ROSS SWIFT ECOLOGY LTD.

BAT DEROGATION LICENCE APPLICATION

CARRICKWOOD,
MULLINGAR,
CO. WESTMEATH

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1.0 INTRODUCTION

Ross Swift Ecology Ltd. has been appointed on behalf of Patrick Mulholland to prepare a Bat Survey Assessment of the Carrickwood, Mullingar, Co. Westmeath as per **Figure 1.1** below. The area of interest that was surveyed for bats is outlined in **Figure 1.2** below. The proposed development is for the replacement of existing two storey dwelling house to provide two-storey dwelling over basement, decommissioning of existing septic tank with installation of new proprietary treatment system, associated polishing filter and all ancillary site works and landscaping and alteration to existing accesses. Eircode of existing house: N91 H5X4. Planning File 2360454. A pea gravel pathway will made to the existing boathouse. The boathouse will not be altered as part of this development. It is proposed that some younger trees will be removed within the site boundary as per the Arborist recommendations, with proposed steps to be constructed providing access to the garden from the dwelling. Mature trees located within the site boundary will be maintained as per Arborist recommendations. Any additional landscaping will use native or naturalised (non-invasive species) in its design and in compliance with County Development Plan recommendations. The development will include green roofs planting scheme and wet meadow planting scheme. As per the Natura Impact Statement mitigation measures for the protection of Lough Ennell SAC and Lough Ennell SPA are included for the proposed development. See **Appendix** for site layout and design.

All bat species are protected by the Wildlife Acts of 1976 and 2000 and are listed on Annex IV of the Habitats Directive and Annex II for Lesser Horseshoe Bat (*Rhinolophus hipposideros*) (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora). A bat survey is carried out by a suitably qualified ecologist and a copy of the survey report to be submitted as part of a Planning Application. If bat species are found to be roosting in any structure, building or tree, then a derogation license is required from the National Parks and Wildlife Service (NPWS) if the species will be impacted. All bat species in Ireland, and their roost sites, are protected under national and international legislation. Under Section 23 of the above listed Wildlife Act (1976) and amendments (2000/2023), it is offence to wilfully interfere with or destroy the breeding or resting place of any bat species while it is occupying a structure or place which it uses for that purpose. A visual roost inspection survey of the existing structures and trees for roosting bats. Roost inspection search - daylight search of the above structures internal and external. The criteria used to categorise the potential roost features or suitability of trees, structures and buildings as a potential roost will be based upon the guidelines by BTHK (2018), Collins, J. (ed.) (2023) and Marnell et al, (2022). This ecological assessment is based on a review of available historical published information, environmental and ecological records, site visits, relevant guidance information, and any additional reports from third parties. All information received has been taken as being true and representative of the site. This Bat Survey and Assessment has been prepared in line with best industry standards. The methodology adopted and the sources of information are outlined in this report.

1.1 STATEMENT OF AUTHORITY

This report and assessment were undertaken by Dr Ross Donnelly-Swift who has a BSc (Hons) in Biology from Maynooth University NUI (2005), an MSc in Environmental Science from Trinity College Dublin (2007), and a PhD in Biosystems Engineering from University College Dublin (2016). Ross was a Research Fellow in the School of Natural Sciences at Trinity College Dublin (2018) in addition to lecturing at 3rd level institutions in areas of environmental and ecological sciences. In 2025 he completed an Advanced Diploma in Planning and Environmental Law at the Honorable Society of King's Inns. Ross has extensive ecological knowledge gained from academic research and field work, and specialised surveys. He has conducted Bat Surveys as well as targeted species and protected species surveys for ecological reports (including for Ecological Impact Assessments, Biodiversity Chapters of EIAR, AA & NIS) to support planning applications, compliance with legalisation, baseline and seasonal ecological surveys that require detailed bat surveys. In addition, he has completed several bat courses to continue his training and CPD with Bat Conservation Trust (UK), CIEEM and other wildlife groups. Ross has also undertaken bat surveys for developments adjacent to waterbodies, wind turbines and demolition projects. Other projects range from small and large scale in areas such as industrial, commercial, agricultural, residential (small and LRD), amenity, and recreational developments.

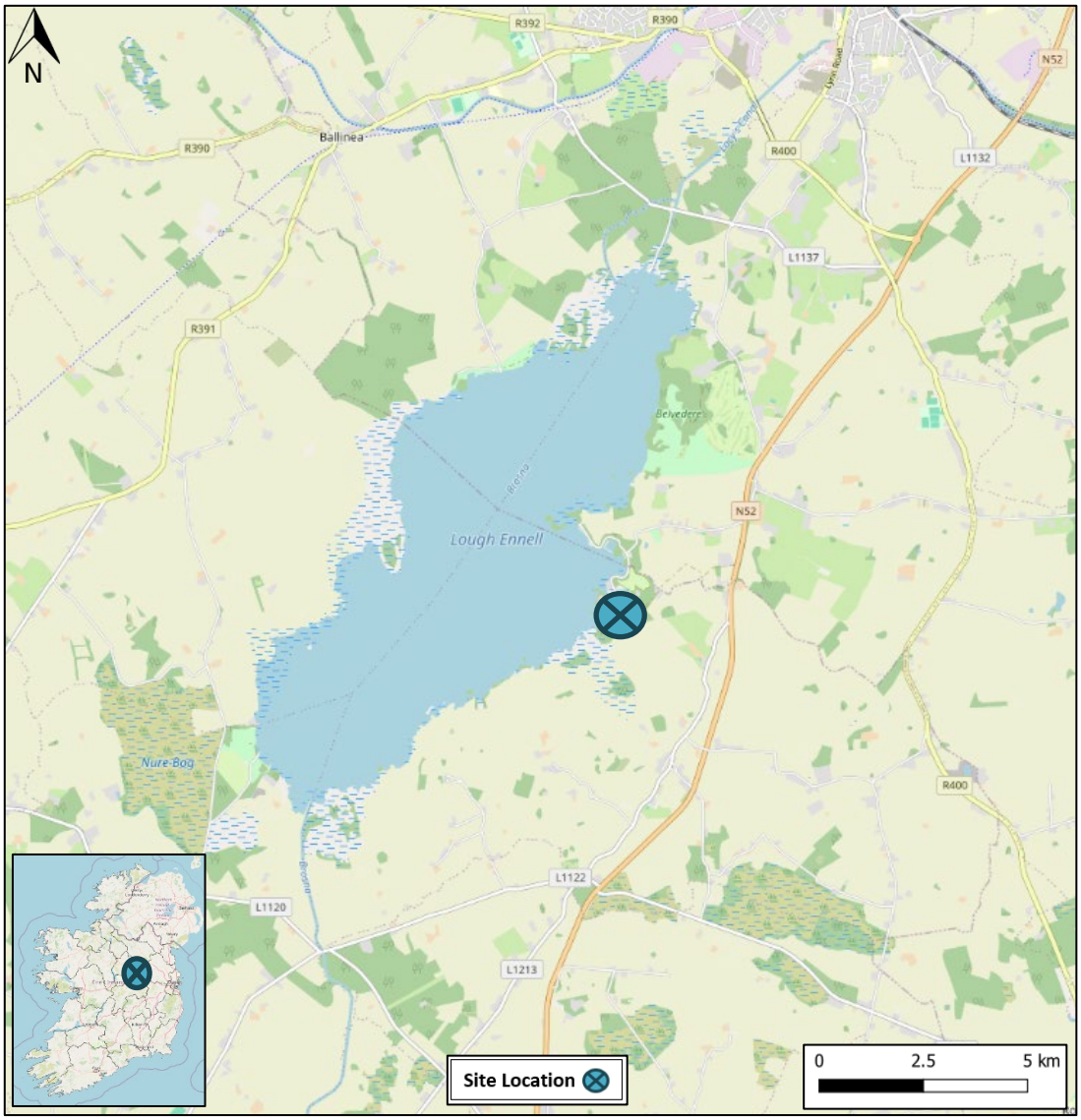


Figure 1.1: Location of proposed development site (Open Street Map ©)

Figure 1.2: Outline of Bat Survey Main Area of Interest (pink) (Google Image 2022 ©)

