

August
2023

Bat Survey Report



***The Saddlery,
Old Church Street
Abbeyfeale,
Co. Limerick.***



ASH Ecology & Environmental

Bat Survey Report – The Saddlery, Old Church Street, Abbeyfeale, Co. Limerick

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1. INTRODUCTION

1.1 Purpose of the Report

Ash Ecology and Environmental Ltd (AEE) was commissioned to carry out a bat survey on behalf of TA Group for their client Limerick City & County Council (LCCC).

The proposed project involves the Demolition of existing building on site 'The Saddlery', and construction of replacement three bedroom two-storey building; works involve clearance of vegetation and waste, and construction of new boundary/retaining wall, on site at Old Church Street, Abbeyfeale, Co. Limerick.

As the existing site contains a derelict house for demolition, a bat emergence survey, which also considers birds, was required. The site location and aerial image of the site is shown as Figures 1 and 2. The existing layout with proposed site plan is shown as Figure 3 - Site Size: 0.616Ha Ground Floor Area: 73.8m² / 794.4ft.²



Figure 1 Site Location Map

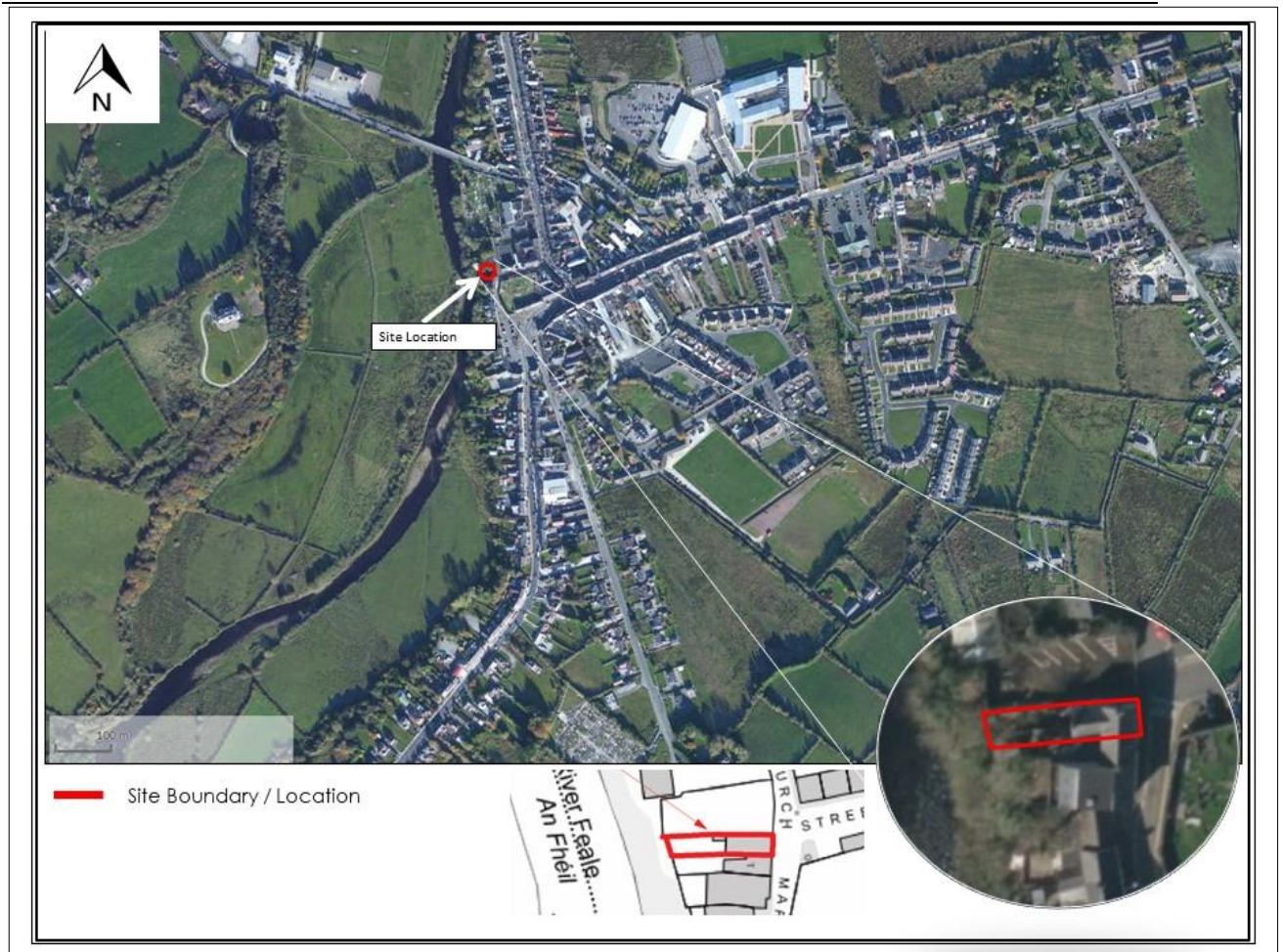


Figure 2 Aerial Photo of Site showing existing layout and surrounding town and agricultural fields along with the River Feale.

