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Preliminary Bat Roost Habitat Assessment

33 & 34 Thomas Street, Limerick

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Table of contents

1 INTRODUCTION

Malachy Walsh and Partners, Engineering and Environmental Consultants, were commissioned by Paul Keogh Architects to carry out a Preliminary Roost Habitat Assessment (PRHA) survey at 33 & 34 Thomas Street, Limerick in order to establish whether the building has the potential to support an established roost site and to record any direct or indirect evidence of recent usage of the structure by bats.

Two staff ecologists, Pat Ryan (B.Sc. (Hons) Wildlife Biology) and Hazel Dalton (BSc (Hons) Wildlife Biology; B.Bus.) with extensive experience in bat surveys completed a preliminary roost assessment to determine the actual or likely presence of bats in the buildings on May 4th, 2021.

The survey established that the buildings cannot provide the conditions necessary to support an established roosting site.

2 COMPETENCY OF THE ASSESSOR

Pat Ryan, the Lead Surveyor, has 10 years' experience in designing, managing, and analysing bat activity surveys and has particular expertise in sonogram analysis and in bat ecology and behaviours. He has considerable experience in carrying out Preliminary Roost Habitat Assessments and emergence surveys at a variety of buildings and bridges. In 2017 and 2018 he carried out Passive Automated Bat Surveys in Killarney National Park[1] (KNP) and, in the summers of 2018 and 2019, he carried out 15 consecutive nights of roost emergence counts at a lesser horseshoe bat maternity roost in KNP which is considered to be one of the most important maternity roost sites in the country. The surveys, which were conducted under authorisation of National Parks and Wildlife Service staff, included 1 hour of post-emergence monitoring to record return flights to the roost.

During 2020 he designed and carried out SNH (2019) compliant bat surveys at 10 proposed wind farm development sites comprising a combined total of 64 sampling points (SP) and carried out sonogram and data analysis for each. Currently he is overseeing similar surveys at 12 locations comprising a total of 80 SPs.

Employees of MWP, including both surveyors, have identified a number of previously unknown bat roosts and a number have been the scientific agents on licences to carry out mitigation and enhancement measures at a number of these roosts.

The preliminary bat roost habitat assessment was conducted per Aughney *et al.* (2008) and Collins (2016) and was cognisant of criteria included in Kelleher *et al.* (2006) (see **Table 1**, below).

3 BAT ECOLOGY AND BEHAVIOURS

3.1 RESIDENT SPECIES

There are nine resident bat species on the island of Ireland. These species are:

- Brown long-eared bat *(Plecotus auritus)*;
- Common pipistrelle (*Pipistrellus pipistrellus*);

[1] A Natura 2000 site and UNESCO Biosphere Reserve

- Daubenton's bat (*Myotis daubentonii*);
- Leisler's bat (*Nyctalus leisleri*);
- Lesser horseshoe bat (*Rhinolophus hipposideros*);
- Nathusius' pipistrelle (*Pipistrellus nathusii*);
- Natterer's bat (*Myotis nattereri*);
- Soprano pipistrelle (*Pipistrellus pygmaeus*); and
- Whiskered bat (*Myotis mystacinus*).

All are insectivores that feed on insects and all use a seasonal feeding strategy to help build fat reserves during the summer and autumn, before their hibernation during winter - a time, generally, when insects are not available. Most hunt flying prey, but some species, e.g., lesser horseshoe bat or Daubenton's bat, glean their prey from surfaces of leaves or water on which the prey have alighted. All hibernate during winter and typically become active in late spring and early summer. As the days and nights warm up each species flies out to forage for insects, for progressively longer periods, at night. Around late June or early July, pregnant females give birth to a single offspring which feeds on its mother's milk for 6-7 weeks at which point it can fly and learns to echolocate and to catch its own prey. Mating takes place from August onwards; the female retains the sperm throughout the winter but does not ovulate and become pregnant until spring the following year. The onset of hibernation, which takes place from October/November onwards, begins once temperatures drop and insect prey abundance drops.

3.2 LEGAL AND CONSERVATION STATUS OF BAT SPECIES IN IRELAND

All Irish bat species are protected under the Wildlife Acts (1976 to 2018)[2] and by the Habitats Directive[3] which protects rare species, including bats, and their habitats.

All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

- *Intentionally kill, injure or take a bat;*
- *Possess or control any live or dead specimen or anything derived from a bat;*
- *Wilfully interfere with any structure or place used for breeding or resting by a bat;*
- *Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose*

All bat species are listed in Annex IV of the Habitats Directive as species protected across their entire natural range and the lesser horseshoe bat is further listed, under Annex II, as a species for which core areas of their habitat must be protected within the Natura 2000 network of protected sites. Under Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015,[4] in regard to the animal species listed in Annex IV of the Habitats Directive, a person will be guilty of an offence whereby that person:

[2] Collective citation for the following: Wildlife Act 1976 (no. 39 of 1976); Wildlife (Amendment) Act 2000 (no. 38 of 2000); Wildlife (Amendment) Act 2010 (no. 19 of 2010); Wildlife (Amendment) Act 2012 (no. 29 of 2012) and Heritage Act 2018 (no. 15 of 2018), Part 3.