2.0 LEGLISLATION AND GUIDELINES

The Wildlife Act is the primary piece of Irish legislation providing for the protection and conservation of wildlife and provides for the control of specific activities which could adversely affect wildlife, for example the regulation of hunting and wildlife trading. Under the Wildlife Act, all bird species, 22 other fauna species and 86 flora species in Ireland are afforded protected status. The Wildlife Act, 1976 allows for the designation of specific areas of ecological value such as Statutory Nature Reserves and Refuges for Fauna. The Wildlife (Amendment) Act, 2000 provides for greater protection and conservation of wildlife and also provides for the designation and statutory protection of Natural Heritage Areas (NHA). The Wildlife (Amendment) Act 2023 places new reporting obligations on public bodies whose statutory functions could have an impact on biodiversity. European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) and (Amendment) Regulations, 2015 (S.I. No. 355 of 2015), transposing the Habitats Directive 92/43/EEC (as amended) and Birds Directive 2009/147/EC. The primary legislation transposing the Nature Directives (Birds and Habitats Directives) into Irish law is the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended. The codes used for the EU Nature Directives and Habitats Directives (Council Directive 92/43/EEC) are:

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

Bat species in Ireland are all listed under Annex IV. Projects that may impact Annex IV species must undergo a risk assessment.

The Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is also listed under Annex II which as per the European Environment Agency is "*Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation*"**.**

Biodiversity Plan 2023-2030. Irelands forth National Biodiversity Plan 2023-2030 identifies actions towards understanding and protecting biodiversity with a vision that, "biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally".

It is an offence under Section 23 of the Wildlife Act and under Section 51 of Habitat Regulations, 2011 to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the Habitat Regulations, 2011 actions that intentionally or unintentionally harm, damage or destroy a bat or its roosting site are considered to be an offence. According to Section 54(2) of the Habitats Regulations 2011, a derogation licence to disturb bats or the breeding or resting places may be granted 'where there is no satisfactory alternative, and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range.

The EUROBATS Agreement (Agreement on the Conservation of Populations of European Bats, 1994), Ireland is required to protect habitats and important feeding areas from damage or disturbance. All Irish bat species are listed in Appendix II of the Bern Convention (1979), as species requiring protection. The IUCN Red List categories and criteria are used as an easily understood system for classifying species by their risk of global extinction. Irish bats have most recently been categorised in the updated IUCN red list of terrestrial mammals in Ireland. (Marnel et al., 2019). All bats normally occurring on the island are listed as "Favourable" with Lesser Horseshoe Bat (*Rhinolophus hipposideros*) listed as "Inadequate" (NPWS, 2025). The status of the Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) is not yet determined in Ireland as only one record has been confirmed.

2.1 GUIDELINES

This Bat Survey and Assessment has been carried with reference to the following guidelines:

- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.
- Bat Mitigation Guidelines for Ireland – V2 (Marnell, F., Kelleher, C. & Mullen, E., 2022).
- Bats and Lighting– Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010).
- Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, GN 08 / 23).
- Guidance Notes for the Reduction of Obtrusive Light GN01-21 (Institute of Lighting Professionals, 2021).
- EUROBATS 8 Guidelines for consideration of bats in lighting projects.
- National Roads Authority (2005), Guidelines for the Treatments of Bats Prior to the Construction of National Road Schemes.
- National Roads Authority (2005), Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes.

See **SECTION 7 - REFERENCES** for additional publications, guidance and literature.

2.2 DATA AND DESKTOP REVIEW

An ecological survey can only assess a site at a particular time and is limited by various factors such as the season, timing of the survey, climatic conditions, and species behaviour. Additional data can be obtained from published records and digital datasets. Aerial imagery and habitat assessments of surrounding landscape can aid in the preparation of an ecological survey prior to any site assessment. Published bat surveys, previous ecological / bat surveys carried out and data available from online database such as National Biodiversity Database Centre (NBDC) and the NPWS. The absence of records of bats in an area does not confirm bats are absence as data may not be published or not available for a specific site or area. Anecdotal evidence of the presence or absence of protected species while potentially useful for site context cannot be relied upon for an ecological assessment of a protected species or habitat. Therefore, a desktop review alone cannot determine the presence or absence of bats at a specific site but can give parameters to an ecological report for determining the likelihood of a site to support specific species or habitats.

2.2.1 SURVEY LIMITATIONS AND SOLUTIONS

Every effort has been made to provide an accurate assessment of the ecological status of the site. The optimal bat survey period runs from April to September. To ensure any limitations encountered did not significantly impact upon the findings of the bat survey, the ecological survey undertaken also assessed the potential of the habitats to support bat species and during optimal weather conditions. The site was assessed for bat activity over a number of surveys in 2024 and a follow up survey in 2025. Where areas within a site cannot be accessed, this should be noted in the report as a constraint to the survey. The site was accessible and visible from all sides. The building and trees were also accessed using Thermal Imagery. Weather conditions were favourable.

3.0 ECOLOGICAL SURVEY OVERVIEW

Areas within the site with the potential to support bat roosts and / or foraging / commuting routes, and which have the potential to be impacted upon by the proposed development were the main focus of the surveys outlined below. When planning a development, it is advisable to check for the presence of bats as early as possible so that any planning and licensing issues can be addressed before resources are committed. Bat surveys require specialist knowledge and equipment. A bat survey is done to determine if the building/structure/tree is a bat roost. Transect surveys are carried out by walking the site with a bat detector to determine the level and type of bat activity at a site. Other more detailed surveys are carried out if a bat roost is suspected and if knowledge on the type of roost is required to determine the best conservation methods.

Table 3.1: Surveys Dates

SURVEY	STUDY AREA	SURVEY DATES
Habitat Survey	Complete Site & Boundary Buffer	14th September 2022 21st April 2024 26th April 2024 18th May 2024 5th December 2025
Site Survey for Bat Roost Potential	Complete Site & Boundary Buffer	26th April 2024 13th May 2024 18th May 2024 4th June 2024 13th September 2025
Active Bat Survey	Complete Site & Boundary Buffer	26th April 2024 13th May 2024 4th June 2024 13th September 2025

3.1 BAT SURVEY METHODOLOGY

The site at Carrickwood, Mullingar, Co. Westmeath and its boundary was assessed for the potential to support bats and also how the type of potential redevelopment (demolish and rebuild unoccupied house) would impact on bats. The aim of the bat surveys are to collect robust data following good practice guidelines to allow an assessment of the potential impacts of the proposed project on local bat populations. To facilitate the design of control measures, enhancement, and monitoring strategies for local bat populations recorded. Provide information to enable robust decisions with definitive outcomes that aid in the conservation of local bat populations. Depending on the type of site or habitats contained within the survey can concentrate on areas of suspected or potential bat roots such as buildings (with accessible features) and trees with cracks and crevices as noted below.

The assessment comprised of an external inspection of trees to identify potential roost features (PRFs) and evidence of bat activity. Any cracks or crevices were further inspected visually with the aid of a strong torch to look for bat droppings, urine staining, grease marks (oily secretions from glands present on stonework) and claw marks. The criteria used to categorise the PRFs or suitability of trees as a potential roost are summarised in the table below, based upon the guidelines by Collins, J. (ed.) (2023) and Marnell et al, (2022). Examples of such features include;

(i) Natural holes, (ii) Cracks/splits in major limbs, (iii) Loose bark, (iv) Hollows/cavities.

Climbing trees to look for roosts, using appropriate equipment and safety precautions, is a possible approach for small numbers of trees with a high probability of bats, but the results of radiotracking studies of some species suggest that bats may use cracks or crevices that are far from obvious (Kelleher & Marnell, 2006).

A bat activity survey with an Anabat Walkabout Bat Detector was undertaken as part of the Bat Assessment of the site. Records either in full spectrum or zero crossing calls in real time with a sampling rate of 500kHz.

A full spectrum passive ultrasonic detector (Song Meter SM4BAT FS with Cabled SMM-U2 low-noise microphones for high-fidelity recording was left on site overnight in September 2025 for additional confirmation of bat identification from bat recordings.

