# Bat Report

## Final

**August 2025**

**Prepared for:**
**Emma Fitzpatrick**

**www.jbaconsulting.ie**

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| Reviewed by | Anne Mullen BSc MSc<br>Senior Ecologist |
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# Contract

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|---|---|
| JBA Project Manager | Anne Mullen |
| Address | Unit 24, Grove Island, Corbally, Limerick |
| JBA Project Code | 2025s0382 |

This report describes work commissioned by Emma Fitzpatrick, by an instruction dated 06/02/2025. The Client's representative for the contract was Emma Fitzpatrick. Mia Heigh of JBA Consulting carried out this work.

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The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between February and August 2025 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

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## Abbreviations

| | |
|---|---|
| BCT | Bat Conservation Trust |
| EC | European Communities |
| EU | European Union |
| LHB | Lesser Horseshoe Bat |
| NBDC | National Biodiversity Data Centre |
| NPWS | National Parks and Wildlife Service |
| NRA | National Road Authority |
| PRF | Potential Roosting Features |
| SAC | Special Areas of Conservation |

# Executive Summary

JBA Consulting was commissioned to undertake bat surveys at a property in Castlecrine, Co. Clare, in response to a request for further information from Clare County Council regarding a proposed renovation and development project. The site comprises of an existing cottage and associated outbuildings, located within a landscape of improved agricultural grassland and mature hedgerows and treelines.

A combination of desktop study, daytime roost inspection, emergence surveys, and static monitoring was conducted between April and July 2025. The surveys confirmed the presence of Lesser Horseshoe Bats (*Rhinolophus hipposideros*) within the attic space of the cottage. This species is listed under Annex II and IV of the EU Habitats Directive and is protected under Irish and international legislation. The cottage is now considered a satellite roost for Lesser Horseshoe Bats, based on emergence counts of 12–15 individuals and variable echolocation activity. While some nights recorded hundreds of calls, others showed minimal activity. No social calls were recorded, and all call data were reviewed by an experienced bat specialist.

The site is located within 2.5km of two other known Lesser Horseshoe Bat roosts – a satellite and a maternity roost – highlighting the ecological importance of the area for this species. The proposed renovation of the cottage poses potential risks to the bat roost, including disturbance, loss of roosting features, obstruction of access routes, and impacts from artificial lighting.

To mitigate these risks, the report recommends:

- Obtaining a derogation licence from the National Parks and Wildlife Service (NPWS) prior to any works.
- A suitable alternative roost will be provided, designed in accordance with the species' requirements, as outlined in the Bat Mitigation Guidelines for Ireland.
- The renovated outhouse/toolshed will incorporate suitable attic space to support roosting opportunities for Lesser Horseshoe Bats
- Implementation of bat-friendly lighting and retention of mature trees and hedgerows.
- Monitoring facilities will be incorporated into the new roost structure, such as an attic hatch, to allow future inspections if required.

These measures aim to ensure compliance with legal obligations and the continued conservation of the Lesser Horseshoe Bat population in the area.

# 1 Introduction

## 1.1 Background

JBA Consulting was appointed by Emma Fitzpatrick to conduct a daytime bat roost inspection survey and two emergence bat surveys of two structures, a house and an outbuilding, at the client's property located at Castlecrine, 2.5km from Sixmilebridge, Co Clare. The work was commissioned in response to a request for further information from Clare County Council dated 18th December 2024 in relation to the proposed planning permission application for the renovation of the existing cottage, demolition of the existing sheds and additional works.

This report summarises the findings of the survey at the site, as well as a desktop study of the proposed site identifying recent and historical records of bats roosting in the vicinity, as well as habitats that may be suitable as commuting and foraging features.

## 1.2 Proposed Project

The proposed project is the extension and renovation of an existing cottage, demolition of existing sheds, installation of new sewerage treatment system, new site entrance and all associated site works (Figure 1-1).