[3] Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora enacted in Ireland as European Communities (Birds and Natural Habitats) Regulations 2011-2015 (Collective citation for the following: S.I. No. 477 of 2011, S.I. No. 499 of 2013, S.I. No. 355/2015).

[4] The 1997 Regulations and their amendments were revised and consolidated in S.I. No. 355/2015 - European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015.

a. *deliberately captures or kills any specimen of these species in the wild,*
b. *deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,*
c. *deliberately takes or destroys eggs of those species from the wild,*
d. *damages or destroys a breeding site or resting place of such an animal, or*
e. *keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.*

Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

3.3 HABITAT ASSOCIATIONS

Table 1: Species' associations with roost types

Species	Trees		Buildings		Underground	
	Maternity	Hibernation	Maternity	Hibernation	Maternity	Hibernation
Lesser horseshoe bat	L	L	H	M	L	H
Daubenton's bat	M?	L?	M	L	M?	H
Whiskered bat	M?	M?	H	L	N	H
Natterer's bat	M?	M?	H	L	L	H
Nathusius' pipistrelle			H?			
Common pipistrelle	M	M	H	H	N	L
Soprano pipistrelle	M	M	H	H	N	L
Leisler's bat	M	M	H	L	N	N
Brown long-eared bat	H	H	H	H	N	M

Trees- includes all types of crevice and hollow as well as bat-boxes attached to trees.
Buildings – above-ground areas, with an emphasis on roof voids and other areas warmed by the sun.
Underground – anywhere that provides cool humid conditions buffered against rapid temperature change. Includes caves, mines, tunnels, souterrains, fortifications, cellars, ice-houses, lime-kilns, etc.
N – not recorded in recent times
L- low dependence; unusual, but has been recorded
M – some usage recorded, though perhaps not the most important type of site
H – the most frequently recorded type of site for this species/activity

Species associations with roost types [adapted from Kelleher *et al.* (2006)]

4 SURVEY METHODOLOGY

4.1 PRELIMINARY ROOST HABITAT ASSESSMENT

The preliminary roost habitat assessment comprised a daylight inspection of the building. Handheld torches and an endoscope were available to enable thorough internal inspection of any crevices or

void spaces should they be present. An extensive photographic record of the building and its surroundings was taken. The methodology was designed to:

- establish whether or not suitable roosting habitat was present;
- determine the physical extent of any potential roosting location recorded;
- search for evidence of bat usage, such as staining, lack of spider webs, feeding signs or droppings.

5 ROOST HABITAT SUITABILITY ASSESSMENT

No direct or indirect evidence of any usage by bats was recorded in the building and it does not have the characteristics required by roosting bats.

The premises comprises a Georgian building (no. 33 Thomas St.) in quite poor condition, again comprising 4 storeys over basement. The adjoining site, no 34 Thomas street is an old fire station/civil defence building that has been vacant for some time. No. 33 Thomas Street is in quite poor condition, and temporary propping has been completed.

5.1 33 THOMAS STREET

The condition of the interior ranges from intact with no suitable voids, crevices etc., to extreme dilapidation and imminent collapse. Some rooms are exposed to the outside due to the extent of structural deterioration. Some rooms dry, others with severe moisture, damp and general rotting of woodwork etc. It was evident from staining on many of the walls that significant ingress of water had occurred, and this was likely to have been a significant contributory factor to the poor structural condition that characterised the Georgian building.

A visual inspection of the attic determined that the space was draped with an abundance of spiders webs from apex to ceiling which would indicate an undisturbed airspace and one not inhabited by any flying vertebrate.

5.2 34 THOMAS STREET

With regard to old fire station/civil defence section of the premises while this, at least cosmetically, appeared to be structurally sound and relatively intact this section also lacked the physical characteristics required to support a bat roost. With regard to the narrow void spaces between the ceiling and the floor boards of the rooms above, which are available in some sections of the ground floor where the ceiling has come away, the survey determined that these are of very limited value, and the fact that the space is not ‘sealed’ and likely allow free lateral movement of air means that the void space is unlikely to provide the stability in humidity and temperature required by roosting bats.

The only finding of note in the old fire station/civil defence section of the premises was the old remains of a single butterfly which exhibited signs of predation, possibly by a bat, although this was not located underneath any structure which could have comprised a feeding perch for bats. Overall, this premises is assessed as having low suitability as a potential bat roost. While it does have potential value, in that it may on occasion be used as some form of temporary occasional roost by low numbers/individuals, it is considered, in light of its setting firmly within the urban fabric of the city, that any use by bats, even occasionally is very unlikely.

6 CONCLUSION

No staining or droppings were recorded on any surface, vertical or horizontal. No direct or indirect evidence of any usage by bats was recorded in the building and it does not have the characteristics required by roosting bats.