3.1.1 Assessment of Bat Roost Potential

An extensive daytime assessment of the site was undertaken. The assessment comprised of an external inspection of any trees and buildings to identify potential roost features (PRFs) and evidence of bat activity, using close focusing binoculars and a Thermal Imaging Monocular. The criteria used to categorise the PRFs or suitability of trees and buildings as a potential roost are summarised in the table below, based upon the guidelines by BTHK (2018), Collins, J. (ed.) (2023) and Marnell et al, (2022). A great majority of roosts are used only seasonally, so there is usually some period when bats are not present. Although there are differences between species, maternity sites are generally occupied between May and September and hibernation sites between October and March, depending on the weather. A hibernation site will have a constant cool temperature and humidity. The majority of bat species do not hibernate in trees with the exception of Leisler's bat (*Nyctalus leisleri*) noted as "probably tree cavities" and Brown Long-eared bat (*Plecotus auratus*) "tree holes." The probability of bats roosting in a tree decreases in coniferous plantations with no specimen trees and young trees with simple growth form and little damage Marnell et al, (2022). Where bats are found, either individually or in groups in the winter months will have a constant cool temperature and humidity. 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. Both Common pipistrelle and Soprano pipistrelle can hibernate in a variety of places, which may be quite exposed frequently in cavities in buildings, rarely underground. Brown long-eared bat can be found hibernating in roofs.

Table 3.2: Bat Roost Potential Categories

CATEGORY	DESCRIPTION
High Trees / Buildings / Structures that are suitable for use by large numbers of bats on a regular basis	Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In buildings, examples include eaves, barge boards, gable ends and corners of adjoining beams, ridge and hanging tiles, behind roofing felt or within cavity walls. In trees, examples include hollows and cavities, rot holes, cracks/splits and flaking or raised bark which could provide roosting opportunities. Any ivy cover is sufficiently well-established and matted so as to create potential crevices beneath. Further survey work would be required to determine whether or not bats are present, and if so, the species present. Appropriate mitigation and potential licencing requirements may then be determined.
Moderate Moderate potential is assigned to Trees / Buildings / Structures with potential to support bat roosts but supports fewer features than a high potential building / tree and is unlikely to	From the ground, building / tree appears to have features (e.g. holes, cavities, cracks or dense ivy cover) that may extend back into a cavity. However, owing to the characteristics of the feature, they are deemed to be sub-optimal for roosting bats.

CATEGORY	DESCRIPTION
support a roost of high conservation value.	Further survey work would be required to determine whether or not bats are present, and if so, the species present. Appropriate mitigation and potential licencing requirements may then be determined.
Low Low potential is assigned to Trees / Buildings / Structures with features that could support individual bats opportunistically.	If no features are visible, but owing to the size, age and/or structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal. In respect of ivy cover, this is not dense (i.e. providing PRF in itself) but may mask presence of PRF features. Further survey work may be required for buildings only or works may proceed using reasonable precautions (e.g. controlled working methods, under license or supervision of a bat worker).
Negligible	Trees / Buildings / Structures have no potential for bat roost.

A daytime inspection of a site will determine the potential of bat roosts within the survey area. The types of bat roosts are listed in **Table 3.3** below;

Roost Type	Definition	Time Of Survey
Day Roost	A place where individual bats or small groups of males, rest or shelter in the daytime but are rarely found by night in the summer.	Anytime of the year
Night Roost	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single bat on occasion or it could be used regularly by the whole colony.	Anytime of the year
Feeding Roost	A place where individual bats or a few bats rest or feed during the night but are rarely present by day.	Anytime of the year
Transitional Roost	A place used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.	Outside the main maternity and hibernation periods.
Swarming Site	Where large numbers of males and females gather. Appear to be important mating sites.	Late summer and autumn
Mating Site	Where mating takes place.	Late summer and autumn
Maternity Site	Where female bats give birth and raise their young to independence.	Summer months
Hibernation Site	Where bats are found, either individually or in groups in the winter months. They have a constant cool temperature and humidity.	Winter months in cold weather conditions
Satellite Roost	An alternative roost found in close proximity to the main nursery colony and is used by a few individuals throughout the breeding season.	Summer months

3.1.2 Bat Survey of Site

Bats use echolocation to hunt and navigate in their environs, echolocation calls are used to identify bat species and therefore bat detectors are the principal tool to aid bat surveys. Bat surveys of the site were carried out in Spring/Summer 2025 and Autumn 2025 using an Anabat Walkabout Active Bat Detector with both heterodyne and frequency division. In addition, a Axion Thermal Imaging Monocular (XP50) was used to assess buildings and observe bat activity within the site and along the boundary.

- The 1st active survey on the 26th of April 2024 and was a dusk survey and commenced at 7:20pm (approx. 30 minutes before sunset) and was approx. three hours and ten minutes in duration, finishing at 10:30pm. Temperature: 8-7°C, Wind: 10km, Cloud Cover: 6 okta – calm and with light breeze, site was wet from previous rainfall but no rain during the survey. Some insect activity.
- The 2nd active survey was on the 13th of May 2024 was a dusk survey and commenced at 8:50pm (approx. 30 minutes before sunset) and was approx. two hours and thirty minutes in duration, finishing at 11:20pm. Temperature: 12°C, Wind: 14km, Cloud Cover: 5 okta warm, dry and light breeze with conditions suitable for surveying. High insect activity.
- The 3rd active survey was on the 4th of June 2024 was dawn survey and commenced at 2.30am (2 hours and 30 minutes before sunrise) and was just over three hours in duration, finishing at 05:35am. Temperature: 11°C, Wind: 12km, Cloud Cover: 6 okta – calm overcast morning, survey started dry but rain arrived by end of survey at dawn. Notable insect activity towards the Lough.
- The 4th active survey was on the 13th of September 2025 was an emergence survey to monitor if bats were still actively using the roof crawl space. Survey commenced at 7pm, approximately 50 minutes before sunset. Active survey of site including the shoreline and woodland was also done after emergence. Temperature: 13°C, Wind: 18km, Cloud Cover: 5 okta – dry with light breeze. In addition, a passive bat detector was left overnight to monitor bat activity at the site.

Plate 3.1: Survey Observation Points for Emergence and Re-entry of building

4.0 SURVEY RESULTS

An ecological site characterisation assessment was undertaken to examine the ecological context of the development site, by systematically walking the site, adjacent land and boundaries and determining the habitats present (See **Table 4.1.1** below). The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "A Guide to Habitats in Ireland", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "Best Practice Guidance for Habitat Survey and Mapping", (Smith et al., 2011). The main habitats at the site are buildings and artificial surfaces (**BL3**), mesotrophic lakes (**GA1**), hedgerows (**FL4**), reed and large sedge swamps (**FS1**), mixed broadleaved (**WD1**), scattered trees and parkland (**WD5**). There is a hedgerow (**WL1**) along the lane boundary and scrub (**WS1**) regrowth where trees were cut by ESB (under powerlines). The surrounding habitat is predominately the same (woodlands and lake). The habitats within the boundary are of moderate ecological value with no flora of conservation significance. The mature woodland and trees are of high local ecological value to bats. Lough Ennell is designated a Special Area of Conservation (SAC) and Special Protection Area (SPA). The identified habitats at the proposed development site, as per the Fossitt habitat classification scheme, are summarised in **Table 4.1.1** and the ecological value in **Table 4.1.2**. There was bird activity at the site predominately woodland species and waterfowl along Lough Ennell. The building and trees were also assessed with a Thermal Imaging Monocular to detect any areas of potential bat roosts.

