



Clondegad, Ballynacally, Ennis Co. Clare Bat Survey August 2024

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Introduction to application

Planning Ref. No: P24/173

APPLICATION. Permission for development which will consist of;

Permission to renovate an existing dwelling which is a protected structure (RPS No. 037) demolish an existing two storey extension constructed to the rear of the dwelling, construct a replacement three storey extension. and to install a replacement effluent treatment system, all with associated site works, and accessed by means of an existing entrance and driveway from the public road.

This is a Protected Structure.

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

It is considered that the information submitted with this application is insufficient to enable the Planning Authority make a complete planning assessment of the proposal. In order to proceed with the application therefore, further information/revised plans are required as follows:

1. With regard to the protection of bat species, having regard to the nature and age of the existing onsite dwelling, its location within a wooded landscape, and in close proximity to the Owenslieve River the Planning Authority considers that there is high potential that the house is used by bats. All bat species are protected by the Wildlife Acts of 1976-2021 and are listed. on annex IV of the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of **wild** fauna and flora). Therefore, you are requested to submit the following:

(a) A bat survey carried out by a qualified ecologist at the appropriate time of year.

(b) You are advised that a derogation licence from the Department of Housing, Local Government and Heritage (DoHLGH) is required for any proposals which would either damage or destroy a bat roost. The recent Court of Justice of the European Union (CJEU) judgement (Hellfire Massey C166/22)¹ held that derogation licences should be applied for and granted if needed, before planning consent is considered so that the planning consent. reflects the need to comply with Article 12 of the Habitats Directive 92/43/EEC. Therefore, in the instance where the proposal would result in damage to or the destruction of a bat roost, you are requested to submit a derogation licence from the DOHLGH.

(c) Details of the proposed external lighting to serve the proposed development and an assessment of the potential for disturbance to bat species arising from same (by a suitably qualified ecologist). You are advised that all external lighting should be kept to a minimum and should have regard to Bat Conservation Ireland Guidelines.

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 compiled to address issues which would concern the Conservation Objectives of the population of Bat species utilising Clondegad House for foraging, roosting and commuting. Due to the potential disturbance of the development and its proximity to an important bat roosts, 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.

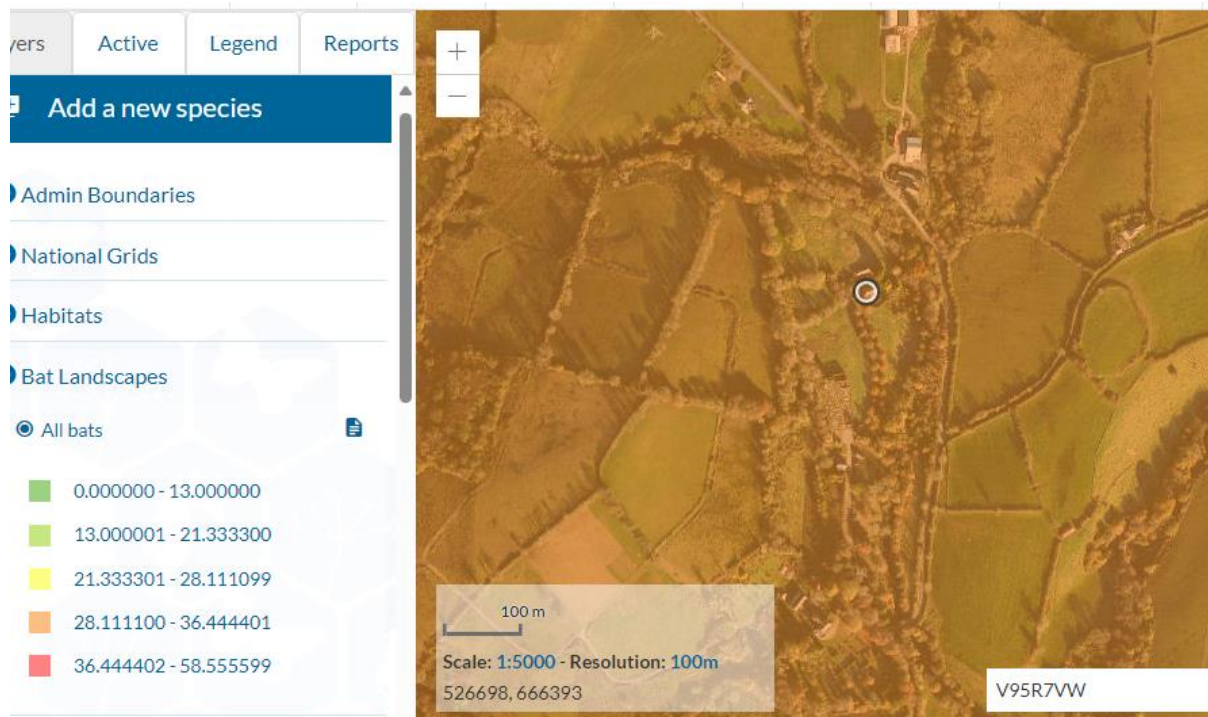
1.3 Desktop research.

