



Minogue & Associates
ENVIRONMENTAL CONSULTANCY

31st October 2024

APPLICATION FOR A DEROGATION LICENSE BAT ROOST, BAUNALOCKA, RAHEEN, CO LIMERICK

Regulation 54 of the European Communities (Birds and Habitats) Regulations 2011 (S.I. 477 of 2011) for a derogation licence from complying with the requirements of the provisions of Regulations 51, 52 and 53 of the same Regulations

Minogue Environmental Consulting Ltd.

1 Contents

1	Introduction	3
1.1	Scope of Works	3
1.2	Justification for Proposed Works and need for derogation license	3
1.3	Equipment	5
1.3.1	Bat roost suitability	Error! Bookmark not defined.
1.3.2	Potential Roost Features of trees	Error! Bookmark not defined.
2	Results	7
2.1	Site overview	Error! Bookmark not defined.
2.2	Desktop results	Error! Bookmark not defined.
2.3	Visual inspection	Error! Bookmark not defined.
2.4	Emergence survey 5 th August 2024.	Error! Bookmark not defined.
2.5	Evaluation	Error! Bookmark not defined.
3	Potential Impacts in the absence of mitigation	13
3.1	Introduction	13
3.2	Disturbance	Error! Bookmark not defined.
3.3	Operation	Error! Bookmark not defined.
3.4	Impacts to the Bat Roost	13
3.5	Mitigation, Compensation and Enhancement	13
3.5.1	Timing of works and activity survey	13
3.5.2	Roost provision – bat tiles	13
3.5.3	Lighting	14
3.5.4	Monitoring	15
3.6	Conclusion	15
	References	17

This report has been prepared by Minogue Environmental Consulting Ltd with all reasonable skill, care and diligence. Information report herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is prepared for private client and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk

1 Introduction

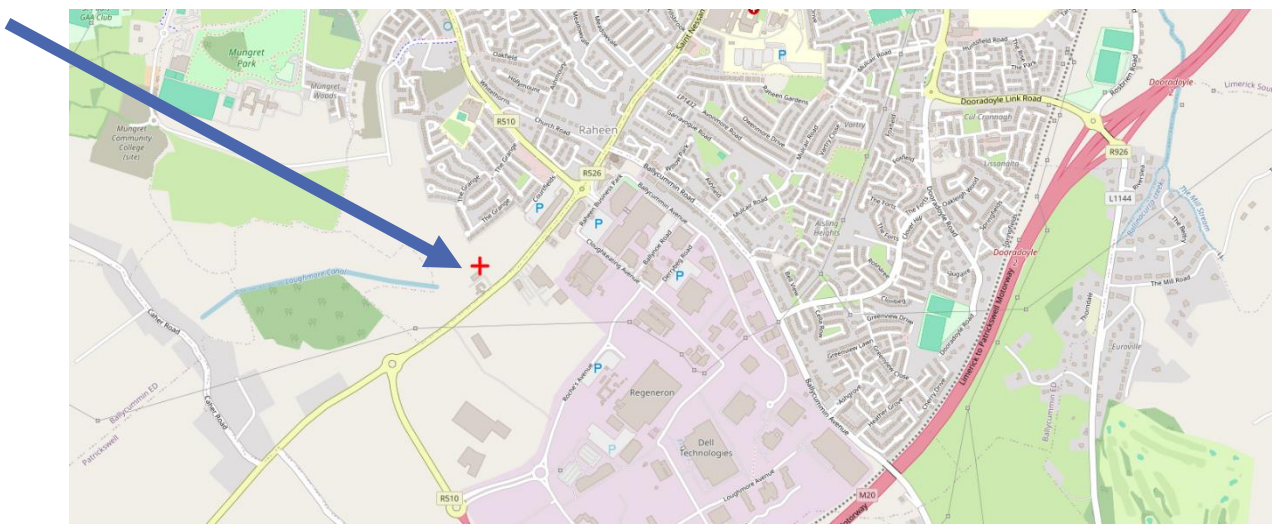
Minogue Environmental Consulting (MEC) Ltd were commissioned by Rockspring Ltd to undertake a bat survey on an a number of sheds associated with a proposed residential development on residential zoned lands at Baunalocka, Raheen Co. Limerick.