Table 4.1.1: Summary of Habitats Identified at the Proposed Development Site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
B Cultivated and built land	**BL** Built land	**BL3** Buildings and artificial surfaces
F Freshwater	**FL** Lakes and ponds	**FL4** Mesotrophic lakes
	FS Swamps	**FS1** Reed and large sedge swamps
W Woodland and scrub	**WN** Semi–natural woodland	**WN6** Wet willow-alder-ash woodland
	WS Scrub / transitional woodland	**WS1** Scrub
	WD Highly modified / non- native woodland	**WD1** Mixed broadleaved Woodland
	WL Linear woodland / scrub	**WL1** Hedgerows

Table 4.1.2: Ecological Value for Bats

HABITAT TYPE	HABITAT RATING	ECOLOGICAL VALUE TO BATS
BL3 Buildings and artificial surfaces	Local importance, lower value	High ecological value to bats*
FL4 Mesotrophic lakes	National importance, higher value. Within protected SAC/SPA boundary	High ecological value to bats

HABITAT TYPE	HABITAT RATING	ECOLOGICAL VALUE TO BATS
FS1 Reed and large sedge swamps	National importance, higher value. Within protected SAC/SPA boundary	High ecological value to bats
WS1 Scrub	Local importance, lower value	High ecological value to bats
WL1 Hedgerows	Local importance, lower value	High ecological value to bats
WD1 Mixed broadleaved Woodland	Local importance, higher value	High ecological value to bats
WN6 Wet willow-alder-ash woodland	National importance, higher value. Within protected SAC/SPA boundary	High ecological value to bats

*** See bat survey results.**

4.1 DESK BASED REVIEW

The development site is located outside of the current distribution, current range and favourable reference range of Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303], Nathusius' Pipistrelle (*Pipistrellus nathusii*) [1317] and Whiskered Bat (*Myotis mystacinus*) [1330] but within the current distribution, current range and favourable reference range of Nathusius' Pipistrelle (*Pipistrellus nathusii*) [1317], Brown long-eared Bat (*Plecotus auratus*) [1326], Soprano Pipistrelle (*Pipistrellus pygmaeus*) [5009], Common pipistrelle (*Pipistrellus pipistrellus*) [1309] and Leisler's Bat (*Nyctalus leisleri*) [1331]. Natterer's Bat (*Myotis nattereri*) [1322] and Daubenton's Bat (*Myotis daubentonii*) [1314] are within the current range of the proposed development (NPWS, 2025). The Lesser Horseshoe Bat is mainly confined to the west of Ireland, with the NPWS database indicating that the nearest record for this bat is located to the south east of the development site near Ballyrobuckbeg, Co. Galway (Grid M9583). **Table 4.2** are the NBDC records for bat activity in **N44**. There are no records of bat activity around the development site boundary at Carrickwood by NBDC. There are records of bats from 3rd party ecologists.

Table 4.2 NBDC records within the 10km square grid (**N44**) and 2km square grid (**N44C**)

TABLE 4.2 NBDC RECORDS FOR BATS	
SPECIES	**HECTAD**
Brown Long-eared Bat (*Plecotus auritus*)	N44
Daubenton's Bat (*Myotis daubentoniid*)	N44
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	N44
Leisler's Bat (*Nyctalus leisleri*)	N44
Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*)	N44
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	N44
Nathusius's Pipistrelle (*Pipistrellus nathusii*)	N44
SPECIES	**TETRAD**
None Listed	N44C

Bat and Bird Survey by **Ash Ecology and Environmental** in 2023 of a derelict cottage approximately 65m to the south found the following species active in the area;

- Common Pipistrelle (*Pipistrellus pipistrellus*) 46.5 kHz - 33 passes
- Leisler's Bat (*Nyctalus leisleri*) 25.0 kHz – 3 passes
- Soprano Pipistrelle (*Pipistrellus pygmaeus*) 56.5 kHz – 16 passes

Bat Conservation Ireland's habitat suitability index available to view on the NBDC online mapping portal, classifies the landscape, within which the site is located, as having a habitat suitability for bats, with a score of **23.44** for the development site and surrounding landscape. 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. The maps are constructed using spatial units of the OSI National Grid. The index presented is for all species combined, in addition to the individual species' indices (Lundy et al., 2011).

Table 4.3 Bat habitat suitability index for the proposed development site

BAT HABITAT SUITABILITY INDEX	
SPECIES	INDEX
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	36
Brown long-eared Bat (*Plecotus auratus*)	24
Common pipistrelle (*Pipistrellus pipistrellus*)	41
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	0
Leisler's Bat (*Nyctalus leisleri*)	36
Whiskered Bat (*Myotis mystacinus*)	9
Daubenton's Bat (*Myotis daubentoniid*)	18
Nathusius's Pipistrelle (*Pipistrellus nathusii*)	16
Natterer's Bat (*Myotis nattereri*)	31

4.1 BAT SURVEY RESULTS

Bat call analysis was undertaken using Kaleidoscope Pro Software and used to analyse bat calls recorded. Bat species identification was interpreted using known call parameters (British Bat Calls: A Guide to Species Identification, Jon Russ 2012) and existing literature on the ecology of Irish and UK bat species, including distribution, range, habitat associations and behavioural characteristics, in addition to surveying the flight pattern and foraging. Every attempt was made to identify bats to species level. However, in some instances it is only possible to take the analysis to genus level (distinguishing between certain bat species echolocation calls can be very difficult due to the overlap in call parameters example those species within the *Myotis* genus).

4.1.1 ACTIVE BAT SURVEY RESULTS

Bat activity levels were low/moderate during the spring months but high in the summer/autumn months. Bat activity was associated with foraging and roosting. There was high bat activity throughout the summer and autumn surveys around the house, the woodlands and along Lough Ennell. The mature trees with the site were assessed for bat roost potential with particular emphasis on any trees for removal. This was done during the day visually and with a Thermal Camera.

At the north gable end of the house a small opening in the ridge tile was observed to be the entrance point for a bat roost. This end of the house was monitored with a Thermal Camera during the 3rd and 4th surveys.

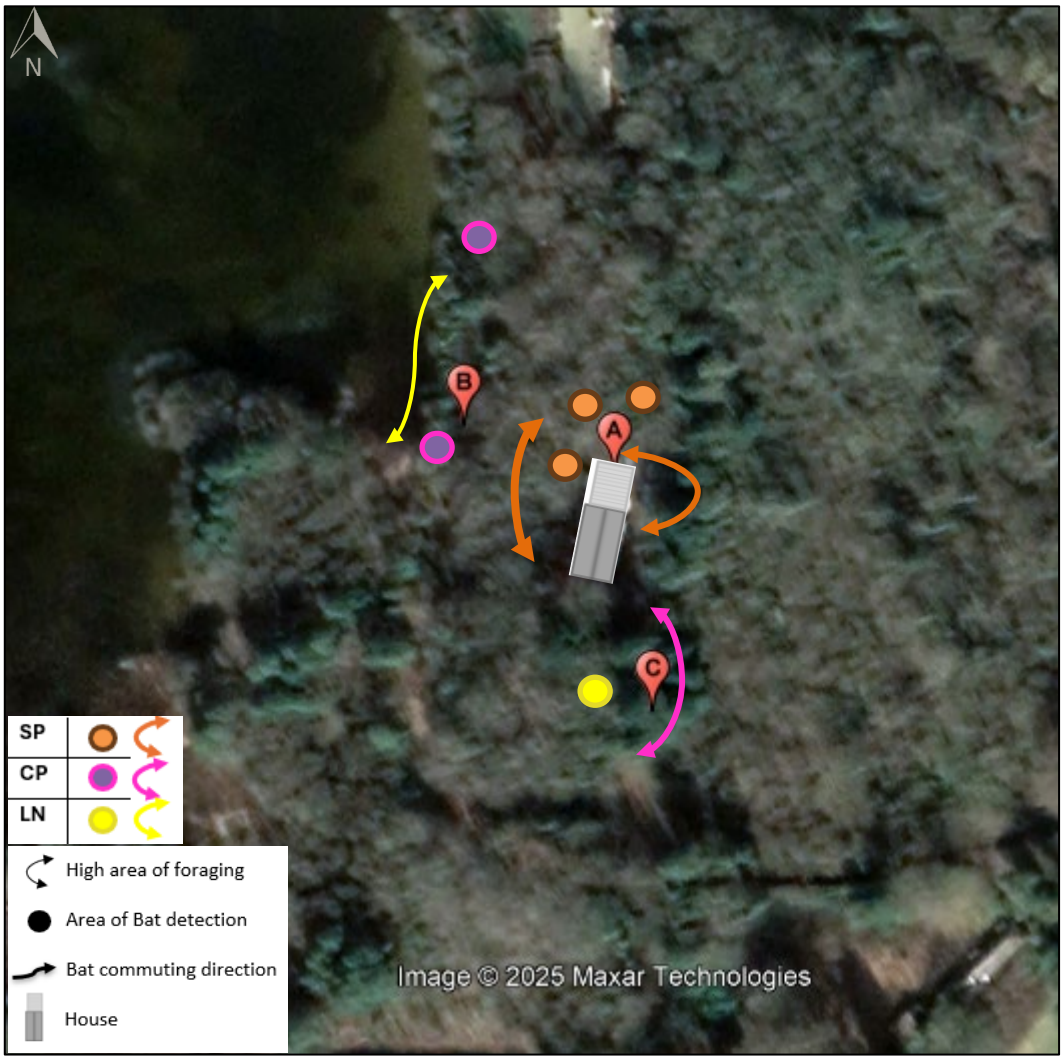
Each survey consistently found bat activity over the house. Other areas of the site (woodlands and shoreline were monitored for bat activity and to determine if other species were active in the area. See **Figure 4.2** for the locations of each main area of the site assessed for bat activity. There was high insect activity during each of the surveys, except the 1st as it was early in the season.