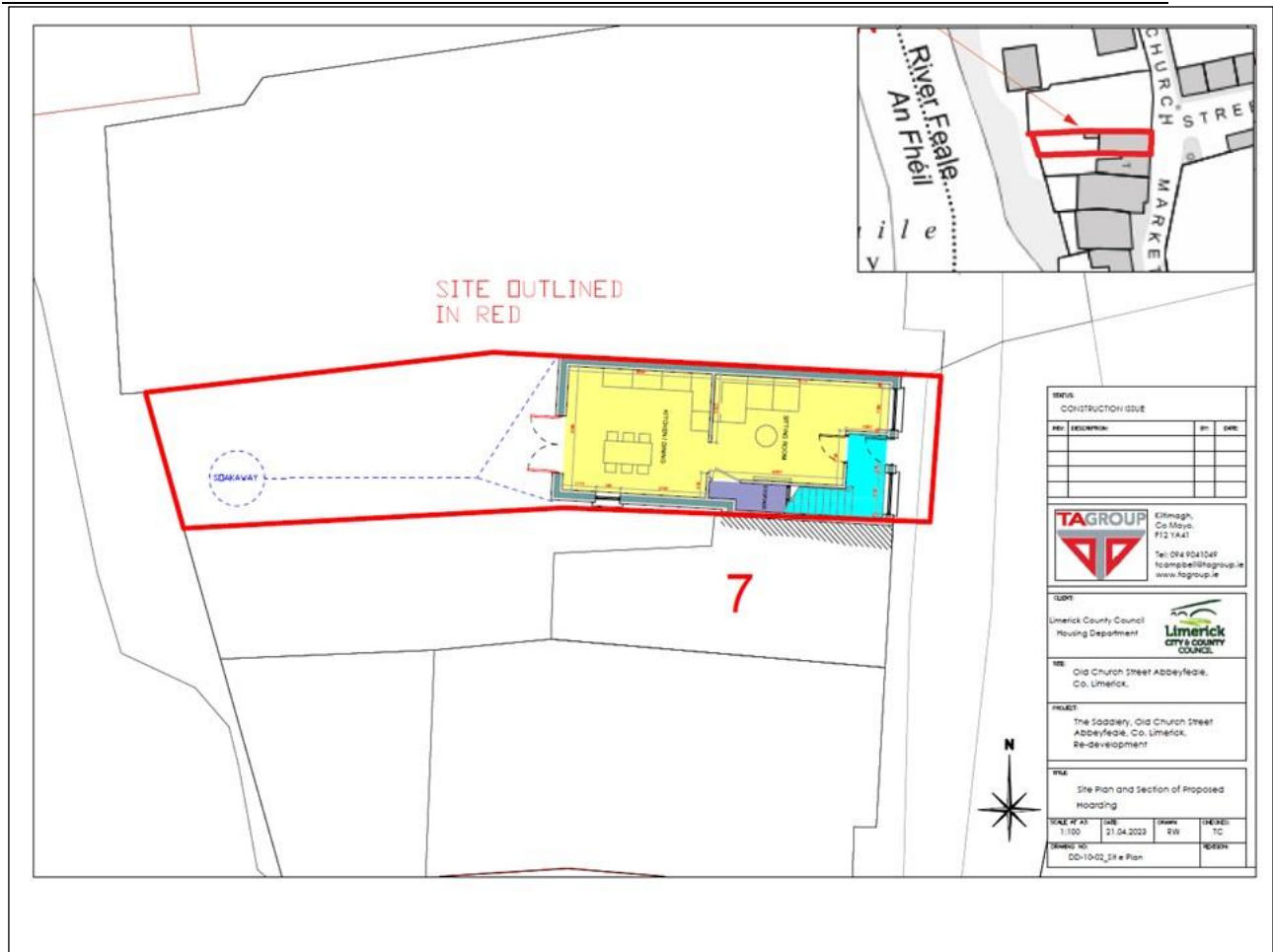


Figure 3 Proposed Site Layout

1.2 Competency of Assessor

This report has been prepared by Ash Ecology & Environmental Ltd (AEE) whose managing director and leading ecologist is Aisling Walsh who is a full member of the Chartered Institute of Ecological & Environmental Management (CIEEM) while the company, AEE, is a Registered Practice by the CIEEM.

Aisling's qualifications include M.Sc. (Dist) in Biodiversity and Conservation (TCD) and B.Sc. (Hons) Zoology (NUIG), a diploma in Applied Aquatic Science (GMIT) and a Certificate in Applied Biology (GMIT). Aisling has over 16 years of experience providing environmental consultancy and environmental assessment services. Aisling has written numerous Ecological Impact Assessments (EIA), Screening for Appropriate Assessment Stage I and Stage II Natura Impact Statements, chapters for Environmental Impact Assessments/Statements (EIAR), Badger Surveys, Bat Surveys, Bird and Habitat Surveys.

Aisling is a licenced bat ecologist (example of recent: DER/BAT 2020 – 46 EUROPEAN, DER/BAT 2020 – 48 EUROPEAN, DER/BAT 2021 – 89 EUROPEAN, DER/BAT 2022 – 12 EUROPEAN) and a member of Bat Conservation Ireland. In addition she has completed several bat courses to continue her training and CPD with the most recently (May 2021) a Lantra-accredited course, developed by the Bat Conservation Trust and supported by the Arboricultural Association to access bat tree roost features. Over the past 16 years Aisling has completed 100s of bat surveys providing her with more than adequate experience in the profession.

1.3 Bat Legislation

All bat species are protected under the Wildlife Act 1976 to 2021 which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of situations.

