



Carrahan Tulia, Ennis, Co. Clare, Bat Survey September 2024

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Contents

1.1 Introduction to application	page 2
1.2 Introduction to survey	page 2
1.3 Desktop research	page 3
1.4 Lesser horseshoe bats	page 5
1.5 The Survey Environment	page 6
2. Site description	page 7
2.1 Bat detector surveys/methodology	page 7
2.2 Results	page 10
3. Evaluation	page 13
3.1 Recommendation	page 14
3.2 Mitigation	page 14
4. Conclusion	page 17

1.1 Introduction to application

Planning Ref. No: Ref. No: P24/60352

APPLICATION:

Permission for the following proposed development:

LOCATION:

- a. To demolish existing single storey rear annex and utility sheds
- b. Alteration and refurbishment of existing dwelling house
- c. Construct both 2 storey and part single storey rear extensions
- d. Construct detached remote home office and gym including utility storage shed
- e. Construct new on-site wastewater treatment system
- f. Adjust existing vehicular site entrances
- g. Including all associated siteworks and services etc.

At Carrahan Tulia, Ennis, Co. Clare

In a request for Further Information the Planning Authority stated the following ;

1. Having regard to the nature of the development proposal which includes the renovation / alteration / demolition of an older dwelling house / outbuildings and taking into consideration the location of the subject site within the Lesser Horseshoe Bat Foraging Range and proximity to Newgrove SAC, you are requested to carry out a bat survey on the site and provide a report on the findings of same.

The survey shall be carried out at the appropriate times /time of year by a suitably qualified person with ecological expertise to determine whether or not bats and their roosts are present on site/within the existing structures on site or utilise the site and also to assess the potential impact of the development on bats, such as their feeding habitat, and in accordance with best practice and relevant legislation. Please address this concern. In the event that of a derogation licence is required same should be obtained prior to responding to this further information request and a copy of same shall be included in any response.

1.2 Introduction to survey

In a request for further information/revised plans from Clare Co Co. Planning Authority, concerning a Permission for development, as outlined above, this survey was undertaken to address issues which would concern the Conservation Objectives of the population of Bat species utilising Carrahan for foraging, roosting and commuting. Due to the potential disturbance of the development and its proximity to an important bat roost (Newgrove House) design and consideration of every aspect of the proposed development programme should consider possible or probable impacts on this mixed species bat landscape.

I Jim Minogue have been surveying bat species, particularly in the West and Midwest region since 2010, I have experience in Lesser horseshoe bats, in terms of monitoring and reporting, applying for derogation licences where required for this species and have studied their specific bat ecology, their habitat requirements as well as their annual life-cycles. In relation to Lesser Horse shoe bats, I understand the international protection and importance of this species and its limitations in population distribution. The presence of bats in any landscape indicates good environmental conditions as they are bio-indicators suggesting clean undisturbed environments. It is considered that incorporating design features at the planning stage and regarding data and information gathered about the bat landscape and the species utilising it is the correct way to address issues regarding developing this site and conserving its utility for bats.

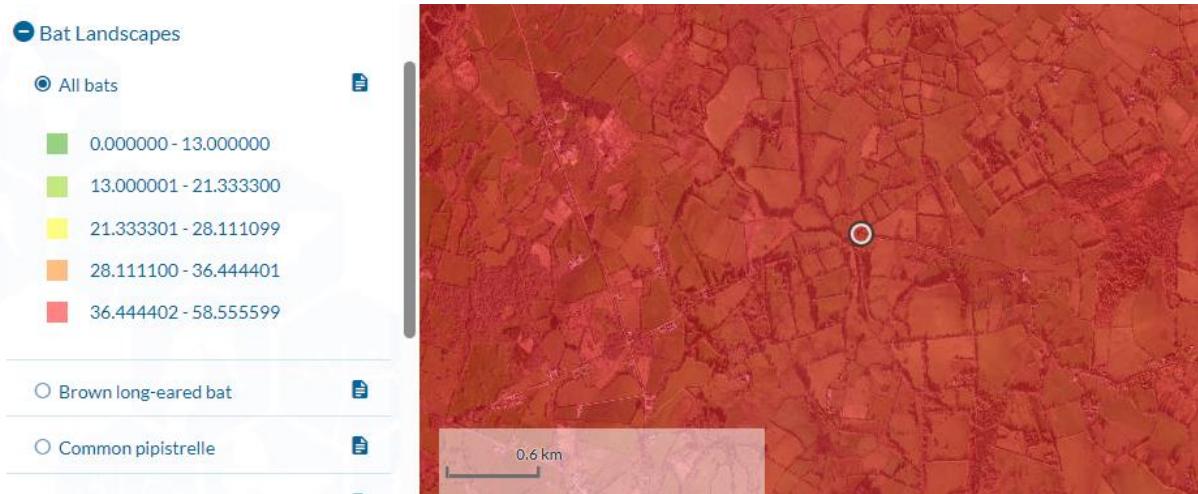
1.3 Desktop research.