Area A, B, C, been assigned to divide up the area to show which areas had higher/lower bat activity.

1st Survey on the 26th of April 2024

- **Soprano pipistrelle** (54 kHz) was detected foraging under the treeline from 21:13 – 21:30 (Area A)
- **Common pipistrelle** (48 kHz) was detected foraging in woodland at 21:30 (Area C)
- **Soprano pipistrelle** (55 kHz) was detected foraging around the house at 21:46 (Area A)
- **Leisler's bat** (24 kHz) was detected foraging along shoreline at 21:54 – 22:08 (Area B)
- **Common pipistrelle** (48 kHz) detected foraging along shoreline at 22:10 – 22:22 (Area B)
- 2 **Soprano pipistrelle** (57 kHz) detected foraging around house at 22:26 – 22:46 (Area A)
- **Leisler's bat** (24 kHz) was detected foraging in woodland at 22:30 (Area C)

Overall bat activity was low to moderate during the survey of the site. No bats were observed emerging from the south gable end of the house.

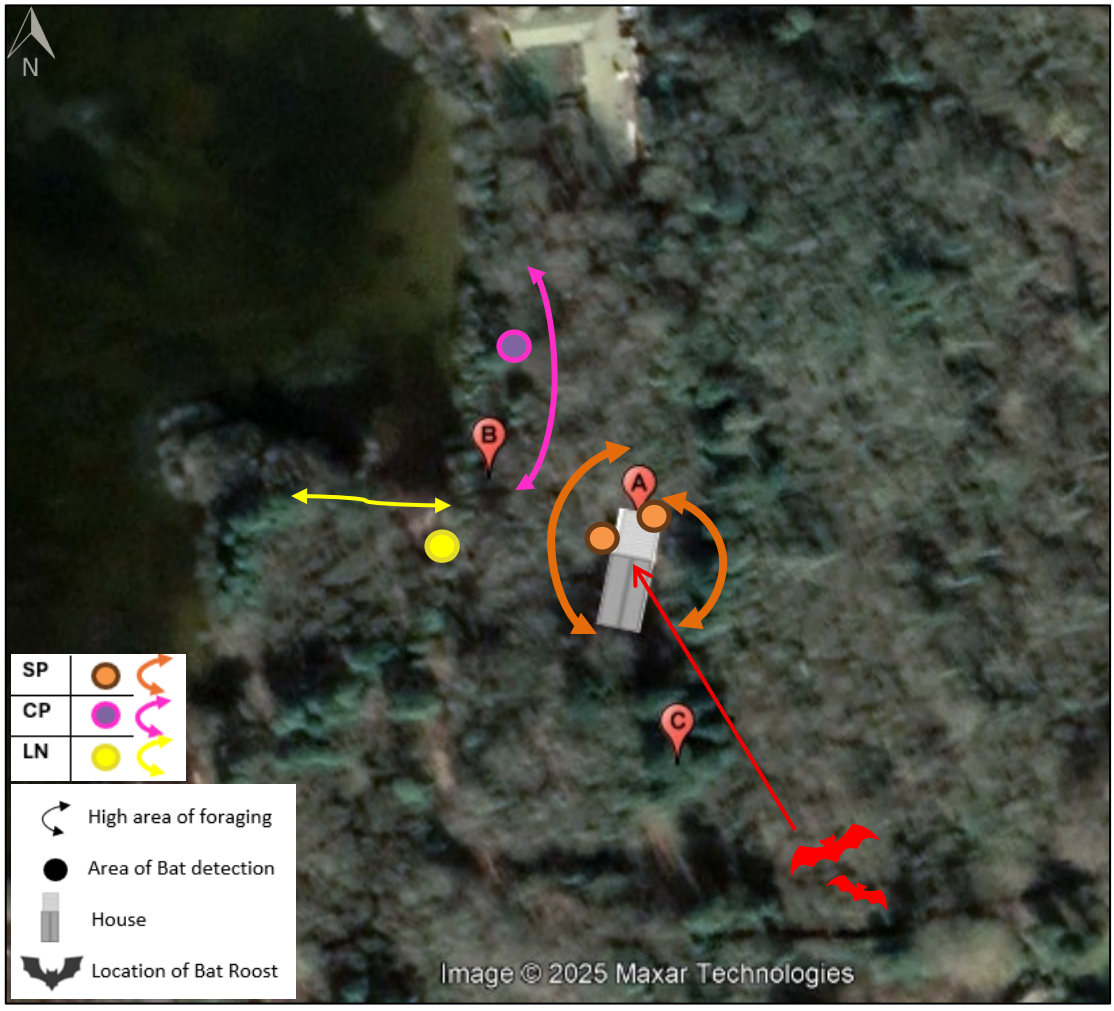


Figures 4.2.1: Active Bat Survey No. 1 (Google Imagery ©)

2nd Survey on the 13th of May 2024

- 8 **Soprano pipistrelle** (57 kHz) were observed emerging from the gable end of the house (opening in ridge tile) (**Area A**)
- There was high Soprano pipistrelle (57 kHz) was activity around the house for up to 1 hour (**Area A**)
- Leisler's bat (20 kHz) was detected foraging along shoreline at 22:22 (**Area B**)
- Common pipistrelle (45 kHz) was detected foraging along shoreline at 22:40 (**Area B**)
- Leisler's bat (20 kHz) was detected along the access road at 22:56 (**Area C**)

Soprano pipistrelle was detected around the house and site for the duration of the survey in particular Area A. Overall bat activity was high around the house, and a bat roost is located within the north gable end of the house (in the ridge tiles). See **Figure 4.2.2** for outline of bat activity during this survey.



Figures 4.2.2: Active Bat Survey No. 2 (Google Imagery ©)

3rd Survey on the 4th of June 2024

The main focus of this survey was to determine how active the bat roost was in the roof of the house. To capture accurate bat numbers a Thermal Camera was positioned to record the house at the optimal location and review imagery.

- 15 Soprano pipistrelle (54 kHz) were observed re-entering the north gable end of the house (opening in the ridge tiles) (Area A)
- Activity around the house was high as the bats returned to the roost.
- No other species of bat was detected.

Figures 4.2.3: Active Bat Survey No. 3 (Google Imagery ©)

4th Survey on the 13th of September 2024

The main focus of this survey was to determine if the bat roost was still active later into the season and how many bats would emerge from the roof of the house. To capture accurate bat numbers a Thermal Camera was positioned to record the house at the optimal location and review imagery.

- 54 Soprano pipistrelle (54 kHz) were observed emerging from the north gable end of the house (opening in the ridge tile) (Area A) this was verified with Thermal Camera imagery.
- Activity around the house was high as the bats exit the roost.
- Daubenton's Bat was detected along the shoreline/open water of Lough Ennell (Area B).

Figures 4.2.4: Active Bat Survey No. 4 (Google Imagery ©)

Table 4.4 is a summary of bat species detected during the course of the bat surveys at the development site.