Section 23 of the Wildlife Act 1976 to 2021 contains several exemptions to the protection given to the species listed for protection on Schedule 5 (e.g. for agriculture or construction). In 2005 a further amendment through the European Communities (Natural Habitats) (Amendment) Regulations 2005 (S.I. No. 378 of 2005) removed all of the exemptions provided in Section 23(7) of the Wildlife Act 1976 to 2021 insofar as they relate to Annex IV species, including all species of bats. Those 2005 Regulations were revoked in 2011 except for Regulation 2 which brings about this strengthened protection for bats (and other Annex IV species). All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

- Intentionally kill, injure or take a bat;
- Wilfully interfere with the breeding or resting place of a bat

The Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora ("the Habitats Directive") seeks to protect rare and vulnerable species, including all species of bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All species of bat found in Ireland are listed on Annex IV of the Directive. Member States are required to put in place a system of strict protection (as outlined in Article 12) for species listed on Annex IV ('European protected species'). The lesser horseshoe bat is further protected under Annex II. This Annex relates to the designation of Special Areas of Conservation (SACs). The Habitats Directive is transposed into Irish law by the European Communities (Birds & Natural Habitats Regulations) 2011 (S.I. No. 477 of 2011) ("the Habitats Regulations"). Under the Habitats Regulations (2011), all bat species are listed on the First Schedule and Regulation 51 makes it an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat particularly during the period of breeding, hibernating or migrating;
- Damage or destroy a breeding site or resting place of a bat;
- Keep, sell, transport, exchange, offer for sale or offer for exchange any bat taken in the wild.

Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (CMS, Bonn Convention 1979) was instigated to protect migrant species across all European boundaries. EUROBATS (a daughter Agreement under CMS) is of particular relevance in relation to cooperation across international borders for the conservation of bats, many of which are known to migrate long distances. The Irish government has ratified both of these conventions as well as the EUROBATS Agreement.

1.4 Derogation licences

It is an offence, under Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 ('the 2011 Regulations') to:

- a) Deliberately capture or kill a bat in the wild;
- b) Deliberately disturb a bat particularly during the period of breeding, rearing, hibernation and migration;
- c) Damage or destroy a bat's breeding site or resting place, or;
- d) Keep, transport, sell, exchange, offer for sale or offer for exchange any bat taken in the wild, other than those taken legally before the Habitats Directive before the Habitats Directive was implemented.

A person may apply to the Minister under Regulation 54 of the 2011 Regulations for a derogation licence to carry out one or more of these prohibited activities. But, the Minister may only grant such a derogation licence if three criteria are met.

Firstly the Minister may only grant a derogation licence if it is for one of the following specified reasons listed in Regulation 54:

- a) In the interests of protecting wild fauna and flora and conserving natural habitats;
- b) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;
- c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and the beneficial consequences of primary importance for the environment;
- d) For the purpose of research and education, of repopulating and introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants, or;
- e) To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of bats.

Secondly, the Minister may only issue a derogation if there is no alternative to carrying out the prohibited activity. The first aim of the developer, whether from a private company or a public authority, working with professional advice, should be to entirely avoid any potential impact of a proposed development on bats and their breeding and resting places. Alternatives may involve redesigning a development so that bat roosts, and associated commuting routes and feeding areas are kept intact and that bats are not disturbed, for example by inappropriate lighting. It should be noted that the European Commission has a specific understanding of satisfactory alternative solution. "An alternative solution cannot be deemed unsatisfactory merely because it would cause greater inconvenience or compel a change in behaviour" (European Commission, 2021, page 13)¹. Decisions about what solution is satisfactory must be science-based and should solve the problem of how to strictly protect the bats in light of the development.

¹ <https://op.europa.eu/en/publication-detail/-/publication/bbc7ace0-27e2-11ec-bd8e-01aa75ed71a1/language-en>

Thirdly the Minister may only grant a derogation if it is not detrimental to the maintenance of the populations of bats at a favourable conservation status (FCS) in their natural range. There is case law from the Court of Justice of the European Union (CJEU) to back this up. One example is the Finnish Wolf Case C-674/17. The ruling establishes that the Member State must “clearly and precisely” identify in the derogation what the objectives of the derogation are. It must also establish that the derogation is capable of achieving those objectives and demonstrate that there is no satisfactory alternative. Cumulative effects of derogations must be taken into account when issuing derogations. The maximum number of all derogations must not be detrimental to the maintenance or restoration of the population at FCS. Consideration must be given to other human causes of mortality. Any risk to FCS must be ruled out by detailed conditions based on the level of population, its conservation status and its biological characteristics. The conditions must be precisely defined and they must be monitored to ensure they are implemented.

If any of these three criteria are not satisfied, the Minister cannot issue a derogation licence. It must never be assumed that a derogation licence will automatically be granted.

In summary, it is clear that a developer must first look to avoid all impacts on bats. This may mean looking at alternative solutions and redesigning the project accordingly. If this is not possible, the developer needs to check whether there are grounds to apply for a derogation licence, based on the reasons given in Regulation 54 of the Habitats Regulations. When applying for a derogation licence the developer must clearly state the reason and describe in detail all alternative solutions which were given serious consideration. Any mitigation intended to ensure that there is no impact or minimal impact on the bats must be clearly described in detail, giving examples of how it worked in other places.

If a derogation licence has been refused by the Minister, any aspect of the development for which the derogation licence was sought, must not go ahead, no matter what other permissions are in place.

A derogation licence is required when on the basis of survey information and specialist knowledge, it appears that:

- The site in question is a breeding site or resting place for bats and/or;
- The proposed activity could impact on a breeding site or resting place of a bat.

No licence is required if the proposed activity is unlikely to result in an offence. The advice given in this document (and see also Mullen et al. 2021)² should assist the proponent, or those acting on their behalf, in arriving at a decision on this matter, though it must be recognised that determining whether a particular site is used as a breeding or resting place can be problematic for such mobile animals as bats.