The house located in Carrahan has had a various history as any historic site of its age and extent would have. From being utilised as a RIC Barracks to a Post office and a family farmhouse. The house has been burned and rebuilt and has some interesting features as a consequence. The level of bat species activity present, it is assumed, would have increased with the declining levels of human activity since the house ceased being a full time residence.

Prior to the site survey a review of existing information on bat roosts and local activity was undertaken. The national biodiversity database was searched for records of all bat species within a 10km grid of the site (R48). Eight of the nine species of resident Bats have been recorded in this area. The following bat species were recorded:

- Brown Long-eared Bat (*Plecotus auritus*)
- Daubenton's Bat (*Myotis daubentonii*)
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- Leisler's Bat (*Nyctalus leisleri*)
- Pipistrelle (*Pipistrellus pipistrellus*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)
- Natterer's Bat (*Myotis nattereri*)
- Whiskered Bat (*Myotis Mystacinus*)

Map 1, The Bat Landscapes Database (Bat Conservation Ireland) which was accessed as part of the desktop research indicates the habitats and landscape features to have the highest habitat suitability, from Biodiversity Ireland showing the site being of high value as habitat for all bat species.



All Bats	41.89
Pipistrellus pygmaeus	46
Plecotus auritus	65
Pipistrellus pipistrellus	52
Rhinolophus hipposideros	25
Nyctalus leisleri	50
Myotis mystacinus	40
Myotis daubentonii	39
Pipistrellus nathusii	2
Myotis nattereri	58

All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC). All Irish species are listed under Annex IV of the Directive, requiring strict protection for individuals, their breeding sites and resting places. The lesser horseshoe bat (*Rhinolophus hipposideros*) is further listed under Annex II of the Directive, requiring the designation of conservation areas for the species. Under this Directive, Ireland is obliged to maintain the favourable conservation status of

Annex-listed species. This Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011.

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976-2018). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat or disturb its roost. Any work at a roost site must be carried out with the agreement of the National Parks and Wildlife Service (NPWS) and a derogation licence must be granted before works commence.