TABLE 4.4 BAT SURVEY RESULTS – ALL SURVEYS			
SPECIES	MATERNITY ROOST	FORAGING	COMMUTING
Soprano Pipistrelle (*Pipistrellus pygmaeus*) (**SP**)	✓	✓	-
Brown long-eared Bat (*Plecotus auratus*)	-	-	-
Common Pipistrelle (*Pipistrellus pipistrellus*) (**CP**)	-	✓	-
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	-	-	-
Leisler's bat (*Nyctalus leisleri*) (**LN**)	-	✓	-
Whiskered Bat / Brandt's Bat	-	-	-
Daubenton's Bat (*Myotis daubentoniid*) (**DB**)	-		✓
Nathusius's Pipistrelle (*Pipistrellus nathusii*)	-	-	-
Natterer's Bat (*Myotis nattereri*)	-	-	-

4.1.2 PASSIVE BAT SURVEYS RESULTS

Results Song Meter SM4BAT FS Bat Detector that was left overnight to monitor bat activity at the house and for additional confirmation of bat species active in the area.

TABLE 4.5 BAT SURVEY RESULTS – PASSIVE SURVEY KALEIDOSCOPE PRO ANALYSIS	
SPECIES	Pulses
Soprano Pipistrelle (*Pipistrellus pygmaeus*) (**SP**)	549
Brown long-eared Bat (*Plecotus auratus*)	0
Common Pipistrelle (*Pipistrellus pipistrellus*) (**CP**)	0
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	0
Leisler's bat (*Nyctalus leisleri*) (**LN**)	27
Whiskered Bat / Brandt's Bat	0
Daubenton's Bat (*Myotis daubentoniid*) (**DB**)	72
Nathusius's Pipistrelle (*Pipistrellus nathusii*)	4
Natterer's Bat (*Myotis nattereri*)	0

The results of the passive survey correlate with the active bat surveys as the most common species overnight was Soprano Pipistrelle. Other species detected such as Leisler's bat were observed and/or detected during the active surveys. Daubenton's Bat (*Myotis daubentoniid*) is likely active along Lough Ennell as it a large open waterbody. Nathusius's Pipistrelle was detected overnight by the passive detector, likely commuting over the woodland.

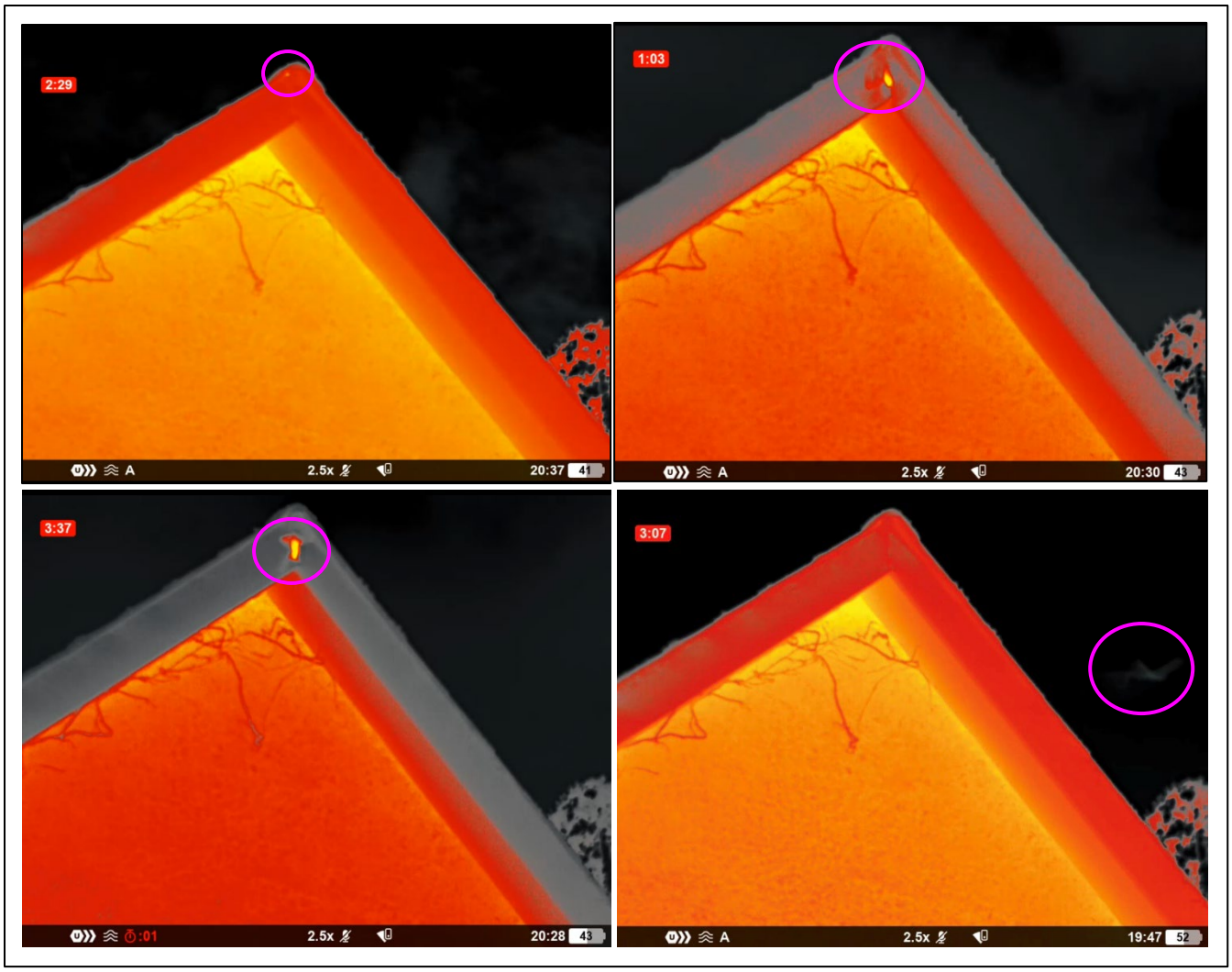


Plate 4:1: Thermal images of bat activity (pink circles) captured emerging from ridge tile on north gable end

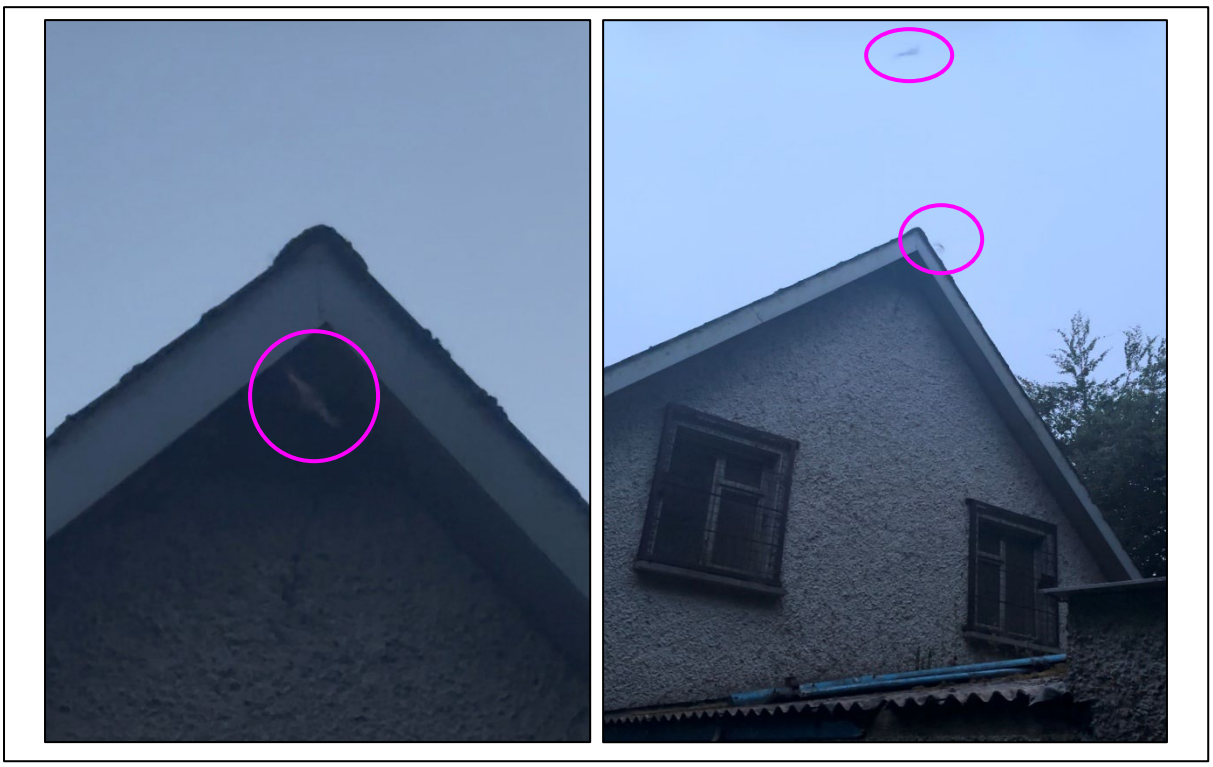


Plate 4:2: Bats captured on camera (i) emerging and (ii) circling to re-enter bat roost at dawn