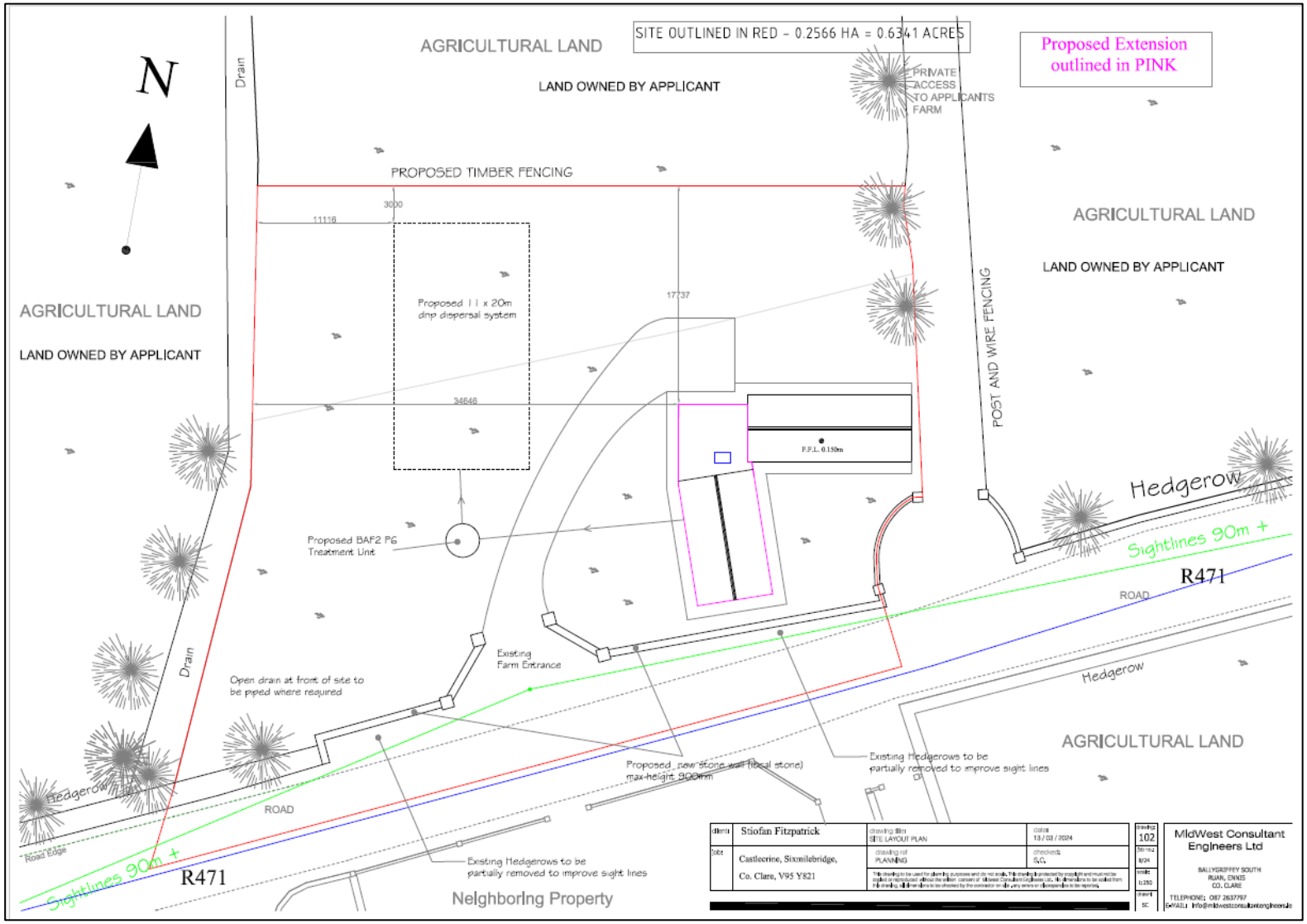


Figure 1-1: Proposed project drawing.

## 1.3 Site Location

The site is located along the R471, in the townland of Castlecrine, approximately 2.5km north-east of Sixmilebridge town. The proposed site consists of improved agricultural grassland, three structurally deteriorated buildings, mature trees and hedgerows (Figure 1-2).

Historical maps of Ireland were reviewed (6 inch and 25 inch), and revealed the structures on the site date back to at least the 1830's.


Figure 1-2: Site location.