Clondegad has had a various history as any historic site of its age and extent would have. 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 in 2012.

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 . All 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*)
- Nathusius Pipistrelle (*Pipistrellus nathusii*)

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 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)

Arrow showing approx. development location



1.4 Lesser Horseshoe Bats

There is a summer maternity roosts for lesser horseshoe bats within Clondegad House Attic above the stairwell, there is observed bat activity throughout parts of the building. Monitoring throughout the site surveyed Lesser Horseshoe bats utilizing habitats throughout the site. 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.

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
- WL1: Hedgerows
- WS1: A mature treeline
- WD1: Mixed broadleaved woodland
- CW2: Tidal rivers
- CM1: Lower saltmarsh
- WN5: Riparian woodland

- WN1:Oak birch-holly woodland
- WN2:Oak ash hazel woodland

There is mature broadleaved woodland woods containing Ash, Beech, Sycamore, Oak and Birch, to the north and extensively to the west. There are estate buildings, former church and modern farm buildings to the south, with access and hard standings. Improved agricultural grassland with extensively managed grass lands present.

The Shannon Estuary is a Special Protected Area and a Special Area of Conservation covered under the EU Habitats Directive. This is located to the south of the site .



Figure 3 showing house with pin in relation to landscape features.

The grassland and artificial surfaces within the site do not provide suitable foraging habitat for bats; the hedgerows and in particular the surrounding riparian and mixed woodland do represent suitable commuting and foraging habitat for all bats. 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 mixed woodland and some open grassland. The house is a stone structure with a slate roof along with concrete and flat roof extension. There is a two stories over a basement. There are several slated stone built buildings to the back of the house. These could have utility for bat species.

2.1 Bat Detector Surveys methodology

Monitoring of the house started in late August 2024 for this research. A daytime inspection of the house was undertaken. As mentioned, 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 the open windows around the house could potentially be utilised by bats species. A missing glass pane on the first-floor bathroom was also considered to be utilised by bat species.

Such evidence includes:

- The presence of droppings within the building and on surfaces around the exterior of the building
- 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 28th of August 2024 on the window sill on the front landing below where the Lesser Horse shoe bat maternity roost was located. Bat droppings were observed throughout the stairwell across all three stories. This monitor was left in place for a number of days.

The results are below and discussed.

A dusk survey was conducted over the 28th of August 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

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 detected at over 100 m distance were filtered out. This was to enable to ascertain bats 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 August 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. The late spring marked by heavy rains and a cold summer could possibly have delayed some aspects of bat annual cycles, especially with heavy rainfall and limited insect populations. The site was in a quiet part of the countryside with good landscape features present for bats, overall, there was moderate levels of human activity. There were few limitations for this survey. A further survey was undertaken between the 28th and 31st of August 2024 where the static monitor collected data on bat activity.

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 Horseshoe bat



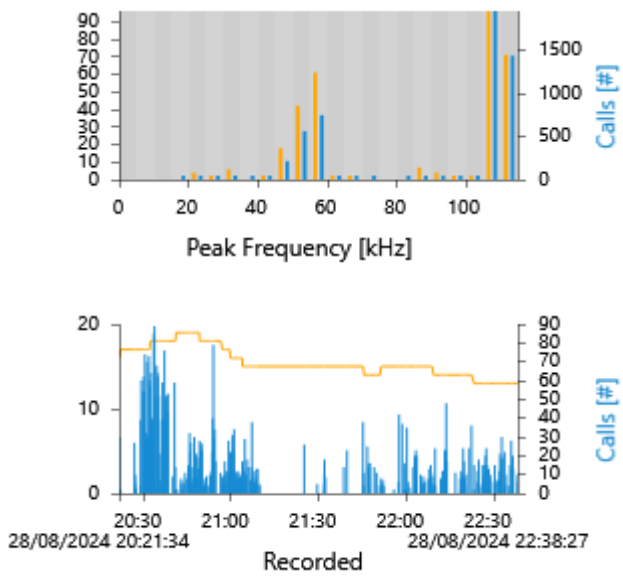
Photo 1. Dead Lesser horseshoe bat found in house on the stairwell.

