shutters are present on the eastern and western elevations and a doorway is present on the eastern elevation. Internally, the dwelling comprises three rooms and supports a roof with A-frame timber trusses and ceiling boards that are partially missing in each room. The roof tiles are not lined with a membrane.

3.3 Bat Roost Survey

3.3.1 Potential Bat Access Points

Potential access points to the dwelling for bats include gaps between the roof tiles and the open windows and door.

3.3.2 Bat Roosting Potential

There is potential for bats to roost within the roof space of the dwelling.

3.3.3 Evidence of Bats

The exterior and interior of the dwelling was examined with close focussing binoculars and a high-powered torch (as appropriate).

The southern part of the roof space is accessible and a small number (c.5) of old bat droppings were present when inspected on 26th October 2023. The droppings were too degraded to allow identification to species level.

A single lesser horseshoe bat was visible in the roof space during the inspection undertaken on 28th June 2025, however the entire roof was not safely accessible for a full inspection.

3.4 Bat Activity Survey

3.4.1 Passive Monitoring

Seven species of bat were recorded during passive monitoring undertaken over 7 nights in May 2024. The most frequently recorded species was lesser horseshoe bat, followed by common pipistrelle, soprano pipistrelle then Leisler's bat. These species were all recorded foraging and commuting across the site. Natterer's bat and *Myotis* species of bat (unidentifiable to species level) were recorded foraging on both monitors at the site and Daubenton's bat was recorded on PM1 adjacent to the hedgerow to the east of the dwelling. A low level of brown long-eared bat activity was recorded on PM2 and one call that was not of sufficient quality to enable call identification was also recorded on PM2 (Table 3-2).

The calls recorded on the passive monitors are summarised in Table 3-2; in order to compare the activity levels between different periods of monitoring, data on the maximum and average call registers per night have been presented, along with the total number of calls recorded. The location of the passive detectors is illustrated in Figure 2-1.

Table 3-2: Summary of bat calls recorded on passive monitors recording at Fermoyle West from 11th to 18th May 2024

Species	PM1			PM2		
	Max/night	Average/ night	Total Calls Recorded	Max/night	Average/ night	Total Calls Recorded
Common Pipistrelle	166	47	376 (14%)	780	115.3	922 (58%)
Soprano Pipistrelle	182	83.6	669 (24%)	16	6.8	54 (3%)
Pipistrelle species[3]	4	0.9	7 (1%)	1	0.25	2 (0%)
Leisler's	60	28.3	226 (9%)	160	60	480 (30%)
Brown Long-eared	0	0	0	6	1.8	14 (1%)
Daubenton's bat	6	1.5	12 (0%)	0	0	0
Natterer's	2	0.25	2 (0%)	4	1.5	12 (1%)
Myotis Species	20	7.4	59 (2%)	24	5	40 (3%)
Lesser horseshoe bat	268	158.8	1270 (48%)	16	8	64 (4%)
Total	n/a	n/a	2,621 (100%)	n/a	n/a	1588 (100%)

The same seven species were recorded on the passive monitor recording within the dwelling between 13th March 2025 and 18th April 2025. The highest level of activity recorded was from lesser horseshoe bat (57% of activity) (Table 3-3).

[3] *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)

Table 3-3: Summary of bat calls recorded on passive monitors recording at Fermoyle West from 13th March to 18th April 2025

Species	Maximum/night	Average/night	Total Calls Recorded
Common Pipistrelle	278	20	740 (9%)
Soprano Pipistrelle	186	49.03	1,814 (21%)
Pipistrelle species	0	0	0 (0%)
Leisler's	114	23.78	880 (10%)
Daubenton's	18	1.24	46 (1%)
Whiskered	0	0	0 (0%)
Natterer's	26	3.78	140 (2%)
***Myotis* species**	0	0	0 (0%)
Brown Long-eared	2	0.32	12 (0%)
Lesser Horseshoe	602	132.70	4,910 (57%)
Total	796	230.87	8,542 (100%)

Lesser horseshoe bat activity was recorded on 32 of the 37 nights of monitoring conducted between 13th March and 18th April 2025. Lesser horseshoe bat activity was variable during this monitoring period, with a peak of activity (602 call registers) recorded on 3rd April 2025 and an average of 133 call registers per night (Figure 3-1). Lesser horseshoe bat activity was recorded from c.30 minutes after sunset on 19 of the 37 nights of monitoring and activity was recorded on the monitor throughout the night for most of the monitoring period.