## 1.4 Legislative Context

Bat surveys were required at this site as all bat species are protected under the Wildlife Act (1978-2018) (as amended) in Ireland and bats are likely to be present on-site. Under international legislation, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) (European Communities, 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) (European Communities, 1983) was instigated to protect migrant species across all European Boundaries. The Irish government has ratified both these conventions. Also, the EC Directive on the Conservation of Natural

Habitats and of Wild Fauna and Flora (Habitats Directive) (European Commission, 1992), seeks to protect rare species, including bats and their habitats and requires that appropriate monitoring of populations be undertaken. All bat species are protected under Annex IV of the EU Habitats Directive, and the Lesser Horseshoe Bat *Rhinolophus hipposideros* is listed under Annex II. Member states are required to designate Special Areas of Conservation (SAC) for all species listed under Annex II in order to protect them.

Where bat roosts exist, application may be made to the National Parks and Wildlife Service (NPWS) for a derogation licence under Regulation 54 of the 2011 Regulations to permit actions affecting bats or their roosts that would normally be prohibited by law. The applicant must demonstrate that there is no satisfactory alternative and that the action will not adversely affect the favourable conservation status of the bat species. Each case is considered on its particular circumstances, and an application may be refused.

Mitigation to reduce or compensate for any impact of development is generally a condition of the licence and should be proportionate to the predicted impact. Mitigation measures may require particular timing of operations, protection of existing roosts or the creation of new roosting facilities to replace ones being lost. Monitoring of the effect of the mitigation is usually required (Marnell, Kelleher, and Mullen 2022).

Table 1-1: Current status and legal protection of bat species known to occur in Ireland.

| Species | Wildlife Act (1976) and amendments | Irish Red List Status | Habitats Directive | Bern & Bonn Conventions |
|---|---|---|---|---|
| Common Pipistrelle *Pipistrellus pipistrellus* | Yes | Least Concern | Annex IV | Appendix II |
| Soprano Pipistrelle *Pipistrellus pygmaeus* | Yes | Least Concern | Annex IV | Appendix II |
| Nathusius' Pipistrelle *Pipistrellus nathusius* | Yes | Least Concern | Annex IV | Appendix II |
| Leisler's Bat / Lesser Noctule *Nyctalus leisleri* | Yes | Least Concern | Annex IV | Appendix II |
| Brown Long-eared Bat *Plecotus auritus* | Yes | Least Concern | Annex IV | Appendix II |
| Lesser Horseshoe Bat *Rhinolophus hipposideros* | Yes | Least Concern | Annex II<br>Annex IV | Appendix II |
| Daubenton's Bat *Myotis daubentonii* | Yes | Least Concern | Annex IV | Appendix II |

| Species | Wildlife Act (1976) and amendments | Irish Red List Status | Habitats Directive | Bern & Bonn Conventions |
|---|---|---|---|---|
| Natterer's Bat *Myotis nattereri* | Yes | Least Concern | Annex IV | Appendix II |
| Whiskered Bat *Myotis mystacinus* | Yes | Least Concern | Annex IV | Appendix II |

***NB:*** *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 begin.*

# 2 Methodology

## 2.1 Guidance Documents

This report provides details of the survey methodology used, the relevant guidelines followed and any relevant data. Conclusions were determined based on the above and on empirical evidence gained from the daytime bat roost search and the nighttime emergence survey.

The following documents were referenced in support of the study:

- Bat Mitigation Guidelines for Ireland – V2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland (Marnell et al., 2022).
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition) (Collins & Bat Conservation Trust., 2023).
- A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland (McAney, 2006).
- The status of EU protected habitats and species in Ireland: Conservation status in Ireland of habitats and species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government (NPWS, 2019).
- Bats and Appropriate Assessment Guidelines. Bat Conservation Ireland (Bat Conservation Ireland, 2012); and
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. National Road Authority. (NRA, 2018).

## 2.2 Methodology

### 2.2.1 Desktop Study

Data on previous records of bats within the 2km and 10km grid of this area have been collected from a range of sources, including:

- National Parks and Wildlife Service website (NPWS, 2025).
- National Biodiversity Data Centre Biodiversity Maps (NBDC, 2025).