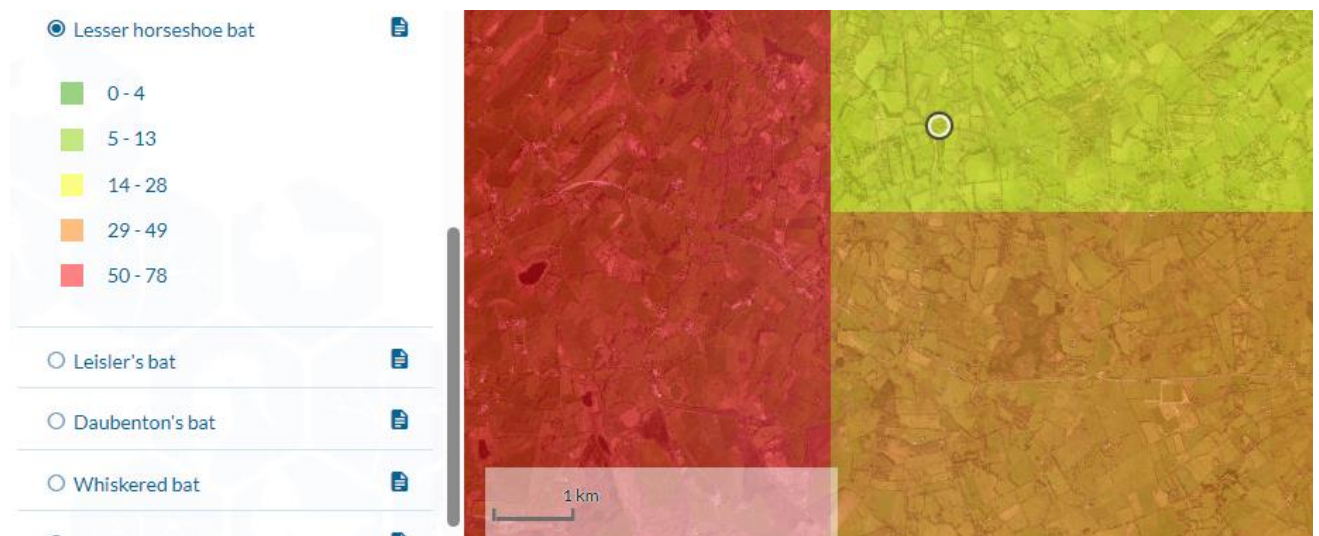


Figure 2. Lesser Horseshoe Bat Landscape Suitability and Recorded Bat Roosts (Biodiversity Ireland)

Dot showing development location, This area with open pasture and lack of woodland is less suitable than adjoining areas for this species.

1.4 Lesser Horseshoe Bats

There is a significant roost for lesser horseshoe bats within Newgrove House located about 2.7-3 km from the site. There were no recordings of Lesser Horseshoe bats utilizing habitats throughout the site, over the course of the dusk and dawn survey. Any further works and lighting developments would require mitigation and design considerations to enable bat species to undertake their annual lifecycle. This requires connectivity throughout the landscape and structures which are presently protected by legislation. Derogation licenses are required for any developments which could impact on bat species. A derogation license will follow on from the results of this survey.



1.5 The surrounding environment

The habitats occurring within the site are described below. All habitats are classified in line with the Guide to Habitat in Ireland (2000).

- BL3: Built land and artificial surfaces
- GA1: Improved grassland
- GS2: Dry meadows and grassy verges
- GS4: wet grassland
- WL1: Hedgerows
- WS1: A mature treeline
- WN5: Riparian woodland
- WN1: Oak birch-holly woodland
- WN2: Oak ash hazel woodland