Temperatures at dusk were mild throughout this monitoring period (>10°C).

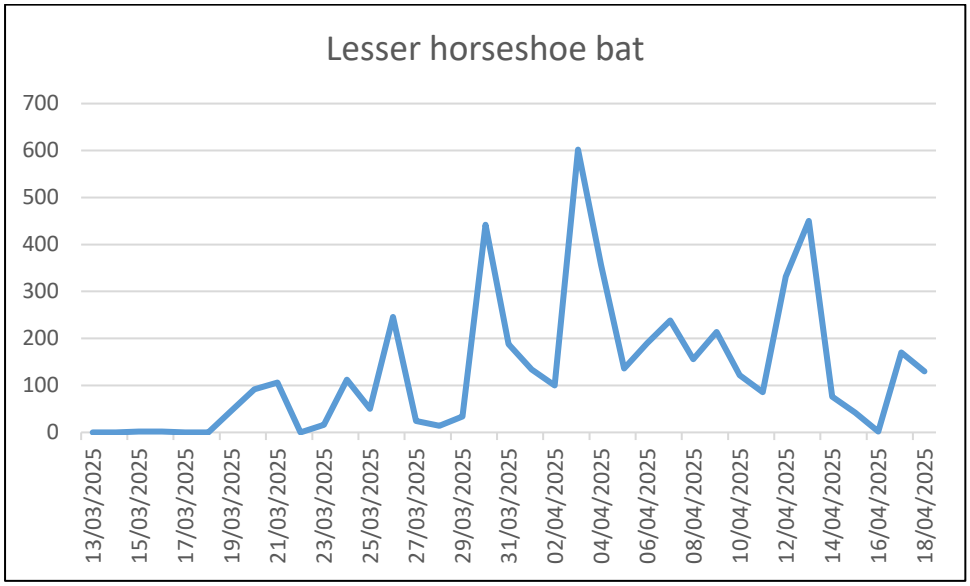

Figure 3-1: Lesser horseshoe bat activity March/April 2025

It is noted that pipistrelle species and Leisler's bat produce loud echolocation calls which travel long distances. The door and windows to the building are open, therefore calls from bats outside the building can be recorded within the building even when bats are not flying or roosting within the building. Calls recorded by species that echolocate more quietly, such as lesser horseshoe bat, are more likely to be within the building when recorded.

3.4.2 Emergence Roost Survey

During the roost emergence survey, approximately 22 lesser horseshoe bats were counted emerging from an open window and the door on the eastern elevation of the building from 46 minutes after sunset on 11th and c.35 minutes after sunset on 18th May 2024. The number of lesser horseshoe bats counted is a best estimate as they were light sampling by flying in and out of the building for several minutes, making certainty on exact numbers difficult. On emergence, the lesser horseshoe bats flew along the hedgerow predominantly in a northerly direction. Approximately 10 lesser horseshoe bat were recorded emerging from the dwelling during the emergence roost survey conducted on 16th August 2025.

Other species of bat recorded during the emergence survey were low numbers of common and soprano pipistrelle and Leisler's bat commuting overhead; these species were not recorded emerging from the dwelling.