The objective of the survey was to determine presence or absence of bats roosting in the structures as the project proposed to demolish 4 structures, three are modern sheds of galvanised construction; the fourth and focus of this application is an older traditional farm shed associated with Loughmore House, a protected structure that is being retained.

Following one dusk emergence survey and inspection of interior and exterior, the survey results suggest that an individual common pipistrelle bats is present and roosting within the building, as it was recorded and observed exiting the rear of the building. The interior inspection did not identify roosting bats or evidence of bats in high numbers ie via presence of droppings etc.

Therefore, MEC Ltd, on behalf of Gerry O Sullivan (Rockspring Developments Ltd are submitting this application under Regulation 54 of the European Communities (Birds and Habitats) Regulations 2011 (S.I. 477 of 2011) for a derogation licence from complying with the requirements of the provisions of Regulations 51, 52 and 53 of the same Regulations. Figure 1.1. presents the project at Baunalocka, Raheen, Co Limerick, currently in use as Empire Car Sales (52.625067440588516, - 8.667915588554463)

FIGURE 1-1 SITE LOCATION (NBDC)



1.1 Scope of Works

A residential development comprising 58 no. apartments in 2no. five storey blocks,

Change of use and renovation of Loughmore House, which is a protected structure (RPS registration no. 1672) to a community building, demolition of fire damaged workshop building including removal of concrete apron and ancillary drainage, demolition of 2no. out buildings beside Loughmore House, demolition of shed containing an office, construction of a pumping station with a pumped rising main connection to existing infrastructure at the Raheen Roundabout along with the construction of all associated roads, pavements, car parking, bicycle parking shelters, street lighting, foul and surface

water drainage and all ancillary site development works on lands at Baunacloka, Raheen, Co. Limerick. The planning application is accompanied by an NIS (Natura Impact Statement).

1.2 Justification for Proposed Works and need for derogation license

This Section addresses the requirement for the derogation to be issued only under specific qualifying circumstances as set out in Regulation 54(2).

Alternatives considered for the development relate to the retention of the older shed as part of the overall development. The reason this is excluded is on design and feasibility grounds. The protected structure of Loughmore House is being retained and access to same as a community centre plus provision of residential units in line with the land use zoning of the Limerick Development Plan 2022 - 2028 does not make the retention of this shed viable.

Key mitigation measure relates to timing of works to avoid the bat activity season subject to planning being approved, provision of woodcrete bat boxes on Loughmore House western elevation, adjacent to linear woodland habitat and additional landscape planting as part of the project.

The derogation is being sought on the basis that there are no satisfactory alternatives to undertaking these works and these works 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 building during the time of survey is estimated to support between one individual bat and whilst though the numbers may increase or decrease over the summer activity period the absence of droppings found do not indicate a significant roost size.

See image below showing front and rear elevation of the shed; there is currently high levels of nighttime security lighting associated with the site and at the front and rear of the shed.





The following surveys were undertaken:

- Emergence bat survey 19th August 2024
- Internal and external inspection of buildings 19th August 2024

Table 2.1 presents details on the surveys.

TABLE 1-1 BAT SURVEY DATES CONDITIONS AND SUNSET

Date	Sunset/sunrise duration of survey	Weather conditions
19th August 2024- roost potential survey, emergent survey and transect survey	Sunset: 20:51 20:35 to 22:55	Temperature at sunset: 15C, Relative humidity 69% No breeze

1.3 Equipment

Ruth Minogue led the survey effort with one other surveyor. The team used the following survey equipment:

- Elekon Batlogger M2 x 2
- Torches
- Thermal imaging camera.

Results were analysed using Elekon Batexplorer software. Following the visual inspection the surveyors were positioned either side of the building allowing views of the long elevation and gable side. Bats were identified in the field to species level, *Myotis* sp. were identified to family level. 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. The surveyors stayed in these locations for the duration of the survey.

1.3.1 Preliminary roost assessment

Four buildings on site are proposed for demolition, a former commercial unit that has been burnt down and has no roofing and two sheds close to Loughmore House, a protected structure; one is modern and an older traditional shed comprising slate tiles and an upper floor that is used for storage, the downstairs in use currently as a workshop.