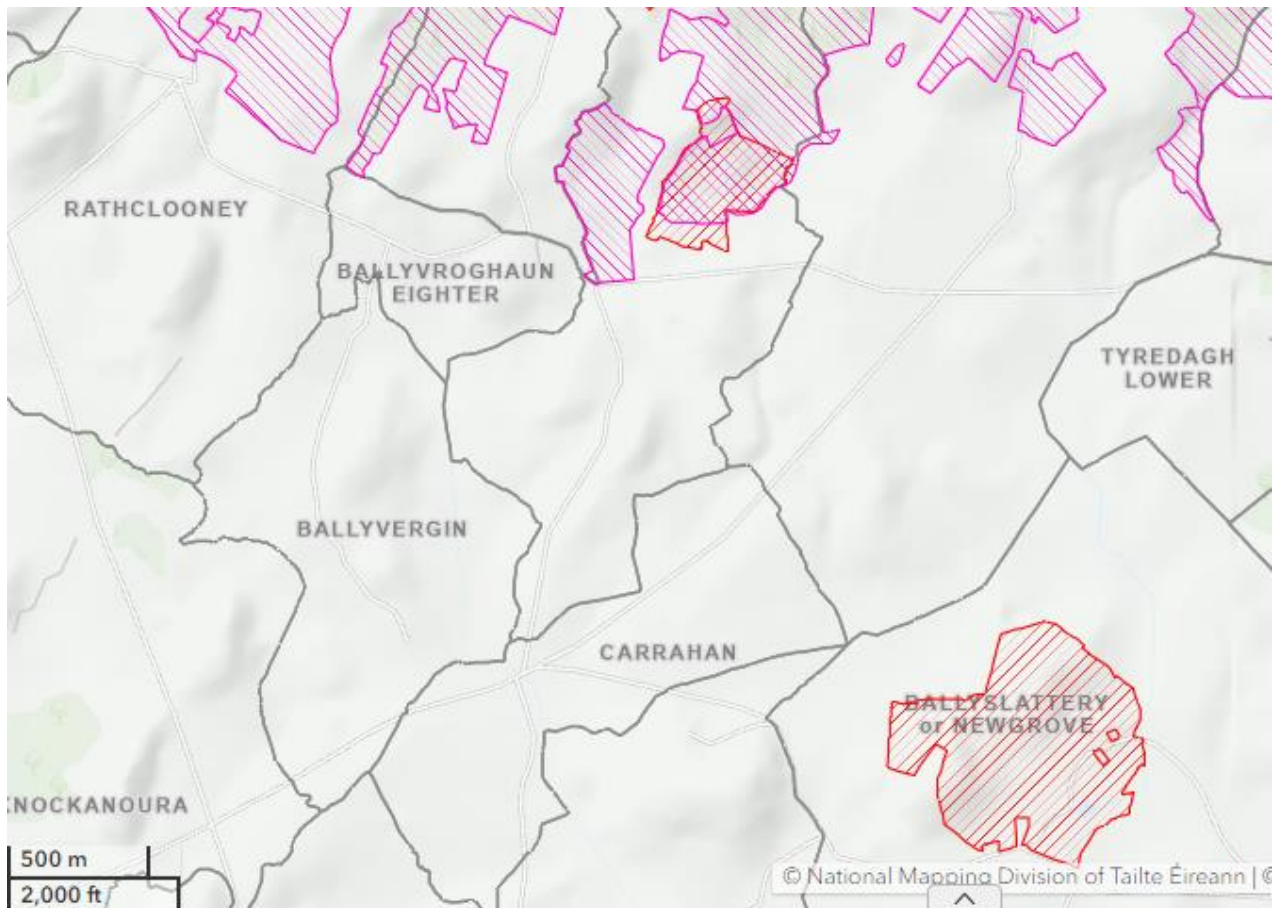


Figure 3 showing Carrahan Townland in relation to NPWS Designated Areas in the vicinity. The extensive Slieve Aughty Mountains SPA is to the north with Newgrove House SAC to the east.

The grassland and artificial surfaces within the site do not provide suitable foraging habitat for bats; the hedgerows do represent suitable commuting and foraging habitat for all bats. With riparian woodland and hedgerows being important along with the river and walls for these functions also.

2. Site Description & Study Area

The House is surrounded by open grassland. The house is a stone structure with a slate roof along with concrete and flat roof extension.

2.1 Bat Detector Surveys methodology

Monitoring of the Structure was undertaken on the 30th of September and the 1st of October 2024 for this research. A daytime inspection of the house was undertaken. Bat species utilise features and structures within the landscape throughout different parts of the year for varying parts of their annual cycle. To understand the seasonal variation of roost requirements the below is useful

Roost Type	Definition
Day	Where individuals or small groups of male's rest/shelter in the day but are rarely found by night in summer.
Night	Where bats rest/shelter at night but are rarely found in the day.
Feeding	Where individuals rest/feed during the night but are rarely found during the day.
Transitional	Used by a few individuals for short periods of time prior to or following hibernation.
Swarming	Where large numbers gather in late summer to autumn. Important mating sites.
Mating	Where mating takes place in late summer to winter.
Maternity	Where females give birth and raise their young.
Hibernation	Where bats are found during winter (constant cool temperature and high humidity).
Satellite	An alternative roost found in close proximity to the main nursery colony.

In general;

April surveys may detect transitional roosts used by bats following hibernation and prior to summer roosting.

May-August surveys may detect maternity colonies and male/non-breeding female summer roosts.

August surveys are best to determine maximum counts of adult and juvenile bats.

August – October surveys may detect swarming and mating bats.

September and October surveys may detect transitional roosts used by bats following the dispersal of maternity colonies and prior to hibernation.

Day, night, feeding and satellite roosts may be found anytime between April and October.

November – March surveys may detect hibernacula.

The inspection surveys consisted of a thorough search of all accessible areas of the building, the exterior and interior, searching for bats or any evidence of use. Numerous structural features internally including crevices in walls, doors, windows and timber joists could support roosting bats. It was noted that some features around the house could potentially be utilised by bats species. These were located around the chimneys and corners of the hipped roof. In general the house was in good condition and well maintained with few places for bats to enter the roof space. There was no evidence of bat activity within the main structure, the survey concentrated on the roof area as this

In the inspection

Such evidence includes:

- The presence of droppings within the building and on surfaces around the exterior of the building, the presence or lack of cobwebs; indicating internal flight.
- Urine staining beneath access points
- Scratch marks around access points
- Visual signs of roosting bats

All accessible surfaces were inspected for bat droppings and crevices were inspected for the presence or evidence of roosting bat species.