3.5 Significance of the Structure for Bats

The building is considered to be of high suitability for roosting bats (see Table 2-1) due to the presence of potential roosting features and connectivity to suitable foraging/ commuting habitat in the wider landscape. However, the building is falling into disrepair and its suitability to support roosts of high conservation significance is reducing and will continue to reduce without renovation works. The building supports potential roosting sites within the roof space. Approximately twenty-two lesser horseshoe bat were recorded emerging from the building during the roost emergence survey undertaken in May 2024 and twenty-nine lesser horseshoe bat were recorded by NPWS during their count undertaken in July 2024. 10 bats were recorded emerging from the building during the roost emergence survey conducted on 16th August 2025. Lesser horseshoe bat activity was also recorded during monitoring conducted within the dwelling in March/ April 2025. No evidence of lesser horseshoe bat was recorded within the dwelling during the inspection of the roof space conducted on 26th October 2023. The building is considered to support a spring transitional roost. Numbers of lesser horseshoe bat recorded emerging from the dwelling during the summer are declining and it is unclear whether the dwelling currently supports a small maternity roost or functions as a satellite roost for the larger maternity roost located 130m to the south-west. Applying the precautionary principle, it is assumed that the dwelling supports a small maternity roost for lesser horseshoe bat.

Lesser horseshoe bat is of 'Least Concern' (Marnell et al., 2019) and the conservation status of this species is considered to be 'Inadequate' (NPWS, 2019).

Lesser horseshoe bat is an Annex II species under the EU Habitats Directive and is one of the rarest species within Ireland and, as noted above, the conservation status of this species is considered to be 'Inadequate'. As such, the roost is considered to be of high conservation significance (in accordance with the *Bat Mitigation Guidelines for Ireland*).

4 Potential Impacts

Twenty-two lesser horseshoe bat were recorded emerging from the eastern elevation of the building on 11th May 2024 and 18th May 2024 and twenty-nine lesser horseshoe bat were recorded emerging from the building by NPWS in July 2024. Ten lesser horseshoe bat were recorded emerging from the building on 16th August 2025.

Loss of Roosting Habitat

The proposed works include the renovation of the building, to include (*inter alia*) installation of windows and a door, replacement of the existing ceiling and repair to the roof. It is also proposed to construct an extension onto the northern gable end of the dwelling (see drawings in Appendix B). Should the works be undertaken during the active season for bats (April to October), there is potential for direct impacts on lesser horseshoe bat. In the absence of mitigation, this would be an adverse effect which would be significant at the County geographic level. This impact assessment is based on lesser horseshoe bat having a national status of "Least Concern" but an "Inadequate" conservation status. The type of roost recorded (i.e. spring transitional roost and maternity roost of a rarer species) is of high conservation significance, however the number of lesser horseshoe bat recorded at the dwelling in 2024 and 2025 was small (29 in 2024 and 10 in 2025 and is below the threshold for a roost of International Importance (100+ individuals within a maternity roost). It is further noted that Marnell *et al* (2022) consider the modification of a maternity roost to be a medium scale of impact and temporary disturbance outside the breeding season to be to be a low scale of impact.

Disturbance

There is 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.[4] Further, there is potential for noise disturbance to occur during the operational phase of the development (i.e. when the dwelling is occupied). In the absence of mitigation, disturbance of bats due to lighting and noise would have an indirect, significant adverse impact at the County geographic level.

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

5 Derogation Tests

Test 1: Reason for the Derogation.

Reason c). The proposed development is required to fulfil a long-term housing need for a local family. The family also operate a farm on land surrounding the property, which is grazed extensively by cattle (herd number available on request). As such, the proposed renovation of the dwelling on farmland will be of benefit socially and economically and will also enable continued appropriate management of the surrounding land.

The roost at the dwelling is minor and recent counts at the roost indicate that the number of bats present is declining year on year. Further, there is an alternative larger lesser horseshoe bat roost present in an outbuilding c. 130m from the building.

In view of these factors, the provision of a family home and continued farming of adjacent land will be of public interest, and this outweighs the conservation interest of the minor lesser horseshoe bat roost recorded at the dwelling.