² Mullen, E., Marnell, F & Nelson, B. (2021) 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. Unpublished Report, National Parks and Wildlife Service. Department of Housing, Local Government and Heritage, Dublin. <https://npws.ie/sites/default/files/files/article-12-guidance-final.pdf>

Determining whether an activity undertaken near to a roost might impact on that roost (e.g. by removing important flight lines or foraging areas) will also require specialist assessment. Note that if the proposed activity can be timed, organised and carried out so as to avoid committing an offence then no licence is required.

Examples of works that are likely to need a licence because they may result in the destruction of a breeding or resting place and/or disturbance of bats include:

- Demolition of buildings known to be used by bats;
- Conversion of barns or other buildings known to be used by bats;
- Restoration of ruined or derelict buildings;
- Maintenance and preservation of heritage buildings;
- Introduction of artificial lighting inside a roost or near a roost entrance;
- Change of use of buildings resulting in increased ongoing disturbance;
- Removal of trees known to be used by bats;
- Significant alterations to roof voids known to be used by bats.

Examples of works that, if carefully planned, may not need a licence include:

- Works near to or at roosts (e.g. re-roofing) if carried out while bats are not present and the access points and roosting area are not affected;
- Remedial timber treatment, carried out with the correct (non-toxic to bats) chemicals while bats are not present.

2. METHODOLOGY

2.1 Information Sources

A desk-based review of information sources was completed. Information contained on the websites of the National Parks and Wildlife Service (NPWS)³ and the National Biodiversity Data Centre (NBDC)⁴ was reviewed. The following publications and websites were also reviewed and consulted:

- 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.
- Mullen, E., Marnell, F & Nelson, B. (2021) 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. Unpublished Report, National Parks and Wildlife Service. Department of Housing, Local Government and Heritage, Dublin. <https://npws.ie/sites/default/files/files/article-12-guidance-final.pdf>
- Bat Conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition
- CIEEM (2021) Bat Mitigation Guidelines - A guide to impact assessment, mitigation and compensation for developments affecting bats
- Bat Conservation Ireland <https://www.batconservationireland.org/>
- Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (2018)

³ The National Parks and Wildlife Services map viewer <http://webgis.npws.ie/npwsviewer/>

⁴ The National Biodiversity Data Centre www.nbdc.ie

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- Bat Conservation Trust (2018) Bats and artificial lighting in the UK Bats and the Built Environment series⁵
 - Mitchell-Jones, A.J, & McLeish, A.P. (eds). 2004., 3rd Edition Bat Workers' Manual, JNCC, Peterborough, ISBN 1 86107 558 8
 - Bat Conservation Ireland (2012) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland, www.batconservationireland.org⁶
 - Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2005).
 - Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority, 2005).
 - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011).
 - Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland);
 - The Eurobats Mitigation of Lighting Document;
BCT and IPL (August 2023) Guidance Note GN08/23 Bats and Artificial Lighting At Night⁷

⁵ <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

⁶ https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-AA-Guidelines_Version1.pdf

⁷ <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

2.2 Desk Study

2.2.1 Previous Records

A desktop review was carried out to identify the previous records of Bat species within the Proposed Development Site and its environs. The study area occurs in 10km² Grid Square R12. The website the NBDC (www.nbdc.ie) was accessed on 10/08/2023 to establish any previous bat records, however there are none listed. The grid square R02 was then consulted and that is shown in Table 1.

Table 1 Historical Bat Records in 10km² Grid Square R02 (NBDC website www.nbdc.ie accessed 10/08/2023)

Species Name - Common	Species Name - Latin	Last Documented Record R02
Daubenton's Bat	<i>Myotis daubentonii</i>	10/10/2009
Leisler's Bat	<i>Nyctalus leisleri</i>	10/10/2009
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	14/08/2014
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	14/08/2014

2.2.2 Species Background

Ireland had ten known bat species until February 2013, when a single live greater horseshoe bat (*Rhinolophus ferrumequinum*) was found roosting in Co. Wexford⁸. On 8th June 2020, a single audio recording was confirmed in the Glendaough area, Co. Wicklow. It was found on two more occasions in the same area in early July 2020 (Bat Conservation Ireland, July 2020).

The ten species (excluding the greater horseshoe) are briefly described overleaf. For a more comprehensive overview see McAney, 2006.⁹

The dependence of Irish bat species on insect prey has left them vulnerable to habitat destruction, land drainage, agricultural intensification and increase use of pesticides. Also, their reliance on buildings as roosting sites has made them particularly vulnerable to renovation works and the use of timber chemical treatment. Buildings are highly important as roosting sites for bats and all Irish bat species use buildings for all roost types. Most significant in terms of roosts in houses are maternity roosts, but cellars and even attics may serve as hibernation sites for bats. Roosts within buildings can far exceed the numbers encountered in trees, bridges, caves or cliffs and roosts of over 1,000 bats have been recorded in buildings.¹⁰

⁸ National Biodiversity Data Centre <http://www.biodiversityireland.ie/new-bat-species-found-in-ireland/>

⁹ McAney, K. (2006) *A Conservation Plan for Irish Vesper Bats*. Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

¹⁰ NRA (2005) *Guidelines for the Treatment of Bats Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin

2.2.2.1 Family Vespertilionidae:

Common pipistrelle *Pipistrellus pipistrellus*

This species was only recently separated from its sibling, the soprano or brown pipistrelle *P. pygmaeus*¹¹, which is detailed below. 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.

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.

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 Down¹² and also in Fermanagh, Longford and Cavan. It has also recently been recorded in Counties Cork and Kerry.¹³ However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The status of the species has not yet been determined.