Notwithstanding the clear evidence that the significant accumulations of dust and light debris that covered all of the surfaces in 34, Thomas Street were undisturbed, particularly in the old fire station/civil defence section, no droppings, feeding litter or insect debris was recorded on any surface such as window ledges, furniture, stairs and the miscellaneous scattered items that are abundant in Thomas Street. Given the undisturbed condition of the dust and debris it is reasonable to infer that, were there any deposits of feeding debris or droppings, then these would have been present and easily observed.

It is our assessment that no further surveys are warranted.

7 REFERENCES

Aughney, T. (2008), *A bat survey of bridges identified by the All-Ireland Daubenton's bat Waterway Survey as potential bat roosts*. Irish Bat Monitoring Programme. Bat Conservation Ireland.

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, (3rd edn). The Bat Conservation Trust, London.

Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. *Irish Wildlife Manuals*, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Scottish Natural Heritage (SNH) (2019). *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation*. Prepared jointly by Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT).

Appendix 1

Photographs

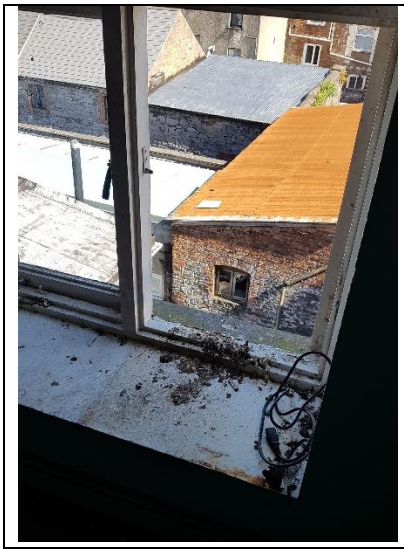
Thomas Street

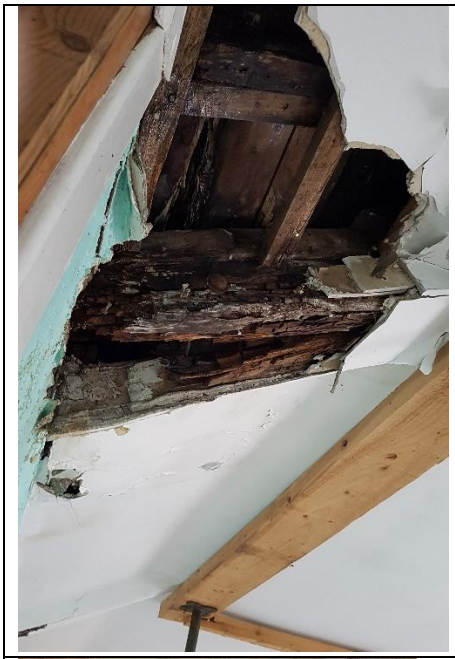
	View of storage room on top floor of Annex (room on LHS at the back of building).
	Ceiling intact, overall, with lack of crevices or holes etc
	Only crevices occurring along either side of section of exposed metal roof beam
	Very narrow (1 inch wide) linear gap along either side of beam No staining, droppings or any evidence of bat usage in this room (other than single butterfly, see below)

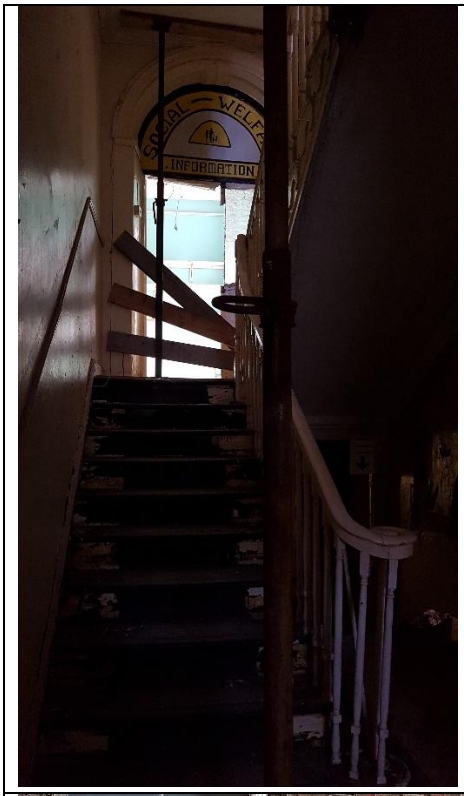
	Butterfly wings on floor
	Wings of tortoise shell. Very old/faded. *Possible* bat feeding remains
	'Kitchen' No evidence of bat usage Parts of ceiling and floor collapsed.

	As above
	Room with attic space used by nesting /roosting pigeons possibly. Bird droppings extensive on floor underneath attic hatch, across floor of room and on windowsill (see below)

	View into attic space from below
	

	Pane of glass missing from window in room with open attic hatch. Bird access point to building.
	Ceiling/top of walls of landing area outside previous room
	Old 'Computer room'? Ceiling and floor along perimeter of room in extremely poor condition

	As above
	Ground-floor 'gents' bathroom – ceiling collapsing in. Extensive moisture ingress/rot and damp
	As above – open to exterior

	Stair-well inside main entrance
	Thomas St front door