Plate 4.3: No significant light pollution at the site – view of sunset from (i) house (ii) from Lough Ennell boundary

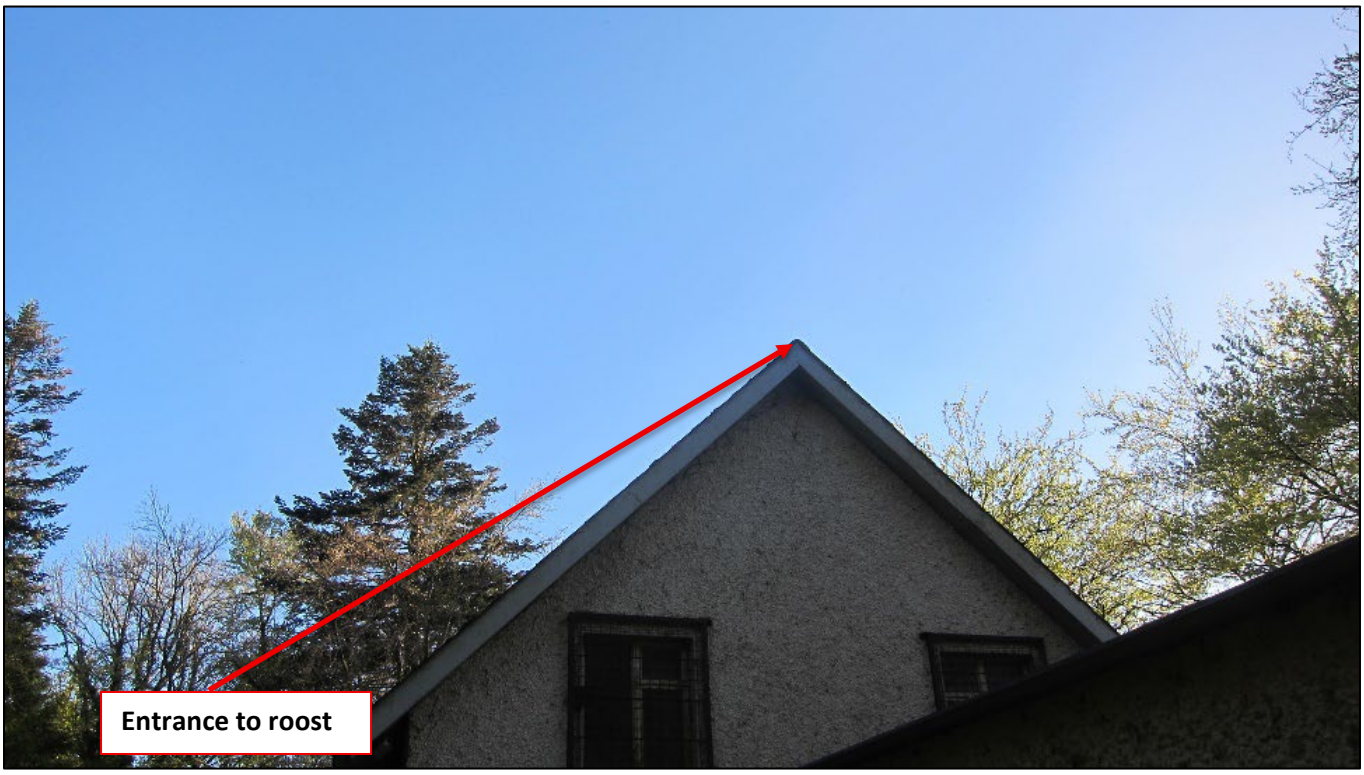


Plate 4.4: Location of entrance to bat roost in ridge tile

Plate 4.5: Assessment of house, garage, outbuildings and surrounding site

5.0 BAT SURVEY ASSESSMENT

Developments have the potential to impact upon bats through destruction and loss of habitat, disturbance due to light pollution. All trees were assessed for potential bat roosts. No trees will be removed as part of the proposed development that are classified as high or moderate bat roost potential. Trees were further assessed with the aid of the Thermal Imaging Camera. The house for redevelopment is surrounded by mature trees, predominately Beech around the house with mixed dense deciduous woodland found to the north east. There is riparian woodland and reed beds along Lough Ennell, which is designated an SAC and SPA and any disturbance of this protected habitat has been assessed separately.

A maternity roost has been identified in the north facing ridge tile with bats using this roost from May and significantly increasing in numbers later in the autumn as observed in September 2025. Dawn re-entry was observed in August with bats circling the roost entry point. The clearing of trees around the house allowed bats to be visibility observed doing this.

Other species of bat were detected foraging in the woodland and along Lough Ennell. Common Pipistrelle, Leisler's bat and Daubenton's Bat were detected foraging and are likely to be roosting in the surrounding woodland which is mature and has trees with bat roost potential. Nathusius's Pipistrelle was also detected by the passive detector and is potentially roosting in the wider landscape. There was high insect activity during the later surveys as temperatures increased. Lough Ennell is a significant waterbody and will contain an abundance of invertebrate life as will the surrounding woodland.

The majority of the flora found at the site are typically associated with understory growth of a woodland (predominately Beech around the house). There was some clearing of trees under the ESB powerline that now has let more light into the site and there is growth of scrub. The house is not occupied (for some time) and is showing signs of dereliction with some vandalism of windows exposing the house to damp. The roof from inspection is intact. There was minimal light disturbance from the surrounding area with some light from neighbouring houses, but this was minimal. Any lighting of the proposed redevelopment will be designed to minimise impact on the surrounding woodland and Lough Ennell. No other bat roost was found within the site or in trees in close proximity to the existing house.

The bat species recorded during the active surveys (Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat and Daubenton's Bat) are among the most common bat species in Ireland, accounting for type of surveys done by Bat Conservation Ireland (Roche et al., 2024). The Irish status of the bat species recorded within the site are all of “Least Concern” (Marnell et al., 2019,). Nathusius’ pipistrelle data in Ireland is limited, and its habitat cycle is not fully quantified due to low numbers and potential under representation in Irish data and its Conservation Status is “unknown”. Given the low detection rate during the passive survey, it is unlikely to be impacted by any development at the site.

5.1 BATS IMPACTS

POTENTIAL IMPACTS

Impacts on bats can arise from activities that may result in:

- Physical disturbance of bat roosts;
- Noise disturbance from increase human presence or use of machinery;
- Lighting disturbance;
- Loss of roosts from destruction or renovation of buildings or cutting trees;
- Modifications of commuting or foraging habitats;
- Severance or fragmentation of commuting routes;
- Loss of foraging habitats.

Artificial lighting during the construction and operational phases has the potential to negatively impact upon bat species, as illumination can impact upon their roosting sites, commuting routes and foraging areas. Cutting down trees or disturbing potential roosting sites for bats. Occupation of roosts in trees or buildings by bats may be very transient. The roosting potential of the development site and trees along the southern boundary are all considered low/negligible with no direct evidence of bat use observed during the daytime inspection. Lighting can cause avoidance of an area for commuting bats and can prevent or reduce foraging for certain species such as *Myotis.*

CONTROL MEASURES

- Demolition works on the roof can only be done outside the active bat season. Bats will be active at the site from April, and any removal of the roof (slates and ridge tiles) must be done before bats are active at the site.

- Prior to removal of the roof an inspection must be carried out by a competent ecologist to ensure that bats are not active at the site.

- To minimise disturbance to bats while works are ongoing bat boxes are to be installed on mature trees (away from construction noise/disturbance) – see further below for installation recommendations.