An external view of possible flight paths and commuting areas were observed with connectivity to linear features of the landscape noted.

A static Batlogger monitor was installed on the 30th of September 2024 on the window sill on the front of the house for the duration of the survey. No Bat droppings were observed throughout the house.

The results are below and discussed.

A dusk survey was conducted over the 30th of August through to the 1st of October 2024, this was towards the end of the bat activity season. A Batlogger M2 handheld monitor was utilised by one surveyor for an hour before sunset and for two hours afterwards for the dusk survey. For the dawn survey the structure was monitored for an hour before sun-rise.

Ultrasonic bat detectors were also used during the survey to aid the detection of bats. Sweeps were made at lower to higher frequency to establish the presence or otherwise of all potential bat species.

The following equipment was used:

- A Ciel Electronique CDP102 R3
- Batlogger static and handheld M2
- High-powered hand torches and head torches.
- Digital camera, scopes and Echo Metre Touch 2 (for Android)

Bats were identified in the field to species level, *Myotis* sp. were identified to family level. All species, that were recorded at less than 50% quality were filtered out. This was to enable to ascertain the

exact bat species encountered and their relationship with the structures surveyed and how the structures could be utilised within the broader bat landscape.

During hand-held bat surveys species were identified in real time by recording peak frequency. Notes were also made on the time of recording and type of behaviour of each bat encountered during the activity surveys, such as flight type and altitude.

Limitations

The bat survey was undertaken at the end of September just within the bat activity season. Weather conditions was optimal for bat surveys, with good visibility and calm conditions. However the nighttime temperatures were low for the time of the year.

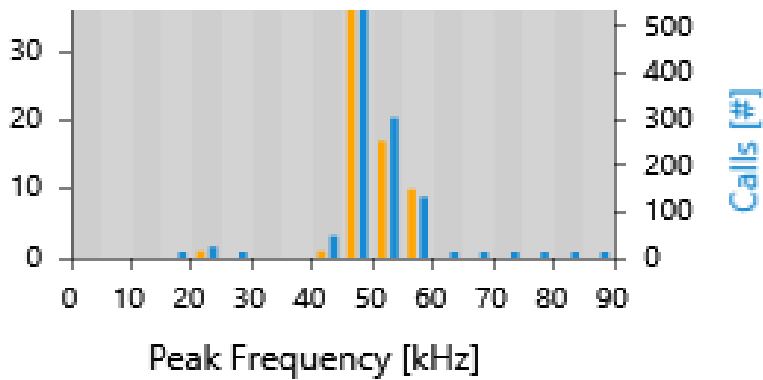
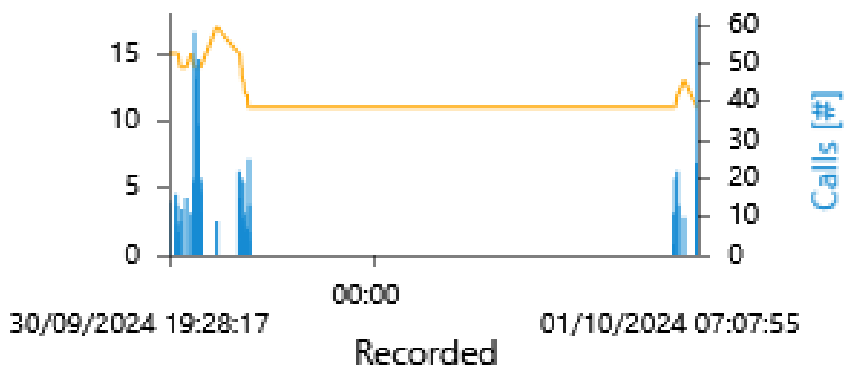
2.2 Results