An external daylight survey of the exterior of the building was undertaken on the 19th August 2024 to identify any potential roost features and to look for signs of roost activity such as presence of bats, dropping and evidence of staining as well as insect remains. External inspections of potential roost features were carried out to survey any potential roosting spaces or entrances. The thermal camera was deployed to assess for any temperature changes within the buildings which could indicate roosting bats. The inspection survey was conducted in accordance with the Bat Conservation Trust (BCT) methodology (Collins, 2023). The building was investigated and allocated a potential roost classification using criteria in Collins et al (2023).

The building and habitats were then assigned a level of suitability for roosting bats as outlined in Table 2.2 below.

Table 1-2 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the present of habitat features within the landscape, to be applied using professional judgement(Collins, 2023)

Potential Suitability	Roosting habitats in structures	Potential flight paths and foraging habitats
None	No features likely to be used by any roosting bats at any time of year (ie complete absence of crevices/suitable shelter at all ground /underground levels)	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (ie no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats)
Negligible	No obvious habitat features on site likely to be used by roosting bats; however a small amount of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight paths or by foraging bats; however, a small element of uncertainty remains in order to account for non -standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (ie. Unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats).	Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated. Ie; not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their	Continuous habitat connected to the wider landscape that could be used by bats for flight-

	space, shelter, protection, conditions and surrounding habitat but are unlikely to support a roost of high conservation status (with respect to roost type only such as maternity or hibernation- the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts eg maternity or class cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly for bats for flight paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Whilst the hedgerow at the eastern boundary will be trimmed, no intervention is proposed for the more intact, older and less disturbed hedgerow along the east.

2 Results

The development site was surveyed on July 5th 2024 by Openfield Ecological Services¹ in accordance with best practice standards (Smith et al., 2011). The following description of habitats on site is from the accompanying Natura Impact Statement prepared by Openfield Ecological Services. Habitats are described here as per standard classifications (Fossitt, 2000).

The survey found that the proposed development site is predominantly composed of buildings and artificial surfaces – BL with minimal vegetation. Those species that are present are ruderal in nature and include saplings of Willow *Salix* sp., Willowherbs *Epilobium* sp. and the non-native Butterfly Bush *Buddleja davidii*.

Heaps of spoil and bare ground – ED2 to the north of this include Thistles *Cirsium* sp., Clovers *Trifolium* sp. and False Oat *Arrhenatherum elatius*.

A band of scrub – WS1 to the north of this again is composed of Blackthorn *Prunus spinosa*, Elder *Sambucus nigra*, Hawthorn *Crataegus monogyna* and Nettle *Urtica dioica*. The field to the north and west is improved agricultural grassland – GA1.

Boundary features to the east and west include native hedgerows – WL1 with Elm *Ulmus* sp., Elder, Brambles *Rubus fruticosus* agg., Blackthorn, Ash *Fraxinus excelsior* and Hawthorn.

Hedgerows and scrub are habitats of local biodiversity value but are not associated with any which is listed on Annex I of the Habitats Directive or species listed on its Annex II, or Annex I of the Birds

¹ AA Screening Report and Natura Impact Statement for Rockspring Development Ltd, Openfield Ecological Services 2024.

Directive. There are no water courses on, or directly adjacent to, the development site, no drainage ditches, bodies of standing water or habitats which could be described as wetlands. Habitats on the development site are not suitable for wetland, wading or wintering birds which are associated with the Shannon Estuary.

- Desktop results

A desktop review of publicly available relevant data was undertaken on the National Biodiversity Data Centre (NBDC) and National Parks & Wildlife Service (NPWS) websites. The National Biodiversity Data Centre was reviewed for relevant data, specifically

- i) existing species records for the 2km square in which the study site is located R55L and
- ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat Landscapes for Ireland (Lundy et al. 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

- Designated Sites

The nearest SAC is Lower River Shannon SAC (002165) which lies within 5km of the site. The nearest designated site for Lesser Horseshoe Bats is Curraghchase SAC over 13km west of the project site. The project site is outside the core sustenance zone for Lesser Horseshoe Bat roosts.

- Bat Records

National Biodiversity Database was searched on 10th of September for 10km tetrad (R55) and the following records were returned:

Species name

- Brown Long-eared Bat (*Plecotus auritus*)
- Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*)
- Daubenton's Bat (*Myotis daubentonii*)
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- Lesser Noctule (*Nyctalus leisleri*)
- Nathusius's Pipistrelle (*Pipistrellus nathusii*)
- Pipistrelle (*Pipistrellus pipistrellus sensu lato*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)

A further search of records of bat activity within 2km of the project site within the past 10 years was undertaken using species dataset from Biodiversity Ireland database and the following records were returned as shown in Table 4.1. See also Figures 4.2 and 4.3 overleaf.