### 2.2.2 Daytime Bat Roost Inspection Survey

A survey of the buildings was conducted on 3rd of April 2025 by JBA Ecologists Mia Heigh and Olly Lynch-Milner. The structures on site were inspected visually for signs and evidence of bat usage. Methodology to conduct this survey follows the guidance

document “Bat Surveys for Professional Ecologists: Good Practice Guidelines” (4th edition) (Collins, 2022).

### Bat Roost Assessment

Structures and trees likely to be impacted by the proposed works were inspected to determine the potential for bat roosts to be present, using the methods specified in Collins (2022). Buildings, structures and trees on the site were categorised as having either ‘negligible’, ‘low’, ‘moderate’ or ‘high’ roosting potential and this was determined by applying the definitions given within the Bat Conservation Trust (BCT) guidelines (see Table 2-1). Evidence of bat activity associated with potential roost sites includes bat droppings, urine staining, feeding remains, scratch marks and dead/alive bats.

Furthermore, the suitability of habitats across the site to support commuting and foraging bats was assessed in terms of habitat type, abundance, connectivity and distribution. These were categorised as having either ‘negligible’, ‘low’, ‘moderate’ or ‘high’ suitability for bats which was determined by applying the categories given within BCT Guidelines.

Table 2-1: Guidelines for assessing the potential suitability of proposed development sites for bats based on the presence of habitat features within the landscape (Collins, 2022).

| Suitability | 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 a larger number of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain potential roost features (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 hedgerows or unvegetated stream, but isolated, i.e., not very well connected to the surrounding landscape by other habitats. 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 | Continuous habitat connected to |

| Suitability | Roosting Habitats | Commuting and Foraging Habitats |
|---|---|---|
| | 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). | 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 habitats. | 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 by regularly foraging bats such as broad-leaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts. |

Once the roost suitability survey has been conducted, this information is utilised to inform the number of emergence surveys that would be required to determine presence/absence and help characterise the nature of the roost (Table 2-2).

Table 2-2: Recommendations for further surveys based on preliminary bat roost suitability (Collins 2023).

| Low Roost Suitability | Moderate Roost Suitability | High Roost Suitability |
|---|---|---|
| One survey visit. One dusk emergence or dawn re-entry (structures).<br>No further surveys required (trees) | Two separate visits. One dusk emergence and a separate dawn re-entry survey. | Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could wither be dusk or dawn. |
| *This gives the recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures* | | |

| Low Roost Suitability | Moderate Roost Suitability | High Roost Suitability |
|---|---|---|
| *(also recommended for trees, but unlikely to give confidence in a negative result).* | | |

### 2.2.3 Nighttime Emergence Survey

A dusk emergence surveys were carried out on the evening of 30th April and 8th July by JBA Ecologists Dominic Tilley and Mia Heigh. Guidelines were followed according to 'Bat Surveys for Professional Ecologists – Good Practice Guidelines 4th Edition'.

The weather was clear, warm and mild on both nights. At sunset but before dusk, as per recommended guidance, the survey began.

Table 2-3: List of equipment used during surveys.

| Equipment used |
|---|
| Magenta Bat Detectors Mk5 |
| X2 Titley Scientific Anabat Chorus Static Detector |
| Pulsar thermal imaging device Axion 2 XQ35 pro |
| X2 torches |

## 2.3 Limitations and Constraints

The conclusion of this report necessarily on some assumptions, and it is inevitably subject to some limitations. These would not affect the conclusion, but the following points are recorded and taken into consideration during the assessment to ensure the basis of the assessment is clear:

- In order to achieve the objectives of the report and surveys within the time period of the commissioning of work and the planning submission, assumptions are made as to the usage of the site by bats outside of the survey period.
- The precautionary principle is used at all times, i.e., the absence of physical evidence cannot fully rule out the presence of bats within the habitat, e.g., commuting or foraging within suitable bat habitats will leave no physical evidence for surveyors to record during preliminary surveys. Some bat roost locations can also be hidden from view with little signs of bat presence. Such locations include under walls or ceiling cladding, under slates or within wall cavities for examples.

# 3 Desktop Study

## 3.1 Database Search for Bat Records

A search for bats recorded in the area of the project through the NBDC website revealed that there are some bat species in the area. Table 3-1 shows a 2km buffer was used for this search of the area around the site.