Test 2: Absence of Alternative Solutions

Do-nothing: Alternative solutions considered included not refurbishing the dwelling (i.e. 'do-nothing). However, that option is not feasible as the dwelling is falling into disrepair, if nothing is done it will fall further into disrepair and will not be habitable by either bats or humans. Its renovation is required to provide a family home on family-owned agricultural land.

Alternative location: No other suitable or available properties in the immediate area meet the location need (proximity to agricultural land) and affordability requirements. Moving to another area would sever family and community connections, contrary to local policy on sustaining rural communities.

Alternative Design: The proposed dwelling refurbishment and extension has been designed in accordance with Marnell *et al* (2022) and Schofield (2008) to incorporate features suitable for roosting lesser horseshoe bat as well as the provision of a family home.

Alternative timing: Delaying works is not viable due to urgent housing need. Delays would risk further deterioration of the structure and would likely result in a continual rapid deterioration of the suitability of the property for roosting bats, as evidenced by the reduction in summer roosting numbers.

None of the alternatives achieve the objective of delivering suitable long-term housing in the required location while supporting the ongoing management of adjacent farmland. Renovating the existing property, with appropriate mitigation as provided in the supporting report, is the best option that meets the housing need while providing a long-term dedicated roost for lesser horseshoe bat.

The proposed renovation, with mitigation measures in place, is the only satisfactory option to address the problem. The derogation sought is therefore essential and proportionate.

Test 3: Impact of a Derogation on Conservation Status

The national population of lesser horseshoe bat is estimated at 14,975 in summer 2023. The number of lesser horseshoe bat roosting in the dwelling is c.10 individuals during the summer, with a similar level of activity also recorded in spring. It is considered that the dwelling currently supports a transitional spring roost and is either a small maternity roost or a satellite roost for a nearby larger maternity roost located c.130 from the dwelling. In the absence of any mitigation, the renovation of the dwelling may potentially result in the mortality of a small number of lesser horseshoe bat, if timed

inappropriately. This would result in an adverse effect on the conservation status of the local population of lesser horseshoe bat but would not be significant on a national scale. With the implementation of the mitigation measures outlined in the supporting report, using established guidelines (e.g. Marnell, 2022 and Schofield, 2008) the proposed development and actions outlined within the supporting report will not be detrimental to the maintenance of populations of bat species at favourable conservation status in their natural range (as required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations, either locally or nationally. Indeed, the condition of the building is deteriorating and the provision of a roost following established guidelines may potentially result in a positive effect on the population of lesser horseshoe bat locally.

6 Mitigation

Bats utilise the existing dwelling for roosting, therefore, safeguards are recommended 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 existing dwelling. No works should be undertaken on the existing dwelling before the licence is granted by the NPWS.

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

"Oppose interference with existing roosts or seek improved roost provision. Timing constraints. No destruction of former roost until replacement completed and significant usage demonstrated. Monitoring for as long as possible."

Measure 1: timing of renovation works

It is proposed to renovate the existing dwelling, including, *inter alia*, the provision of windows and a door, repair of roof tiles and repair to the ceiling internally (see drawings enclosed in Appendix B). In accordance with the *Bat Mitigation Guidelines for Ireland*, the optimum time for undertaking works to a building supporting a maternity site is between 1st October and 1st May.

Renovation works to the existing dwelling shall be undertaken between 1st October and 1st May. Renovation of the existing dwelling shall only proceed under licence.

Measure 2: renovation works

Prior to commencement of works, the dwelling 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. In the event that no evidence of bat usage is found during the survey, works can commence. Should bats be found within the building, works will be delayed until the bats have flown from the building.