Table 2-1 Records of bats within 2km of project site

Species name	Date of last record	Title of dataset	Designation
--------------	---------------------	------------------	-------------

Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	16/06/2014 2km grid , c400m south-east of our project site	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Daubenton's Bat (Myotis daubentonii)	09/06/2019 2km grid, c1800m North-East of our project site	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Soprano Pipistrelle (Pipistrellus pygmaeus)	16/06/2014 2km grid , c400m South-East of our project site	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts

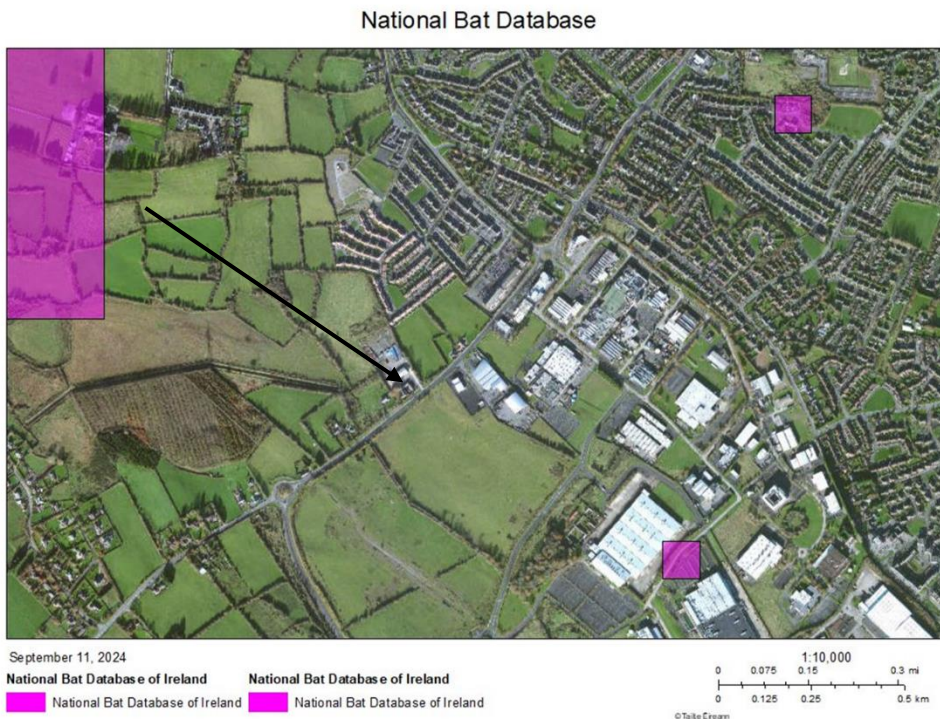
Bat Habitats

The bat habitats at landscape scale database was reviewed and this shows the project site and environs is of highest suitability (red) for all bats. See Figure 4.1 below.

Figure 2-1 Bat Landscapes suitability (BCI)



Figure 2-2 National Bat Database



- Review of planning applications in surrounding lands

A review of the EIA portal and myplan.ie was undertaken² to source any recent bat surveys or relevant information on bats in the surrounding area. The most recent related to the EIA prepared for Eli Lilly (application: 2022015) on lands directly across the regional road, south east of the project site. The relevant baseline is extracted from this EIA³ below and Figure 4.3 shows the relevant baseline with the project site indicated by red square. The neighbouring planning application that forms part of the larger masterplan lands (22-841) did not include a bat survey.

Bats
Given the characteristics of the available habitat and the availability of alternate resources, the only key ecological resource identified for bats is the hedgerow through the site which runs SE/NW which connects the woodland patch to the east of the site to the wider environment. Measures are needed to ensure the connectivity of this hedgerow is maintained as there is a known brown long eared bat roost in the built structure within this woodland. The boundary hedgerows will be maintained and the central hedgerow has a substantial gap of over 20m already. Therefore, this is not identified as a suitable connectivity pathway.

The field margins represent key foraging areas for bats – particularly with respect to the SE/NW hedgerow. Interactions with the foraging resources along this commuting route need to be considered with respect to potential impacts to bats.