Table 3-1: NBDC records of bats within 2km of the site.

| Species | Record Count | Date of Last Record | Title of Dataset |
|---|---|---|---|
| Common Pipistrelle *Pipistrellus pipistrellus* | 1 | 22/08/2018 | National Bat Database of Ireland |
| Lesser Horseshoe Bat *Rhinolophus hipposideros* | 4 | 21/07/1999 | National Lesser Horseshoe Bat Database |
| Lesser Noctule *Nyctalus leisleri* | 1 | 22/08/2018 | National Bat Database of Ireland |
| Soprano Pipistrelle *Pipistrellus pygmaeus* | 1 | 22/08/2018 | National Bat Database of Ireland |

## 3.2 Ratty River Cave SAC

The Ratty River Cave SAC is situated approximately 2.4km from Sixmilebridge in Co Clare. The site is selected for the following habitats and species listed on the Annex I/II of the EU Habitats Directive:

- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]
- Caves not open to the public [8310]

The main interest of the SAC is the presence of a maternity and hibernation site of the Lesser Horseshoe Bat. The bats hibernate in the cave opposite the River Ratty, with the maternity site being a nearby derelict cottage. This site is an important winter and breeding site for the Lesser Horseshoe Bat.

The proposed project is situated 2.7km from the known roost in Ratty River Cave and is outside the 2.5km foraging range for these bats.

## 3.3 Previous records

The site was surveyed site was in the late 1990s, no bats were counted but droppings were found and recorded, indicating a ‘night roost’.

Within 2.5km of the proposed site, two known roosts of Lesser Horseshoe Bats have been previously recorded. Both of these roosts are located to the north of the site. One is identified as a satellite roost, which typically serves as a temporary shelter used by individual bats or small groups, often in close association with a primary

roost. The second is a maternity roost, which supports breeding females and their young during the critical summer months. This is a non-SAC roost and is a small roost. The presence of these roosts in such proximity to the proposed site highlights the area's importance for the local Lesser Horseshoe Bat population.

# 4 Results of Survey

## 4.1 Results of Preliminary Roost Search

A survey of the buildings was conducted on 3rd April 2025 by JBA Ecologists Mia Heigh and Olly Lynch-Milner. The structures on site were inspected visually for signs or evidence of bat usage. The methodology to conduct this survey follows guidance document “Bat Surveys for Professional Ecologists: Good Practice Guidelines” (4th Edition) (Collins, 2022).

Two structures within the proposed project boundary were inspected for evidence of bats. Internal and external inspections of all structures were conducted, and evidence collected has been compiled below.

Figure 4-1: Photograph of the structures.

No evidence of bat activity or a bat roost was found within either of the buildings.

### 4.1.1 Cottage Inspection

From the exterior, the cottage appeared unsuitable for roosting bats due to the galvanised steel roof, which typically offers poor thermal properties and limited

roosting opportunities. However, following an internal inspection, JBA ecologists observed that beneath the steel sheeting was the collapsing structure of an original thatched roof. Although parts of the walls were collapsed, it was evident that the internal roof space was enclosed, dark, and likely to be thermally stable – conditions that are consistent with roosting preferences of bats. The bats are flying into the attics where the beams have collapsed and broken through the ceiling and created holes (see Figure 4-12).

Although no physical signs of bat activity – such as droppings or staining – were observed during the inspection, the presence of a retained thatched roof and numerous access points to the attic space indicated that the cottage provides suitable roosting features for bats.

Figure 4-2: Cottage – exterior front view.

Figure 4-3: Thatched roof visible through collapsing ceiling and wall.

Figure 4-4: Cottage - exterior rear view.

### 4.1.2 Sheds

Both sheds were deemed less suitable for bat roosting. Although there were dark crevices in places, damage to the steel roof at the rear of the building means that there is a lot of light entering the spaces. Additionally, the space does not provide much protection from adverse weather conditions and is not as thermally stable as the cottage.

No physical evidence of bat activity or a bat roost was found during the inspection of the sheds.

Figure 4-5: Exterior rear of the sheds.

Figure 4-6: Interior shed structure of roofing.