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, caddisflies 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. This species is uncommon in Europe and as Ireland holds the largest national population the species is considered as Near Threatened here.

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.

¹¹ Barratt, E. M., Deauville, R., Burland, T. M., Bruford, M. W., Jones, G., Racey, P. A., & Wayne, R. K. (1997) *DNA Answers the Call of Pipistrelle Bat Species*. *Nature* 387: 138 - 139.

¹² Richardson, P. (2000) *Distribution Atlas of Bats in Britain and Ireland 1980 - 1999*. The Bat Conservation Trust, London, England.

¹³ Kelleher, C. (2005) *International Bat Fieldcraft Workshop, Killarney, Co. Kerry*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

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, caddisflies 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.

Daubenton's bat *Myotis daubentonii*

This bat species feeds close to the surface of 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.

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 whiskered bat is one of our least studied species and further work is required to establish its status in Ireland.

Brandt's bat *Myotis brandtii*

This species is known from five specimens found in Counties Wicklow (Mullen, 2007), Cavan, and Clare in 2003, a specimen in Kerry in 2005¹⁴ and another in Tipperary in 2006.¹⁵ No maternity roosts have yet been found. It is very similar to the whiskered bat and cannot be separated by the use of detectors. Its habits are similar to its sibling.

2.2.2.2 Family *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

¹⁴ Kelleher, C. 2006a *Nathusius pipistrelle* *Pipistrellus nathusii* and Brandt's Bat *Myotis brandtii* - New Bat Species to Co. Kerry – *Irish Naturalists' Journal* 28: 258.

¹⁵ Kelleher, C. 2006b Brandt's Bat *Myotis brandtii*, New Bat Species to Co. Tipperary. *Irish Naturalists' Journal* 28: 345.

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.

2.2.3 Landscape Suitability

The National Biodiversity Data Centre (NBDC) maps landscape suitability bats based on Lundy *et al.* (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats. On average for all bat species the highest range is between 36.44 - 58.56. The overall assessment of bat habitats for the current study area is given as '28.22', deemed 'Moderate' by the author.

Table 2 gives the suitability of the study area for the bat species found in the study area (based on NBDC) along with their Irish Red List Status (from Marnell *et al.*, 2019).¹⁶

Table 2 Suitability of the study area for the bat species found in the Abbeyfeale area (based on the NBDC data) with Irish Red list status indicated.

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	28.22	Least Concern
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	41	Least Concern
Brown long-eared bat	<i>Plecotus auritus</i>	44	Least Concern
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	40	Least Concern
Lesser-horseshoe bat	<i>Rhinolophus hipposideros</i>	11	Least Concern
Leisler's bat	<i>Nyctalus leisleri</i>	38	Least Concern
Whiskered bat	<i>Myotis mystacinus</i>	21	Least Concern
Daubenton's bat	<i>Myotis daubentonii</i>	29	Least Concern
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	2	Least Concern
Natterer's bat	<i>Myotis nattereri</i>	28	Least Concern

2.2.4 Bat Roosts

Bats were originally cave and tree dwelling animals but many now find buildings just as suitable for their needs. Bats are social animals and most species congregate in large colonies during summer. These colonies consist mostly of females of every reproductive class, with some juvenile males from the previous year. Male bats normally roost individually or in small groups meeting up with the females in the late autumn-early winter, when it is time to mate. In summer, bats seek warm dry buildings in which they can give birth and suckle their young. In winter, they seek out places with a constant low temperature and high humidity where they can become torpid and hibernate during adverse weather conditions. However, bats do not hibernate continuously during winter and will awake and hunt during mild nights when there are insects available, and it is energetically advantageous to forage.

¹⁶ Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

2.2.4.1 Maternity Roosts

Maternity roosts are the most significant roosts and they are predominantly all-female aggregations that are formed from late May onwards and remain as a relatively cohesive unit until mid to late August. Not all female bats give birth annually. These females that do bear young in a given year avail of a suitable building, tree and sometimes cave (or equivalent). The young are flightless for several weeks and hence are vulnerable to dangers such as tree felling and restoration, reinforcement or demolition of structures such as buildings and bridges.

2.2.4.2 Mating Roosts

Most bat species mate in autumn but pregnancy does not occur until the following spring. During this time males will take possession of a cavity in a building, tree, bridge, cave or mine and attract females to these sites to establish a harem. Male bats call both from a perch and in flight in much the same manner that male birds sing.

2.2.4.3 Hibernation Roosts

Bats have a high metabolic rate and in temperate countries, such as Ireland, flying insects are not available in sufficient numbers during winter to sustain bats. Therefore, bats hibernate during winter. In hibernation sites, bats are often completely inactive for several days and are extremely vulnerable to disturbance by human activities due to the time taken for them to become sufficiently active to allow escape. Hibernation may extend from November to the end of March, during which time bat activity will take place sporadically.

2.2.4.4 Night Roosts

These are roosts which are used as resting places for bats between foraging bouts. They also provide retreats for bats from predators or during inclement weather conditions. They also function as feeding perches and may be important for socialising.

2.3 Bat Survey Methodology

A general bat activity and emergence survey of the house onsite was undertaken on the 8th of August 2023 commencing at 20.45 to 23.15 (sunset 21.17 - Abbeyfeale). The weather was optimal for a bat survey with temperature on the night 18-19°C in calm conditions. Bat emergence surveys are best carried out May to end of September in suitable weather conditions¹⁷ which this survey was.

The equipment used for the bat activity surveys included a Elekon Bat Logger M detector. Visual observations were taken with the aid of a powerful L.E.D. torch (AP Pros-Series 220 Lumens High Performance Spotlight).