All trees within the site boundary were inspected for potential bat roost features and only 1 potential bat roost was identified. However, this tree will not be removed through the development. However, considerations are required in this regard.

Figure 2-3 Extract from EIA showing bat corridors and known roost in relation to project site indicated in red square (EIS for Jacobs Engineering, 2022)



² Accessed on 29th October 2024

³ EIS for Jacob's Engineering, proposed manufacturing facility, Raheen, Co Limerick, February 2022 [View Files](#)

2.1.1 Bat roost potential of buildings.

The four buildings for demolition were evaluated for bat roost potential in line with the criteria presented in Section 2.1.2. Three were evaluated as negligible roosting potential due to construction materials, absence of gaps etc. The older shed, the focus of this application was identified as having moderate roosting potential – due to the older construction techniques, roof timbers on the first floor and access via a hatch, as well as roofing materials that afford access for bats. The shed is also quite close to the western hedgerow.

An interior visual inspection was undertaken on the building (older shed) with moderate roost potential. This involved a visual search for evidence of roosting bats and bat activity including stains, droppings, prey remains. The thermal camera was also utilised to assess any heat spots that may indicate roosting bats. Access was possible to the ground and first floor of this building. No evidence of roosting bats was found during this visual inspection.

2.1.2 Emergence survey 19th August 2024

Two surveyors undertook the emergence survey on either side of the buildings this allowed visual survey of both sides of the building identified as having moderate roosting potential.

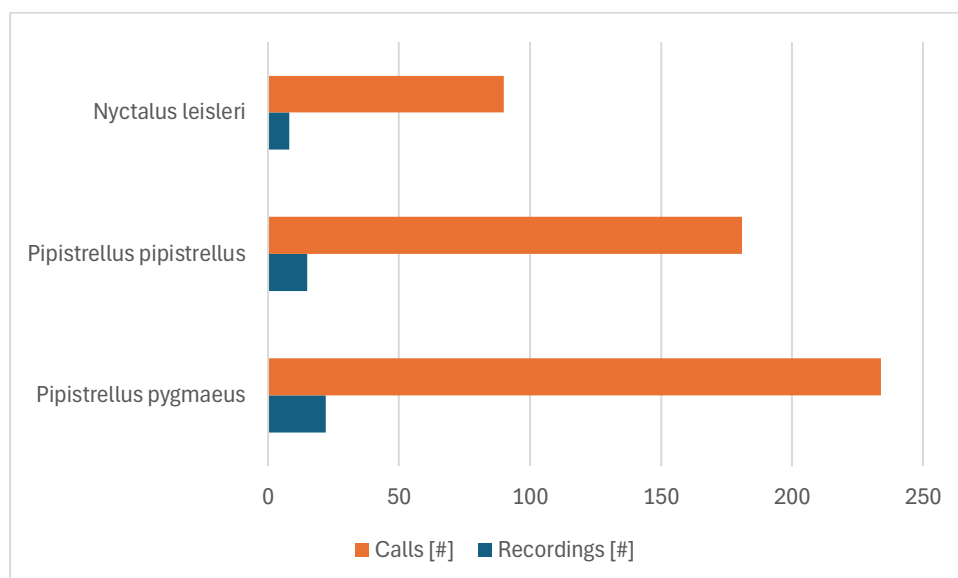
A common pipistrelle was observed flying out of the rear of the older shed at 21:22. No other bats were observed or recorded emerging from either the old shed or the other 3 buildings during the emergent survey.

2.1.3 Transect Surveys 19th August 2024

Bat activity levels were very low on the evening on 19th August with the most commonly recorded species Soprano pipistrelle (22 recordings) and Common pipistrelle (15 recordings) and low numbers of Leisler bats (8 recordings).

2.1.4 Summary of survey

Chart 4.1 Total species/ recordings/calls over emergent and transect survey of 19th August 2024.



3 Potential Impacts in the absence of mitigation

3.1 Introduction

This Section details the potential ecological impacts of the proposal to undertake works as outlined in Section 1.1. Scope of Works in the absence of mitigation. In many cases, whilst a potential negative impact is identified at this stage, mitigation measures have been proposed to ensure that no significant negative impacts to local bat populations of common pipistrelle bats occur.

3.2 Impacts to the Bat Roost

The proposed works will result in the demolition of the existing bat roost. This represents a permanent loss at local level based on the results of the bat survey.