## 4.2 Foraging and Commuting Potential

Based on the external habitat of the site, improved agricultural grassland with mature treelines and hedgerows bordering the area, it is likely that bats are foraging and commuting via the site. While commuting and foraging on the site is likely for common bat species, Lesser Horseshoe Bats prefer to forage in woodland or scrub within 2.5km of their roosts. Therefore, it is unlikely that Lesser Horseshoe Bats are utilising the site for anything more than commuting to woodland foraging areas. 400m north and east of the proposed site, there is approximately 100 hectares of woodland that is far more likely to be utilised by this Annex II species.

Figure 4-7: Photograph taken of site exterior habitats.

Figure 4-8: Ruined structure within the site boundary.

## 4.3 Results of Emergence Surveys

### 4.3.1 Emergence Survey April 30th

The emergence survey started at approximately 21:00 at sunset and continued until 22:30. The first bat was recorded at 21:18, commuting along the northern boundary of the site headed west.

The survey confirmed that the cottage and the sheds are being used as a roost for Lesser Horseshoe Bats. A summary of the survey is provided in Table 4-1.

Table 4-1: Summary of emergence survey, 30th April 2025.

| Time | Species | Location | Comments |
|---|---|---|---|
| 21:18 | Unknown | North boundary | Unknown species bat flew over the mature treeline on the northern site boundary, headed east. Commuting behaviour. Too fast to ID. |
| 21:23 | Pipistrelles (Soprano and Common) | Outside eastern boundary | Approx. 2-3 pipistrelles feeding in the agricultural field opposite the site (to the east). |
| 21:26 | Soprano Pipistrelles | West boundary | 4 Sopranos flying overhead from west to east, along the mature hedgerows. |
| 21:29 | Soprano Pipistrelles | West boundary | 2 Sopranos overhead, flying west to east. |
| 21:35 – 21:47 | Lesser Horseshoe Bats | Cottage and Sheds | Minimum of 3 LHB, likely more. Bats flew in and out of the doors of the cottage and sheds for approx. 12 minutes as the bats tested the light. Thermal imaging video and photo evidence was recorded (Figure 4-9, Figure 4-10, Figure 4-11). LHB flew east, over mature treelines. |

The emergence survey conducted confirmed the presence of an active bat roost within the cottage while utilising the adjacent sheds, with a minimum of three Lesser Horseshoe Bats observed emerging and re-entering the buildings during the survey, likely light testing, consistent with pre-emergence behaviour.

Additional activity from Soprano and Common Pipistrelles was recorded along the site's boundaries, particularly near mature hedgerows and treelines, indicating that the wider site also supports foraging and commuting activity.


Figure 4-9: Two Lesser Horseshoe Bats flying out of the Cottage structure.

Figure 4-10: Single LHB flying in and out of cottage door.

Figure 4-11: Single LHB emerging from shed door.

### 4.3.2 Emergence Survey 9th July

The emergence survey began at 22:00, at sunset and continues until 23:15. The primary objective of the second survey was to monitor and record bats emerging from the cottage. To facilitate accurate counting, a thermal monocular in video mode was positioned facing the open front door of the cottage. This setup allowed for real-time observation during the survey and enabled post survey verification of emergence numbers through video playback.

The first bat was recorded at 22:12. The individual was observed exiting through the front door of the cottage but promptly re-entered. This brief emergence and immediate return behaviour is commonly interpreted as the bat assessing external light and environmental conditions before committing to full emergence, a behaviour often referred to as 'light testing'. A summary of the survey is provided in Table 4-2.

Table 4-2: Emergence survey summary, 8th July.

| Time | Species | Location | Comments |
|---|---|---|---|
| 22:12 | Lesser Horseshoe | Cottage | Single individual light testing, emergence then re-entry very quickly, Lux 2.6 at time of record. |
| 22:19 | Common Pipistrelle | Overhead | Flew overhead in a west to east direction. |

| Time | Species | Location | Comments |
|---|---|---|---|
| 22:22 | Lesser Horseshoe | Cottage | Single individual emergence, Lux 1.4 at time of record. |
| 22:23 – 22:34 | Lesser Horseshoe | Cottage | Active emergence of ~12 individuals from cottage front door. |
| 22:37 | Lesser Horseshoe | Cottage | Single individual re-entry. |
| 22:50 | Lesser Horseshoe | Cottage | Single individual emergence |
| 23:15 | N/A | N/A | Survey finished |

The second emergence survey confirmed the presence of approximately 12-15 Lesser Horseshoe Bats roosting within the cottage. This estimate was based on direct observations of bats emerging from the structure, supported by thermal imaging footage. The consistent emergence activity suggests that the cottage is being used as a day roost, potentially serving as a satellite or transitional roost within the local network of Lesser Horseshoe Bat habitats.