¹⁷ 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.

A Seek Thermal Reveal Pro High-Resolution Thermal Imaging Camera, along with a RIDGID 36848 Micro CA-150 Hand-Held Borescope was available for any inspection of any crevices/roof spaces on the affected building (where accessible). The borescope is fitted with a camera and allows visibility of confined spaces and narrow passages potentially used by hibernating/roosting bats. It allows spaces up to 3m from ground level to be inspected. All spaces that could potentially allow bats access the main building were visually examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary. Cracks, crevices etc. were investigated for ingress / egress points and evidence of bat habitation, such as prey items, smearing lines, droppings, and staining. The garden area to the rear of house was not accessible due to health and safety reason, nor was the attic area of the house.

The BCT guidelines were followed for the assessment rating¹⁸ and classified using Table 4.1 of the BCT guidelines (2016) which is shown as Table 3 overleaf.

The affected building onsite was also inspected for nesting birds. General Site photos are contained in Appendix A.

¹⁸ *Bat Surveys for Professional Ecologists, Good Practice Guidelines (2016)*

Table 3 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement.

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 ^a 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 ^b). 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. ^c	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated 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 ^a 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 ^a 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.

^a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

^b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

^c This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

2.4 Bat Potential Tree Assessment

Boundary trees and hedging to the rear will be retained to form a buffer between site and River Feale. Visible affected trees from walking the boundary, that may provide a roosting space for bats were classified using the Bat Tree Habitat Key (BTHK, 2018)¹⁹ and the classification system adapted from Collins (2016). The Potential Roost Features (PRFs) listed in BTHK (2018) were used to determine the PBR value of trees, see Table 4.

During the survey, the features listed below were sought on the potentially affected Sycamore tree:

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.

¹⁹ BTHK (2018) Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals. Exeter: Pelagic Publishing.

- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Cracks/splits in stems or braches (horizontal and vertical).
- Partially detached, loose or bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with included bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter.

Certain factors such as orientation of the feature, height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value.

Table 4 Classification and Survey Requirements for Bats in Trees²⁰

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	<p>A National Parks and Wildlife (NPWS) derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) and nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence.</p> <p>Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence.</p> <p>However, where confirmed roost site(s) are not affected by works, work under a</p>

²⁰ Bat Surveys for Professional Ecologists: Good Practice Guidelines (J., Collins (Bat Conservation Trust), 2016).

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
High Potential Category 1	<p>A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.</p>	<p>precautionary good practice method statement may be possible.</p> <p>Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August).</p> <p>Following additional assessments, tree may be upgraded or downgraded based on findings.</p> <p>If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from the NPWS will be required.</p> <p>After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.</p>
Moderate Potential Category 2	<p>A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.</p>	<p>A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August).</p> <p>Following additional assessments, tree may be upgraded or downgraded based on findings.</p> <p>After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.</p> <p>If a roost site/s is confirmed a licence from the NPWS will be required.</p>
Low Potential Category 3	<p>A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very</p>	<p>No further survey required but a precautionary working method statement may be appropriate.</p>

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
	limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	
Negligible/No potential – Category 4	Negligible/no habitat features likely to be used by roosting bats	None.

2.5 Landscape Evaluation

Ecological survey results were evaluated to determine the significance of identified features located in the study area on an importance scale ranging from international-national-county-local (from NRA, 2009) The local scale is approximately equivalent to one 10km square but can be operationally defined to reflect the character of the area of interest. Because most sites will fall within the local scale, this is sub-divided into two categories: local importance (higher value) and local importance (lower value).

3. RESULTS

3.1 Bat Survey

The results of the bat survey carried out May 24th 2023 are summarized in Table 5 with the complete dataset of bat species identified in real time in the field using the Elekon Batlogger M detector presented in Appendix B. A map outlining the locations of the bat calls is shown as Figure 4.

In total three species of bat were detected during the emergence survey but not from the affected building, rather flying over the site or feeding and commuting along the mature sycamore trees around the car parking area (outside the site). The activity onsite was deemed Low on the night despite optimal weather and very warm temperatures. The low activity was possibly due to high levels of street lighting to the front (which may deter certain bat species). The passes were generally the same bats commuting up and down the treelines and not individual bats.

Table 5 Bat Results Summary Data –8th August 2023 (20:45-23:15)

Species Common	Name	– Species Name – Latin	Number of Passes	Peak Frequency (kHz)
Common Pipistrelle		<i>Pipistrellus pipistrellus</i>	8	46.5
Leisler’s Bat		<i>Nyctalus leisleri</i>	3	25.0
Soprano Pipistrelle		<i>Pipistrellus pygmaeus</i>	18	56.5

The plan is to demolish the derelict house on the site. As per Table 4, this house was deemed ‘Low’ for bat roost potential, with some access points via a broken windows and large cracks in the structure. However, no bat emergence was recorded.

The exterior of the house was inspected as per the methodology set out in Section 2.3. The attic space was not accessed for health and safety reasons. All spaces that could potentially allow bats access the building (where accessible) were visually examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary. Cracks, crevices etc. were investigated for ingress / egress points and evidence of bat habitation, such as prey items, smearing lines, droppings, and staining. No bats were uncovered or observed emerging from the house, however general mitigation regarding demolition timing is recommended for the winter.

Plates of the site are contained in Appendix A.