3.3 Mitigation, Compensation and Enhancement

In order for the works to comply fully with applicable legislation and planning policy it is necessary to mitigate or compensate for any significant ecological impacts associated with the proposed works.

The timing of the works is significant to ensure disturbance to bats is avoided. The following mitigation measures are proposed as follows:

3.3.1 Timing of works and activity survey

- Demolition of the sheds should be undertaken outside the bat activity season, preferably late Autumn to early Spring (October to February)
- Immediately prior to works commencing during the above period, a pre demolition bat survey should be undertaken to assess presence/absence of bats.
- In advance of works commencing, the contractor should have a shoebox or covered cardboard box with holes at the yard. Should bats be encountered the bat should be put gently into the box (wearing gloves) and released that evening after sunset. found during roof removal, the following will be provided.
- Contact Ruth Minogue on 086 6026043.

3.3.2 Roost provision – woodcrete bat boxes

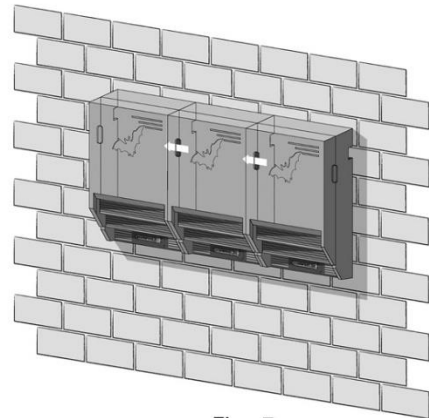
Given that Loughmore House is adjacent to the older shed, the provision of Schwegler woodcrete bat boxes is proposed for mitigation. Woodcrete boxes have the highest rate of occupation for all bat boxes. A number of woodcrete boxes are proposed for the southwestern elevations of Loughmore house.

Recommended bat boxes are Schwegler IFF bat boxes (see Figure below), maintenance free and the Schwegler Universal Bat Summer Roost 1FTH with temperature controlled hanging areas. The south western elevation is adjacent to existing woodland habitat with hedgerow and the canal leading to the Loughmore Commons Turlough pNHA. The boxes will be installed under supervision by a licensed ecologist to ensure they are located at an appropriate height a minimum of 3m and preferably away from traffic routes. Whilst common pipistrelles are reasonably tolerant of the urban environment they prefer to use darker corridors and areas that provide good foraging habitat. The western boundary of the project site is adjacent to agricultural land and provides connectivity to the wider landscape via the canal and other linear woodland habitat. Please see Figure 3.3 for bat box locations within the Landscape Plan indicated in orange circles on the south western elevation of Loughmore House.