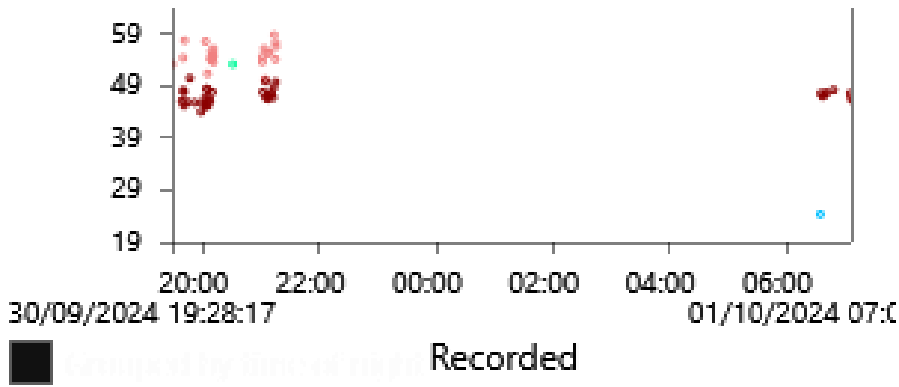
The visual daytime inspections yielded information which would aid the electronic surveying. The below photo was taken on the first floor landing, identified as a Lesser Horse shoe bat

The handheld monitor found good bat activity around the house, this was shown by the results below, with recordings to the left and calls made to the right, with significant Common pipistrelle activity, followed by Soprano pipistrelle activity. There were no lesser horseshoe bats recorded with this filter on.

● Nyctalus leisleri	1	3	
● Myotis daubenton	1	9	
● Pipistrellus pygma	26	433	
● Pipistrellus pipistræ	37	625	

The colour codes on the above legend are used for this distribution map.





- This survey confirmed the presence of 4 species of bats around the site at 50% quality recording
- Common pipistrelle were the species most recorded
- A Common Pipistrelle and a Soprano pipistrelle were recorded exiting the roof space on the evening survey.
- At the dawn survey two pipistrelle species returned to the chimney of the house

These calls were made surrounding the structure. When all recordings are included unfiltered the following results were monitored ;

● Rhinolophus hipposideros	1	3
● Plecotus auritus	1	4
● Myotis daubentonii	1	9
● Nyctalus leisleri	7	18
● Pipistrellus pygmaeus	32	476
● Pipistrellus pipistrellus	50	760



- In total 6 bat species were monitored around the site, these other species were commuting or foraging. Soprano and Common Pipistrelle, Leisler bats, Brown long-eared bat, Lesser horseshoe and Daubenton's bat were all utilising the site.
- There was only one recording each made for these last three bat species.

3. Evaluation

A dusk survey and a static survey in late September, early October 2024 confirmed bats utilizing the structure and the adjoining hedgerows that bound the site to the West, East, South and North. Throughout both surveys Common Pipistrelle were the most prevalent species, Soprano pipistrelles were the second most common recorded. Leisler bats were the third most prevalent.

Two Common Pipistrelle were using the roof around the flashing of the two chimneys as a transitional roost. As these were monitored on the dusk survey, it was decided to return to undertake a dawn survey. Two Common pipistrelle bats returned to roost before sunrise.

There is always some limitations in concluding use of a building based on a few surveys, with one surveyor and a fixed static survey conducted, as well as a hand-held Batlogger, any bats present were recorded. The lack of droppings and the extent of cobwebs throughout the building suggested no bat use of the house internally. The sealed and well maintained exterior did not create an ease of access for bat species.

The unusual design of the chimneys which are almost joined at the roof and flare internally to create space for a stairwell, was where the bats emerged and returned to. The chimneys are moving and internally are not sealed. Water is entering the house from this movement. The Engineer stated that they were compromised and would have to be removed. The chimneys could not be inspected

closely on the survey. They would seem to be providing roost space for two individuals on a temporary basis.

In light of these findings under Regulation 54 of the European Communities (Birds and Habitats) Regulations 2011 (S.I. 477 of 2011) a derogation licence will be required in order to proceed with the demolition works and renovations and comply with the requirements of the provisions of Regulations 51, 52 and 53 of the same Regulations.

3.1 Recommendations

The surveys undertaken demonstrate the significance of the local landscape in particular the existing hedgerows and treelines that bound the site, these habitats are significant and important linear features for the local bat community and are of high value for foraging and commuting bats.

There are a variety of mature broadleaved treelines surrounding the site. These are to be maintained.