Figure 4 Bat Results with Legend – August 8th 2023

3.2 Bat Potential Tree Assessment

The treelines to the carpark area are being used for foraging and commuting bats as it is darker. Much of the trees within the site itself are semi mature sycamore with no bat roost potential. The trees on the boundary near the River Feale will be retained to keep a 10m+ buffer from the river.

3.3 Landscape Evaluation

The landscape is considered of local importance (Higher value) for bats due to a Moderate landscape suitability score for bats. The Lower River Shannon SAC is located close to the rear of the site adding to its importance, see Figure 4. It is important to retain as many trees as possible on the site boundary to continue to serve as biodiversity corridors for bats and birds. Nevertheless the site itself is located within a well-lit residential area which may deter certain bat species.

4. RECOMMENDATIONS

4.1 Lighting for Bats

In order to minimise disturbance to bats utilising the site in general, the lighting and layout of the proposed development should be designed to minimise light-spill onto habitats used by the local bat population foraging or commuting. This can be achieved by ensuring that the design of lighting accords with the latest guidelines from the Bat Conservation Trust (BCT) and Institute of Lighting Professionals (IPL) - *Guidance Note 8 Bats and Artificial Lighting* (2023).

Therefore, where possible, the lighting scheme should include the following:

- The avoidance of direct lighting of proposed areas of habitat creation / landscape planting, or on existing trees to be retained
- Unnecessary light spill controlled through a combination of directional lighting and hooded / shielded luminaires or strategic planting to provide screening vegetation.
- Lights should be of low intensity. It is better to use several low intensity lights than one strong light spilling light across the entire area.
- Narrow spectrum lighting should be used with a low UV component. Glass also helps reduce the UV component emitted by lights.
- The colour rendering of the selected light fitting should be 3000k making the LED fittings a warmer light, helping to further minimize the impact on the local wildlife
- Where lighting is necessary, it shall be of limited height and targeted downwards to prevent overspill.
- The existing treelines/hedging should be kept as a 'Dark zone' for bats (if possible).

-
- The buffer area between the site and River Feale (Lower River Shannon SAC) should also be kept dark with no light spill to this area.

4.2 Bat Potential Trees

Treelines on the boundary will be kept for bats to continue to forage, commute and potentially roost with the aid of bat boxes (see Section 4.3).

Tree felling, where required, should be :

- Undertaken in the period 1st September to late October/early November. During this period bats are capable of flight and this may avoid risks associated with tree-felling.
- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.
- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. Normally trees are pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 24 hours, and preferably 48 hours to allow bats to escape.
- Trees should be removed as per Section 40 of the Wildlife Act 1976 - 2021 (as amended) taking cognisance of the Bird Nesting Season.
- Trees felled should NEVER be sawn up or mulched immediately in case bats or other wildlife is present.
- Trees used for future landscaping should comprise of native Irish species.

4.3 Bat Roosting Opportunities

A series of 3 x large bat should be placed on suitable mature trees,²¹ at a height of 4.5m, with a clear flightpath and in a dark area which is not illuminated by street lighting, See Appendix C for further information.

4.4 Bird Nesting Opportunities

A series of x2 Swift boxes²² should be integrated into the proposed development along with x3 generic garden bird boxes, see Appendix C for further information.²³

No disturbance/demolition works to the garden should occur until the bird nesting season is over due to the presence of trees and scrub. The bird nesting season occurs 1st March to August 31st of a given year.

5. CONCLUSION

The results of the bat survey showed no bats emerging from the affected house onsite. No bat derogation licence is required for this reason, however for best practice the demolition of the house, due to fact it has 'Low' bat roost potential should take place during the winter months.

A series of Bat boxes, Swift boxes and generic bird boxes are recommended for the final landscape plan.

Any trees on site should employ a soft felling technique during September/October.

A bat friendly lighting design should be implemented following best practice guidelines with the existing treeline to the rear boundary kept as a 'Dark zone' for bats. The buffer area between the site and River Feale should also be kept dark with no light spill to this area.

If bats are found at any stage during demolition works, then works will cease and the NPWS Ranger and AEE contacted. In that instance a Derogation Licence will be required.

On the basis of the findings of the survey works it is concluded that the overall impact arising from the proposed works for bats and birds will be negligible.

²¹ <https://www.birdfood.ie/beaumaris-bat-box-large>

²² <https://www.nhbs.com/woodstone-build-in-swift-nest-box-a>

²³ https://www.birdfood.ie/swallow-nest-box?utm_source=google_shopping&gclid=Cj0KCQjwz7uRBhDRARIsAFajulnpXicLWuQBWhat_r_LSMJp-gosP7k76e70A3mgqX-FY1sn8-QxZfg4aAvXgEALw_wcB

APPENDICES

APPENDIX A



Plate 1 Building for demolition, front of site. Bat Roost Potential 'Low'. No bat emergence.



Plate 2 Building for demolition, side of site. Bat Roost Potential 'Low'. No bat emergence.



Plate 3 Building for demolition, side of site. Bat Roost Potential 'Low'. No bat emergence.



Plate 4 Sycamore treeline in the carpark adjacent the site. Area of most bat activity.



Plate 5 Interior of house revealed no signs of bats.