FIGURE 3-1 SCHWEGLER IFF BAT BOX



FIGURE 3-2 SCHWEGLER UNIVERSAL BAT SUMMER ROOST 1FTH

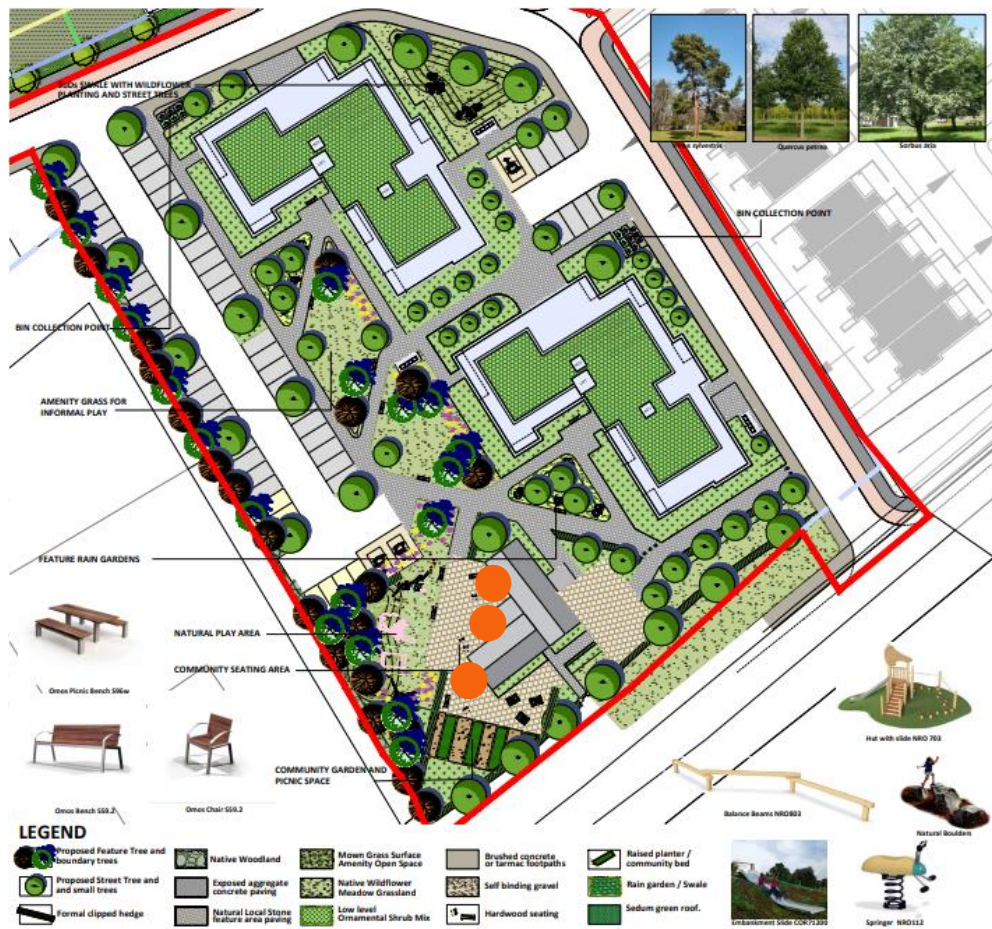


▲ Fig. 5

3.3.2.1 Landscaping

Tree along the eastern boundary will be trimmed; this will be undertaken outside the bird nesting season. No interventions are proposed for the western boundary of linear woodland habitat. Additional hedgerow planting is proposed around the western corner of the project site to the rear of Loughmore House and includes a high proportion of species on the All Ireland Pollinator Plan.

FIGURE 3-3 LANDSCAPE PLAN WITH ORANGE CIRCLES INDICATING LOCATION OF WOODCRETE BAT BOXES



3.3.3 Lighting

Avoidance of lighting and extra illumination at the roof site as this will deter bats from using the roof. The lighting plan has been designed as follows

- The outdoor lighting design has taken into account best practice, as published by the UK Bat Conservation Trust and Institute of Lighting Professionals Guidance note 08/23, in respect of mitigation strategies, to minimise the impact of outdoor lighting upon bat populations.
- LEC type lanterns of the Warm White type, have been specified, with a Colour Temperature of 3,000K as are considered least disruptive to the emergence of bats from roosts at dusk, and subsequent movement from habitats to foraging locations.
- LED lanterns do not emit any ultraviolet or infra- red radiation, this again being a desirable feature in relation to bats, in terms of causing spatial exclusion from artificial light
- Light levels have been kept as low as possible by reference to levels specified in BS EN 5489-1:2020 for trafficked roads in residential areas.
- Lanterns are of the fully cut off type with no light output above the horizontal plane.
- Dimming of the light levels to Class P4 and P5 between 23:00 hours and 06:00 hours has been specified to further reduce the environmental impact of the scheme.

As no vehicular traffic is proposed at the western part of the site, behind Loughmore House, the lighting will be in line with minimum safety requirements and designed in line with the above principles and guidance.

3.3.4 Monitoring

The above mitigation measures will require monitoring to assess the effectiveness of their implementation. It is recommended that monitoring of bat activity including emergent surveys of the Schwegler bat boxes take place 1, 3 and 5 years post construction. Light levels should be monitored post construction along the western boundary and the area adjacent to the bat boxes and corrective action taken if lux levels are too high (>5lux) or lightspill is occurring on the western boundary hedgerow.

3.4 Conclusion

The Bat surveys have recorded an individual common pipistrelle bat emerging from older shed at Baunalocka, Raheen, Co Limerick. The EU Habitats Directive 92/43/EEC states the conservation status of a species is favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status.

The presence of common pipistrelle roosting at the project site is not unexpected. This species are widespread and commonly occurring throughout the country and are “*commonly encountered during bat surveys*” (NPWS, 2019). Common pipistrelle are also “*very general in their habitat preference, foraging in woodland, riparian habitats and parkland, along linear features in farmland, and in towns and cities*” (NPWS, 2019). The national population of this species is increasing and no existing pressures or threats to the conservation status of this species at a national level have been identified. Overall, the future prospects for this species in terms of range, population and habitat are Good (NPWS, 2019).