With reference to the Bat Mitigation Guidelines the unmitigated effect of the potential impacts associated with the works will represent a certain impact on Common Pipistrelle bats. There being no signs of a maternity or winter roost, it is supposed that the house in its unused state is providing temporary roosts. With the house being brought back to habitable condition it is suggested that these effects could be mitigated against, depending on the outcome of an application for a derogation licence. The present location of a temporary roost is in two compromised chimney stacks, which are potentially dangerous as these are moving and are in need of removal. It is proposed to establish other temporary roost locations within the site.

3.2 Mitigation

The creation of a roost location utilising bat boxes, or a constructed roost under the eaves of this building along with a dark corridor along the northern and eastern boundary of the site at the back of the garage is proposed. This may require slightly extending the roof overhang, to allow the installation of Woodcrete bat boxes or the fitting of a constructed roost. This would be dependent on the granting of a derogation licence. The Chimney works would proceed when the hibernation period has begun, generally in November, as insect activity will have ceased and there would be no need for bats to utilise the transitional roost that is presently in place in the chimneys of this house.

Access, size of roost space and structure

- Crevice-dwelling bats can crawl into their roosts via small gaps in the range of 15–20mm high (h) by 20–50mm wide (w). The roost area should maintain a crevice of this approximate size that the bats can roost between. The area this roost provision covers can be small but about 1m² would be useful for summer nursery roosts. The height of entry can be from 2–7m.
- Roof-void dwelling bats require similar dimensions to access the roost but typically need timber joists or beams on which to roost. The height of entry can be from 2–7m.

- Bats needing a flying area require the same access dimension as mentioned above, 15–20mm (h) x 20–50mm (w) situated over 2m in height. The roosting area should not be trussed, to allow flight, and should ideally be about 2.8m in height and 5m in length and width
- Horseshoe bats need a larger access so that they can fly (instead of crawl) directly into the roost. Lesser horseshoe bats need an access of 300mm (w) x 200mm (h), while greater horseshoe bats need 400mm (w) x 300mm (h). As above, the roosting area should not be trussed, to allow flight, and should ideally be about 2.8m in height and 5m in length and width.

The access point should be constructed to give these dimensions 30cm x 20cm constructed as a hopper slate or as a slight dormer in the roof.

Connectivity to the larger landscape would also be important, this is created by the maintenance of linear features such as tree-line or hedgerows, ideally this access gap should be under 5m wide, as some bat species do not cross open non-linear feature areas.

The best times for building operations in a bat landscape, are spring and autumn. At these times of the year the bats will be able to feed most nights and may be active or torpid during the day, depending on weather conditions, but will not have begun giving birth. Active bats will usually keep out of the way of any operations.

Timber treatment should use appropriate treatments that are not damaging to mammals, see the following guidance: Bats & Pesticides: Guidance Notes for Planners, engineers, architects, pest control companies and developers (Bat Conservation Ireland 2014).

It would be suggested that a the vegetation on the boundaries of the house be maintained, as well as being enhanced with the inclusion of pollinator friendly plant species.. This would aid passage through to the larger countryside. Lesser horse shoe bats do forage up to 2.5km from roosts, increasing connectivity through the landscape would be an important way to access suitable habitat for this species.

The specific foraging sites favoured by this species of bat are broadleaved woodland and riparian vegetation. There is a positive association for a number of bats including Lesser horseshoe, between the extent and proximity of broadleaved woodland and roost locations. Having such woodland to shelter, screen and provide foraging for the bats utilising the landscape is of considerable importance.

Hedgerows can also be both a barrier to disturbance and a screen for any light or background noise. The management of the hedgerow for its stated objectives is of importance. It should exhibit the following in terms of creating beneficial conditions for bats.

The hedge should be wide and tall (at least 2.5m) comprising native species and ideally pollinating plants. To add the screening effect of the hedge, if needed, it is thought to include holly at a relatively high density giving year round screening of the development. Willows and blackthorn give early season nectar for insects, hawthorn, bramble and rose give summer nectar and ivy gives autumn nectar. These species also produce berries and create habitat for an number of species of insect and birds.

Cutting sections of the hedge in rotation in late winter would benefit wildlife, as opposed to routine annual indiscriminate cutting.

Commuting Routes

Hedgerows are a good way to link foraging and commuting routes for bat species. When there are standard trees present it can increase the abundance and diversity of moths as prey. Due to the increasing incidence of ash-die-back disease there will be older standard trees that will die in the coming years. Oak trees planted in tree guards to prevent browsing by deer, would be a suitable species on heavier soils, as would alder or birch. Holly, wild cherry, elder, crab apple and hazel would be suited to the lighter soils. Oak is an attractive tree for lesser horseshoe bats, in terms of foraging. There also stone wall features within the site, these walls have ivy and bramble and also act as commuting and foraging routes.