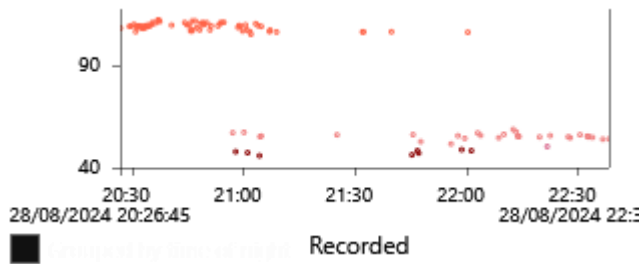
The handheld monitor found good bat activity around the house, this was shown by the results below, with recordings to the left and calls made to the right, with significant Lesser Horseshoe bat (*Rhinolophus hipposideros*) activity recorded. There were 104 recordings of bats within 50 m of the monitor from 4 species of bat. 65 of these were Lesser horseshoe bats.

● Plecotus auritus	1	24	
● Pipistrellus pipistrellus	8	180	
● Pipistrellus pygmaeus	30	604	
● Rhinolophus hipposideros	65	2142	

Soprano pipistrelles (*Pipistrellus pygmaeus*) were the next most frequent bats recorded with 30 recordings.

The August handheld survey suggested use of the structure by these 2 species. The colour codes on the above legend are used for this distribution map.





- This survey confirmed the presence of 4 species of bats utilising the site around the house. 4 species of bat were recorded utilising the area within 100 m of the site
- Lesser Horseshoe bats were the most recorded within 100 m of the structure.
- 363 recordings of Lesser horse shoe bats were made, with a total of 4535 calls.
- There were 393 recordings made within 100m of the structure over the period that the static monitor was in place,

These calls were made surrounding the structure.

- In total 5 bat species were monitored around the site; these other species were commuting or foraging. Soprano and Common Pipistrelle, Myotis nattereri, Lesser horseshoe and Leisler bats were all utilising the site, only Lesser Horseshoe bats were recorded utilising the House.
- This survey as it was remote could not confirm bats emerging or entering the structure. However the evidence of droppings within the house and the number of recordings at 0-10 m away from the monitor meant that there was use of the structure by Lesser horseshoe bats during the monitors recording period.

August static monitor survey

This survey was undertaken between the evening of the 28th of August 2024 and the evening of 31/08/24.

This survey was undertaken using a Batlogger S2. It was placed on the landing window sill at the front of the house on the first floor, directly underneath the Lesser horseshoe bat maternity roost.

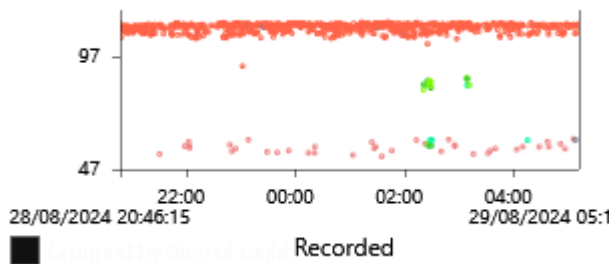
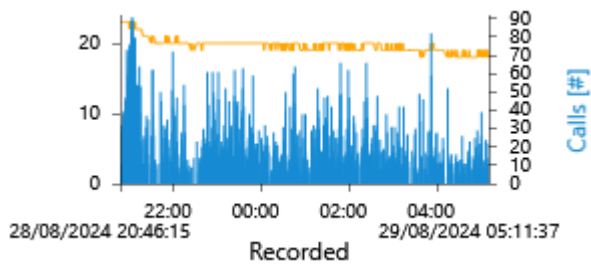
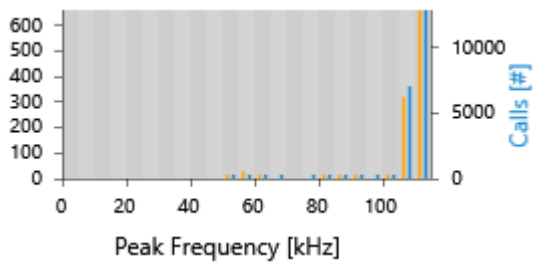
There was a considerable amount of data collected over the time the recorder was in situ. There were 3,294 recordings made with 33,034 calls within those recordings.