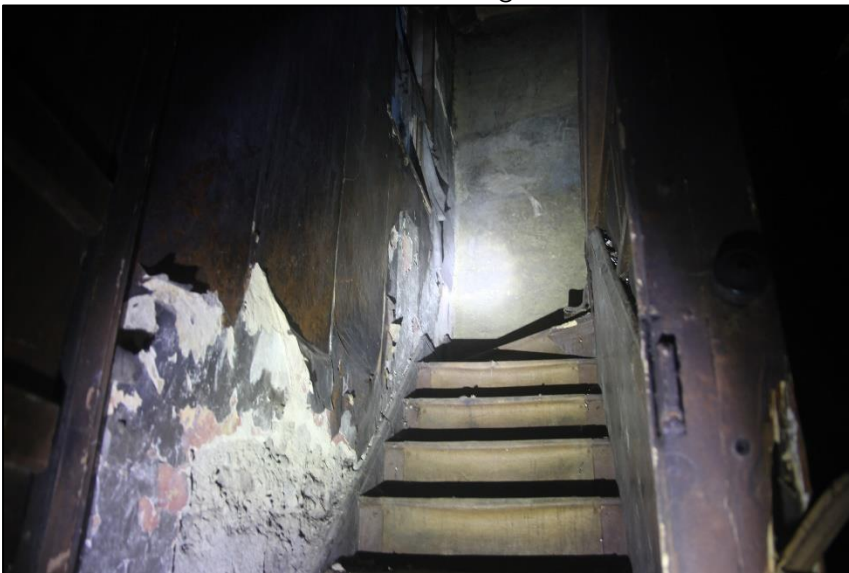


Plate 6 Interior of house revealed no signs of bats.



Plate 7 Interior of house revealed no signs of bats.



Plate 8 Semi Sycamore trees to the garden behind house. No direct access due to H&S issues however no mature trees present and the semi mature lacked bat roost potential features.



Plate 9 Front of affected house well illuminated with street lighting.

APPENDIX B

08/08/2023	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
21:28:24	Soprano Pipistrelle	3	57.5	61.4	57.1	3.5	64	19	52.38544	-9.30246
21:29:21	Soprano Pipistrelle	29	53.7	65.5	53	5	80	19	52.38543	-9.30245
21:30:00	Leisler's Bat	11	20.9	21.5	20.4	7	518	19	52.38545	-9.30244
21:32:20	Soprano Pipistrelle	7	56.5	64.7	54.9	3	80	19	52.38545	-9.3024
21:33:09	Leisler's Bat	4	22.2	22.9	21.3	17.4	310	19	52.38545	-9.30231
21:33:47	Soprano Pipistrelle	2	54.3	57	53.8	4.6	138	19	52.38545	-9.30232
21:34:06	Soprano Pipistrelle	9	56.1	59.9	55.4	4	80	19	52.38544	-9.30232
21:35:54	Soprano Pipistrelle	7	55.3	61.4	54.8	3	80	19	52.38543	-9.30233
21:37:30	Soprano Pipistrelle	15	54	63.8	53.5	5	80	19	52.38544	-9.30233
21:38:00	Soprano Pipistrelle	17	54.5	66.5	53.9	5	80	18	52.38542	-9.30246
21:38:06	Soprano Pipistrelle	1	55.5	64.7	54.9	3.3	0	18	52.38542	-9.30252
21:38:09	Soprano Pipistrelle	70	55.3	69.3	54.6	4	84	18	52.38543	-9.30253
21:38:21	Soprano Pipistrelle	54	55.5	70.8	54.2	3	80	18	52.38545	-9.30262
21:38:37	Soprano Pipistrelle	2	55.2	63.6	54.4	2.9	249	18	52.38543	-9.30266
21:38:53	Common Pipistrelle	2	46.8	55.2	46.2	3.3	151	18	52.38548	-9.30253
21:39:15	Soprano Pipistrelle	1	55.5	64.4	53.7	2	0	18	52.38546	-9.30237
21:39:18	Soprano Pipistrelle	12	51.8	61.3	51.1	3	90	18	52.38549	-9.30236
21:41:22	Soprano Pipistrelle	6	57.1	60.5	56.6	3	222	18	52.38545	-9.30233
21:41:42	Common Pipistrelle	11	45.9	57.4	45.2	3	100	18	52.38546	-9.30231
21:41:55	Common Pipistrelle	1	47	53.7	45.1	3.3	0	18	52.38541	-9.30232
21:45:19	Soprano Pipistrelle	3	55.4	58.7	54.8	3.3	171	18	52.38546	-9.3023
21:46:26	Common Pipistrelle	4	51.1	54.4	50.4	5	112	18	52.38544	-9.30237
21:49:12	Common Pipistrelle	3	44.7	49	44	4.2	162	18	52.38543	-9.30239
22:02:35	Soprano Pipistrelle	10	56.8	65.9	55.8	4	401	18	52.38513	-9.3023
22:11:10	Common Pipistrelle	2	45.9	47.9	45.6	4.6	718	18	52.38546	-9.30232
22:11:25	Leisler's Bat	29	23.9	28.4	22.6	9	280	18	52.38546	-9.30233
22:18:40	Soprano Pipistrelle	8	54.8	64.6	53.2	5.3	246	18	52.38546	-9.30264
22:27:36	Common Pipistrelle	9	51.7	55.8	51.1	3	140	18	52.38543	-9.30236
22:48:58	Common Pipistrelle	3	47.2	52.8	46.6	3.1	186	18	52.38546	-9.30234

APPENDIX C



**Generic 1B Schwegler
Box Nest Box**



Owl Nest Box



Starling Nest Box



Swift Nest Box



Sparrow Terrace



House Martin Nest box

Available on link below with fitting instructions on website

<https://www.nhbs.com/4/bird-boxes>



**2F Schwegler Bat Box
(General Purpose)**



**PRO UK Build-in
WoodStone Bat Box**



Maternity Bat Box



**4m Pole Mounted Large
Colony Bat Box**

Available on link below with fitting instructions on website

<https://www.nhbs.com/search?q=bat+boxes>