The linear features present consisting of stone walls, hedgerows and tree-lines are all important for bat species commuting and foraging. The removal or loss of these features therefore have the potential to affect local bat species. Very small amounts of hedgerow/treeline removal is proposed as part of this development. A suitable mitigation measure, to ensure minimum disturbance to bat species would be the enhancement of hedgerows throughout the site. The opportunity to provide additional ecologically appropriate planting and provide for pollinator friendly planting in line with the All-Ireland Pollinator Plan (particularly night scented or moth friendly planting) could provide additional foraging resources for bat species within the area. It would also increase commuting pathways.

Lighting

The reduction and minimising of additional light and light pollution is a key mitigation measure, in addition to bat friendly lighting structures and bulbs. The avoidance of additional light or light spill on the field boundaries is of particular importance in this regard, with particular attention paid to the western boundary – the provision and maintenance of a dark corridor along this feature is recommended.

Guiding principles in design should be that lighting should only be erected where it is needed, in use for the required time that it will be utilised and only at levels that enhance visibility. Any permanent lighting without timers or sensors should not be included in the lighting design for this development in this sensitive bat landscape.

Using the minimal lighting required for safety, there should be no excessive lighting, both in time duration and spatial spread. Never illuminate commuting or foraging or roost areas. Minimise light spill and do not utilise bare bulbs or any up lighting. The linear features formed by the boundary hedgerows and tree-lines are important for bats commuting and foraging. The retention and enhancement of these features is an important element of this report.

Light should be spread below or near the horizontal - flat cut off lanterns and shaded down lighting achieve this.

Narrow spectrum bulbs should be used, this reduces the amount of species affected by artificial lighting. Light should minimise the amount of ultra-violet and white and blue wavelengths in the light spectrum. This avoids attracting insects that might otherwise be in foraging areas and available as prey.

Lights should peak higher than 550nm, glass shading covers can be used to filter UV light. White LED lighting does not emit UV, the glare off these can disturb some bat species.

Avoid using reflective surfaces under lights, such as pale flagstones or limestone chips.

No light should be directed towards hedgerow vegetation.

It is important to note that the winter when most lighting is required is also the dormant period for bat activity.

Lighting will be concentrated on the two access points to the dwelling. These lights should be utilising the design approaches outlined above and should operate on sensors. There will be no permanent lighting or light spill on vegetation associated with commuting, foraging routes.

Lighting factors are important considerations in planning for bat activity generally the following principles should be observed.

- Only illuminate what needs to have light directed upon, for instance a pathway, no up lighting or floodlighting so as to reduce lighting spill onto vegetation or trees.
- Reduce light levels.
- Reduce the height of lighting to enable bats to commute and forage above the height of the lighting installed.
- Shielding of lighting, this allows buffers to be placed between natural features or flight paths.
- The type of lighting employed: warm coloured light is preferable to colder types, the illumination of UV light is recommended. LED lighting has no UV.
- Lighting controls can be utilised to reduce the timing of active lamination, these could be as motion sensors or simply reducing lighting intensity at dusk/dawn, when bats may be commuting and foraging.

4. Conclusion

Incorporating the above mitigation measures at the design stage would benefit wildlife in general around the site, as well as bat species. While habitat loss is an important driver of declining wildlife in Ireland, Climate change is also an important driver that needs to be addressed across all sectors, especially in design.

The provision of temporary roosts in the garage/office/gym building would provide opportunity for roost spaces to be established within the site following the works being undertaken on the two chimneys.

The maintenance of the commuting and foraging corridors and provision of an appropriate buffer around these linear features should maintain the overall connectivity within the wider landscape.

The surveys have shown the active use of the site and its landscape features that bound this site for foraging and commuting; the mature trees may also support roosting bats at different times of the

year. The above mitigation measures are outlined to reduce the potential adverse effects on local populations of bat species, protect known roosts and increase available habitat.

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Identifying guide to Ireland's Bats Bat Conservation Ireland

National Biodiversity Data Centre

Exploring Irish mammals