- Permanent integrated bat boxes will be part of the finished design of the redeveloped house. Guidance on the type and durability of integrated bat boxes is available at Bat Conservation Trust (BCT, 2025).

<u>Artificial Lighting and Other Measures During Construction Phase</u>;

- Construction works in the hours of darkness, when bats are active (April – October), would be kept to a minimum;
- Lighting of woodland and Lough Ennell must be avoided.
- Should lighting be required during construction works, it will be of a low height (without compromising safe working conditions) to ensure minimal light spill. Where possible and where practicable to do so, timers or motion sensors would be used;
- Directional lighting would be used where possible, by use of louvres or shields fitted to the lighting;
- Any mature trees felled should be left for 48 hours to ensure any night roosting bat can escape.

Any lighting plan should be done in accordance with Institution of Lighting Professionals and the Society of Light and Lighting with threshold increments calculated to ensure luminaires are not a glare source. Recommendations as per Bat Conservation Trust Bat Conservation Trust - Bats and artificial lighting at night Guidance Note 08/23. BCT, London.

- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component;
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- Adoption of 3000K lighting rather than 4000K results in a 37% reduction in blue light moving to 2700K (suggested for more sensitive areas) provides a 48% reduction (Dark Sky Ireland, 2025).
- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.

<u>Artificial Lighting during Operational Phase</u>

The lighting plan must ensure luminaires shall be fully compliant with regulations such as the *Single Light Regulation ~ Commission Regulation (EU) 2019/2020 of 5th December 2019.* The luminaire shall be

registered on the *EPREL* website and labelled in accordance with the regulation requirements. The luminaire shall be designed specifically to be used with LED light sources which is considered to be low impact in comparison to other lighting types. The lighting design should be done in accordance with *Institution of Lighting Professionals and the Society of Light and Lighting*. The design must ensure there is no direct upward light or light spill onto Lough Ennell. The lighting design must ensure light spill outside the site boundary is minimised. By using a tailored lumen package to minimise reflected, and refracted light as far as practicable for an amenity development. Continued use of sensors on security lighting to minimise impact of flood lights.

RESIDUAL IMPACTS

Given the nature and rural location of the site it is likely that bats also utilise the wider area for roosting. The roof of the house is in use as a maternity roost and its removal will impact on the local population of Soprano pipistrelle until an alternative maternity roost has been established at this location. It is possible to incorporate bat boxes in the block/brick work of a building that allow for bats such as Soprano pipistrelle to reestablish a maternity roost at this location. Given the location beside a dense mature woodland and shore of Lough Ennell is highly likely bats will continue to use the surrounding area and the redevelopment of this site, while having an impact on the short term can facilitate development that is more ecologically beneficial to biodiversity and incorporate features for bats.

The population of bats detected at the site such as Soprano pipistrelle, Leisler's Bat, Daubenton's Bat and Common pipistrelle are at favourable conservation status at a national level. There will be no significant loss of foraging habitat for the local bat populations as a result of the any redevelopment of the site as there will be no works within the boundary of Lough Ennell and there is a site-specific landscape plan that has been developed to be ecologically beneficial with the aid of a green roof and planting of only native and naturalised species. There will be no attic in the new building but some of pitched roof end can include Ridge Roost (bat roost for crevice dwelling species in the self-contained design).

The installation of bat boxes on buildings or mature trees can be done to encourage bat activity at the site and in the general area. Bats provide an ecologically beneficial method of insect control especially around buildings that can attract insects, which is even greater significance when occurring beside a large waterbody. Bat species that are most regularly found using bat boxes are Soprano pipistrelles, Leisler's bats and Brown long-eared bats (Bat Conservation Ireland). Locate boxes where bats are known to feed and navigate at least 4m above the ground, away from artificial light sources and not exposed to harsh weather conditions such as strong winds and should get direct sunlight for part of the day (Bat Conservation Trust, 2018). The boxes should face different directions in order to provide a range of micro-habitats for bats.

5.2 REASON FOR DEROGATION

The existing building is currently not in use and is subject to dereliction. The roof is intact however much of the rest of the building is starting to become exposed to elements and is damp. Any redevelopment of the existing building would disturb the maternity roost in the roof (ridge tiles) given the potential the building would require a complete refit if not demolished. The adjoining garage (below the roost entrance) have asbestos roofs and will require removal. Demolition of the existing house will require a derogation licence as it will directly impact a maternity roost of Soprano pipistrelle.

ALTERNATIVE SOLUTIONS CONSIDERED;

(i) Do Nothing; The house will remain unoccupied and will likely become more exposed to dereliction over time. The impact to the roost will likely be in the future as the building will require potentially significant refurbishment works to make inhabitable again.

(ii) The redeveloped house will require significant refurbishment. It is not viable to retain the existing house and any works to the existing house would cause significant disturbance to the roost. The new house will have large sections of green roof to reduce to the visual and ecological impact to Lough Ennell SAC/SPA. The green roof has been designed to naturalise the building into the area as the vegetation establishes. There will be no attic in the new development with only some pitched roofs as part of the design.

(iii) A small boat house is part of the existing development, it's potential redevelopment could offer an alternative bat roost location within the design of the roof to incorporate bat roost features. However, its location within Lough Ennell has the potential to cause disturbance to the protected habitats and species of Lough Ennell SAC/SPA. The boat house would require significant alterations to make it viable as a potential bat roost and the conservation objectives of Lough Ennell habitats and species would take precedence.

6.0 CONCLUSION

It is the conclusion of this report that there is potential for an impact on roosting bats as a result of the proposed redevelopment. However, given the type of existing development (existing unoccupied house) there is potential this site will become more derelict over time or will require significant restoration work that would also likely cause an impact to the bat roost. This maternity roost for Soprano pipistrelle will likely be impacted at a local level before the roost reestablishes. To mitigate for the loss of this roost bat boxes on mature trees can offer a temporary substitute at this location. Given the high ecological value of the surrounding landscape, it is unlikely bats will move away from this area. To reestablish a maternity roost, it is proposed to install permanent integrated bat boxes as part of the structural design of the new house. The proposed roof will be part green roof, and the landscape design will establish a wetland meadow along Lough Ennell boundary. The landscape plan will only use native and non-invasive species and mature trees with moderate/high bat roost potential will not be removed. Additional mitigation measures have been included in the accompanying Natura Impact Statement that will prevent an adverse impact from lighting onto Lough Ennell, this will also mitigate and be beneficial to bats located at the site and foraging in the area. It is recommended prior to any redevelopment of the existing house that a resurvey is carried out to ensure there are no bats within the roof prior to demolition/removal works.

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8.0 APPENDIX


section AA scale 1:100
section BB scale 1:100
PLANNING
lakeview house, mullingar
mcgarry-moon architects


section CC scale 1:100
section DD scale 1:100
PLANNING
lakeview house, mullingar
mcgarry-moon architects


Landscape Ethos
Set within broadleaf woodland and bordering the shores of Lough Ennell Special Area of Conservation (SAC) and Special Protection Area (SPA) under the EU Habitats and Birds directives respectively. Lough Ennell is also a Ramsar site12 on account of its international importance as a wetland. This special and unique site is to be treated with respect and approached with a lightness of touch, working in harmony with the natural environment and with a sympathetic and restrained palette.
Lough Ennell
Natura 2000 Boundary
Native Woodland Understorey Planting To Boundary
Native Tree Planting
Biodiverse Wildflower Roof
Wet Meadow
Aquatic / Marginal Planting
Permeable Paving to Courtyard
Planted Beds with species selected from the All-Ireland Pollinator Plan (AIPP)
Native Tree Planting
Native Woodland Understorey Planting To Boundary
Ag
Bpu
Bp
Psy
Qp
Sc
N
Notes:
House reduced following Pre App
Nov 23
A
Revision Details
Date
Rev
www.sweeneylandscapedesign.com
Client : Mr & Mrs P. Mulholland
Project: Lakeview House - Carrickwood, Mullingar, Westmeath, N91 H5X4.
Title: Landscape layout
Scale@A1 1:200
Date: Nov 2022
Purpose: PLANNING
Dwg No: 0076-SLD-00-XX-DR-L-0300