To filter this data, a filter was utilised filtering out all recordings under 99% recording quality.

These were the following results

Tables Survey Results

● Myotis daubenton	4	28
● None	6	126
● Myotis nattereri	8	57
● Myotis mystacinus	9	64
● Pipistrellus pygma	39	327
● Rhinolophus hippo	978	19952



3. Evaluation

A dusk survey and a static survey in late August 2024 confirmed bats utilizing the structure and the adjoining hedgerows/woodlands that bound the site to the West, East, South and North. Throughout both surveys Lesser horse-shoe bats were the most prevalent species, Soprano pipistrelles were the second most common recorded. Lesser horse shoe bats were utilizing the attic of the house as a maternity roost. Access and visibility were poor about 30 individuals of young and breeding females were counted.

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 amount of droppings throughout the building suggested high bat use of the house. The ease of access to the attic space was made easier for this species by the opening of the windows which was done in May of 2024, on the advice of the Conservation Architect. Prior to this access seemed to be through a missing window pane in a bathroom at the back of the house on the first floor.

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 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 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. The riparian vegetation along the river is very suitable bat habitat .

There are a variety of mature broadleaved treelines surrounding the site. There are a diversity of wet-land and dry-land habitats with extensive agricultural intensity surrounding the site. The woodland habitat and residues from agricultural activity meant good insect life.

The counting of about thirty Lesser horseshoe bats during the evening survey, emerging at dusk , would suggest that this site is utilised intensely by Lesser horse shoe bats, these like to roost in large colonies preferring sheltered valleys with deciduous woodland. Summer roosts are usually occupied from April. The young are usually born between mid-June to mid-July. Due to the wet and late spring it is likely that young will be more likely born in July. The young are left in the roosts, while mothers forage, until they can fly at about six weeks of age. On the 31st of August the roost was less populated than 3 nights previously, the maternity roost would be in its last weeks of utility to bats.

With reference to the Bat Mitigation Guidelines the unmitigated effect of the potential impacts associated with the works will represent a certain impact on Lesser horse shoe bats. It is suggested that these effects could be mitigated against, depending on the outcome of an application for a derogation licence.

3.2 Mitigation

The creation of a roost location within the existing shed loft is proposed to provide and preserve the present maternity roost space for lesser horse shoe bats surveyed. This would require adaptation of the new roof, by the installation of a covered entrance to the attic space in the slates. This would be dependent on the granting of a derogation licence. The roof works would proceed when the maternity roost was empty and doors and windows would be shut at this stage. Roofing works could proceed and be completed for next season. The adjoining sheds are suitable for bat roosts, there are to be no works associated with these structures. It is envisaged to maintain access to the roof spaces in these sheds.

Bat loft design

For Lesser Horse shoe bats, who fly to roost, access to the roost is important, Ideally the design should take into account additional bat species that could use the loft, not just the species whose roost is being possibly impacted upon. It is envisaged to place a Dormer or hopper slate access point on the east side of the roof facing the river. As lesser horse shoe bats are generally found roosting on the ridge beam or the apex of a roof space it is important to allow access to these areas. Warm air naturally rises to the apex of the roof, and this provides ideal temperatures for the lesser horseshoe bats. However, large open roof spaces encourage draughts and even the slightest draughts will mix warm and cool air, lowering the roost temperature and reducing its suitability. To overcome this air can be trapped to reduce draughts and maintain warm temperatures. Triangular wooden panels are used to make an airtight seal against the rafters and the wood is painted matt black to further encourage heat retention.

These features ensure that the roost provides a range of microclimates, cooler areas for when summer temperatures get too high, and warmer areas during cooler weather. This is essential to meet the varying needs of the colony. The warmest areas are most critical for the pregnant and lactating females.

Research revealed that all non-woven roofing membranes, produced using spun-bond filaments could pose a serious threat to bats as a result of entanglement, traditional felt is more suitable and robust for the sharp claws of the bats.

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 points should be constructed to give these dimensions 30cm x 20cm.

Connectivity to the larger landscape is 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 the vegetation on the river side of the house be maintained. This would aid passage from the roost 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.

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.

The linear features consisting of stone walls, hedgerows, groves 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, as this is a long narrow site. Some screening could be included by potted plants or space boarding around the two access areas.

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 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