Prior to commencement of works, the bat specialist will brief Mr Luksan/ the contractors on the possible presence of bats within the dwelling, the subsequent need to take appropriate care and attention whilst carrying out the works and the steps to take should bats be discovered within the dwelling at any time (i.e. stop works and inform the bat specialist). As noted in *Bat Mitigation Guidelines for Ireland*, active bats will usually keep out of the way of any operations, but torpid bats may need to be gently moved to a safe place, preferably without causing them to fly out in daylight. Any moving or handling of bats requires a licence.

Measure 3: retention/enhancement of bat roosts in the dwelling

As noted previously, the dwelling is falling into disrepair, consequently its suitability to support a roost of high conservation importance is diminishing. As such, it is proposed to incorporate features into the renovated dwelling that will improve roost provision. The Marnell *et al* (2022) and Schofield (2008) publications have been consulted to design features within the dwelling for roosting lesser horseshoe bat. Design principles followed include:

- The existing dwelling shall be renovated to provide 3 bedrooms. The roof space over the bedrooms shall be retained as a dedicated roosting space for lesser horseshoe bats. The roof space will be uncluttered by timbers and the ceiling over these two rooms will remain at its present height. The existing roost, therefore, shall be retained and will measure 12.255m x 4.352m with a height of 1.991m ceiling to apex.
- An entry/ exit point for lesser horseshoe bat will be provided on the southern gable wall. The existing vegetation adjacent to the southern gable wall will be retained to provide some cover and a flight line from the roost. Native species of tree shall be planted to the east of the dwelling to ensure an unbroken flight line to foraging habitat in the wider landscape.
- The design takes into consideration the requirements of the species concerned:
    - The design of the roost is informed by Schofield (2008).
    - The pitched roof will be retained to provide sufficient flying space and roosting space.
    - Suitable thermal regimes shall be provided by the inclusion of a hot box and a variety of roosting opportunities will be provided.

The roost plans are as follows:

- The entry/exit on the southern gable end will be 50cm wide and will have a minimum height of 20cm. There are no windows or doors proposed on the southern gable end of the renovated dwelling.
- A partition box shall be provided around the roost entrance point to reduce light entering the roof space. The box shall be 75cm square and shall be open at the bottom to allow bats to enter the box and fly down.
- The slate roof shall be lined with bitumastic roofing underfelt.
- A hot box shall be provided within the roof space by fixing 2 no. 6mm triangular plywood panels to rafters to make an enclosed area while keeping areas of open roof. At least 900mm of space between the joists and the bottom of the pocket shall be retained to allow adequate flight room.
- A hatch to the roof space will be provided to allow a bat specialist to access the roost and for droppings to be cleared away, as required.
- Additional perches shall be provided by nailing untreated battens near the apex of the roof.
- The roost shall be located above bedrooms, which will reduce noise disturbance from human presence during the day. Noise disturbance will be reduced further by the use of insulation in the ceiling, which will be fully installed to the edges of the ceiling and any air gaps at the edges shall be sealed.
- The existing flight line from the dwelling comprises a hedgerow to the east. The gap in the hedgerow to provide access to the dwelling from the new access track will be 5m wide.
- There shall be no external lighting close to the roost entrance.
- Light spill from the windows of the dwelling onto vegetation used as a flight path to the east of the house shall be avoided by the design of the building, which includes semi-concealed windows with timber cladding (see Figure 5-1 and the Design Drawings for an example of a louvred/timber clad window).

Figure 5-1: Example of louvred window to reduce light spill

6.1 Monitoring

A bat specialist shall be consulted to ensure that works are completed correctly as per the design enclosed in Appendix B and the mitigation provided in Section 6 of this report during the construction phase.

A compliance report on works undertaken during the construction phase will be submitted to National Parks and Wildlife Services on completion of construction, to include details of supervisory measures used and the results obtained, including corrective measures used (if required).

Permission for monitoring of the roost by National Parks and Wildlife Service will continue to be granted to assess uptake of the roost by bat species, including lesser horseshoe bat.

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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. Brand't 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.

<u>Rhinolophidae:</u>

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.

Appendix B Proposed Dwelling Drawings