The timing of the works will be informed by pre works bat surveys. The demolition of the shed represents a permanent loss of roosting space for the above specie, although present in very low numbers. The provision of woodcrete Schwegler boxes as specified in Section 3.2.2 in the south western elevations, adjacent to foraging and commuting habitat, with low light levels will provide alternative roost space. The provision of monitoring post works will provide for oversight as to the success of the bat boxes given bats may take a number of years to use new roosting sites.

References

References

NPWS & VWT (2022) Lesser Horseshoe Bat Species Action Plan 2022- 2026. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland

Bat mitigation guidelines Version: January 2004 A. J. Mitchell-Jones. English Nature:

Bat Workers Manual (3rd Edition) (Eds A.J. Mitchell-Jones and A. McLeish)

An investigation of the impact of development projects on bat populations: Comparing pre- and post-development bat faunas. Bat Conservation Ireland 2008

Landscape and Urban Design for bats and biodiversity. Bat Conservation Trust 2012

Bats and Buildings Bat Conservation Trust (nd).

Marnell, F. & P. Presetnik (2010): Protection of overground roosts for bats (particularly roosts in buildings of cultural heritage importance). EUROBATS Publication Series No. 4 (English version)

Bat Conservation Global evidence for the effects of interventions 2019 Edition Anna Berthinussen, Olivia C. Richardson & John D. Altringham Synopses of Conservation Evidence

Dietz, C and Kiefer, A. Bats of Britain and Europe. Bloomsbury Wildlife, London. 2014

The Vincent Wildlife Trust's Irish bat box schemes Kate McAney & Ruth Hanniffy July 2015. Vincent Wildlife Trust

P. F. Reason / Conservation Evidence (2017) 14, 52-57 52 ISSN 1758-2067 Designing a new access point for lesser horseshoe bats, Gloucestershire, U

BCI (2021a) Common pipistrelle and soprano pipistrelle. (online) Available at:

<https://www.batconservationireland.org/irish-bats/species/common-and-soprano-pipistrelle> (Accessed June 2024).

BCI (2021b) Avoidance, Mitigation and Compensation. (online) Available at: Avoidance, Mitigation & Compensation- Buildings, planning and development- Bat Conservation Trust (bats.org.uk) (Accessed June 2024).

BCI (2021c) Leisler's bat. (online) Available at: [Leisler's Bat - Bat Conservation Ireland](#)

Brown long-eared bat. (online) Available at: [Brown Long-eared Bat - Bat Conservation Ireland](#) (Accessed June 2024)).

Bearing witness for wildlife: Bat roost mitigation project report. Available at:

[BWWM-Report-FINAL-11.03.21.pdf \(bats.org.uk\)](#)

CIEEM (2018) Reviewing the evidence on the mitigation strategies for bats in buildings: information best-practice for policy makers and practitioners.

Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Ed). The Bat Conservation Trust, London.

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities No L 206/7. Council Directive 2001/42/EC on the

assessment of the effects of certain plans and programmes on the environment. Official Journal of the European Communities No L 197/30.

Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

[IWM134.pdf \(npws.ie\)](#)

Lundy, M., Montgomery, I. and Russ, J., 2010. Climate change-linked range expansion of Nathusius' pipistrelle bat, *Pipistrellus nathusii* (Keyserling & Blasius, 1839). *Journal of Biogeography*, 37(12), pp.2232-2242.

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

[https://www.npws.ie/sites/default/files/publications/pdf/Red%20List%20No.%2012%20Mammals.p df](https://www.npws.ie/sites/default/files/publications/pdf/Red%20List%20No.%2012%20Mammals.pdf) (Accessed June 2024).

NPWS (2024) 4th National Biodiversity Action Plan 2023-2030 . Department of Culture, Heritage and the Gaeltacht. (online) Available at: . [4th National Biodiversity Action Plan.pdf \(npws.ie\)](#)

Wildlife Act 1976 (as amended)

Websites:

www.biodiversityireland.ie

www.batconservationireland.ie

www.vincentwildlifetrust.ie

www.batsorg.uk

www.eurobats.org