### 4.4 Static Monitoring Survey

Following the first emergence survey which confirmed a small number of Lesser Horseshoe Bats on site, a bat static detector was deployed within the cottage from 26th May to 3rd June 2025. The detector was strategically positioned with the ultrasonic microphone on an extension lead placed in the attic space, an area identified as having suitable roosting conditions (Figure 4-12).

Figure 4-12: Photograph of the microphone in the attic void of the cottage.

The detector was programmed to record when triggered from sunrise to sunset each night, capturing echolocation calls during peak bat activity hours. Upon retrieval, the recordings were analysed using specialist bat call analysis software (Anabat Insight). Three bat species were identified in the recordings: Lesser Horseshoe Bat, Common Pipistrelle, and Soprano Pipistrelle. All three species are known to utilise built structures and surrounding vegetation for roosting, commuting, and foraging, particularly in rural environments. Soprano and Common pipistrelle were only recorded on a single night, and only 4 and 2 calls were recorded indicating very limited usage of  the structure.

Table 4-3: Bat echolocation calls recorded within cottage attic.

| Date | 26/05 | 27/05 | 28/05 | 29/05 | 30/05 | 31/05 | 01/06 | 02/06 | 03/06 |
|---|---|---|---|---|---|---|---|---|---|
| Common Pipistrelle | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Soprano Pipistrelle | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lesser Horseshoe Bat | 416 | 368 | 52 | 205 | 45 | 74 | 88 | 24 | 8 |
| **Totals** | **422** | **368** | **52** | **205** | **45** | **74** | **88** | **24** | **8** |

The acoustic monitoring data revealed consistent activity of Lesser Horseshoe Bats within the cottage attic over an eight-night period, with a total of 1,280 echolocation calls recorded. Activity peaked on 26 May and declined steadily by 3 June. The variation with the numbers of calls indicates heavy usage on some nights, but hardly any usage on other nights. No social calls were recorded. The pattern is typical of a satellite roost, which is used intermittently by bats as part of a broader network of roosts. Lesser Horseshoe Bats are known to frequently switch between roosts, especially during the summer months, as part of their natural behaviour to manage microclimatic conditions, social dynamics and parasite loads.

The detection of Lesser Horseshoe Bats within the cottage confirms the building's suitability as a roost site, while the presence of pipistrelle species further supports the ecological value of the site for bats. Although the monitoring period was limited to eight nights, the data provides a reliable snapshot of bat activity during the mid-summer period. In line with the precautionary principle and considering the structural features of the cottage, it is reasonable to assume that the site may continue to support bat activity throughout the bat activity season.

# 5 Discussion

The surveys undertaken at the Castlecrine site have confirmed the presence of a Lesser Horseshoe Bat roost within the cottage. This is a significant finding, as this species is listed under Annex II and IV of the EU Habitats Directive and is protected under Irish and international legislation. The static monitoring survey recorded high levels of activity within the cottage attic, confirming its use as a transitional or satellite roost. Additional activity from Common and Soprano Pipistrelles was also recorded, indicating that the wider site supports foraging and commuting activity.

The proposed development includes the renovation and extension of the existing cottage, which houses the confirmed bat roost. As such, the works present a direct risk to the roosting bats through potential disturbance, structural modification, and loss of roosting features. The renovation of the building as a domestic dwelling is incompatible with the retention of the roost, as Lesser Horseshoe Bats rarely occupy permanently inhabited homes. Therefore, provision of an alternative roost is recommended. This development is subject to the requirement of a derogation licence and NPWS should be informed of the confirmed roost.

**Potential Impacts of Development:**

- **Disturbance or Displacement of Roosting Bats:** Construction activities such as noise, vibration, and human presence can disturb bats during sensitive periods, particularly the maternity season (May-August). This may lead to abandonment of the roost or reduced breeding success.
- **Loss of Roosting Features:** The renovation works will result in the removal or alteration of key roosting features including the enclosed attic spaces, access points, and will change the internal microclimates within the cottage. Mitigation is suggested in the form of an alternative roost in Section 6.
- **Obstruction of Access Routes:** Lesser Horseshoe Bats typically enter and exit roosts via low-level unobstructed openings. Changes to the building façade, installation of doors and windows, or sealing of gaps could block access to the roost. The renovated cottage will not have provision for access within the new attic. Mitigation is suggested in the form of an alternative roost in Section 6.
- **Lighting Impacts:** This species avoids illuminated areas and will abandon roosts if light spill occurs near entrances or along commuting routes. External lighting associated with the renovated dwelling could deter bats from using the roost or disrupt their nightly emergence and return.
- **Barrier Effects and Habitat Fragmentation:** The loss of trees or scrub is limited to the immediate site and is unlikely to affect landscape-level connectivity. The site lies outside the core sustenance zone of any SACs. Connectivity will be

maintained through the provision of suitable roosting habitat as outlined in Section 6.

# 6 Recommendations

To ensure the protection of the Lesser Horseshoe Bat roost confirmed within the existing cottage, and to comply with the requirements of the Wildlife Act 1976 (as amended) and the EU Habitats Directive, a series of robust and carefully considered mitigation measures have been recommended, some of which are legal requirements.

### Derogation Licence

A derogation licence must be obtained from the National Parks and Wildlife Service prior to the commencement of any works that may affect the roost. This licence is a legal requirement and must include a detailed method statement outlining the scope of the proposed renovation, the mitigation measures to be adopted, as well as outlining any monitoring that might be required. The application must also demonstrate that there is no satisfactory alternative to the proposed works and that the conservation status of the species will not be adversely affected.

### Providing an Alternative Roost

As the proposed renovation will impact a known bat roost, a suitable alternative roost will be provided, designed in accordance with the species' requirements, as outlined in the Bat Mitigation Guidelines for Ireland. This will be incorporated into the refurbished shed structure on site. JBA Consulting has identified a derelict structure on site, located near the main construction area, which is proposed to be reroofed and refurbished and will provide new roost facilities for bats (as well as being and a functional shed). It should be designed in the style of a stone outbuilding, incorporating a slate or corrugated roof. Further design specifications are provided by in the derogation licence application.

### Construction Timing

While timing constraints are not mandatory, roof removal is ideally undertaken in September before temperatures drop. Works may proceed under the supervision of a licensed bat ecologist (EcCOW), who will oversee soft exclusion measures to ensure all bats have vacated the structure. Renovation activities should be scheduled outside of the bat maternity season, which typically runs from May-August, and ideally outside of the broader activity season from April to October. If works must proceed during these periods, they must be carried out under the direct supervision of a licensed bat ecologist, using soft demolition techniques and exclusion protocols where appropriate.

### Lighting

Bat / nocturnal-mammal-friendly lighting should be considered on site for any outdoor lighting. The following points are lighting recommendations from Bat Conservation

Trust and the Institution of Lighting Professionals (Bat Conservation Trust & Institution of Lighting Professionals, 2023):

- Warm white light (2700 Kelvin or below) should be implemented to reduce blue light component.
- LED lighting should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- Buildings, walls and hard landscaping may be designed so as to block light spill from reaching habitats and features.
- Sensor outdoor lighting should be used at night.
- Elements of on-site lighting can be controlled by dimming or switching to either diurnally, seasonally, or according to human activity. This is known as Part-Night Lighting.

### Trees and Hedgerows

All mature trees and hedgerows on the site should be retained, where possible, and protected throughout the construction period. These features provide essential commuting and foraging habitat for Lesser Horseshoe Bats. Where hedgerow removal is unavoidable, compensatory planting of native species should be undertaken to maintain ecological connectivity and habitat quality.

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Registered Office
24 Grove Island
Corbally
Limerick
Ireland

t: +353 (0) 61 345463
e:info@jbaconsulting.ie

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