



Environmental Consultants

**Preliminary Bat Roost and Badger Survey
for a proposed Hydrogen Plant**



DOCUMENT DETAILS

Client: Mercury Renewables (Carrowleagh) Limited

Project Title: Firlough Wind Farm

Document Title: Preliminary Assessment of Trees and Buildings for the Potential to Host a Bat Roost & assessment for presence of badgers

Prepared By: John Curtin – Consultant Ecologist

Bats recorded: None

Badgers recorded: None

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1 INTRODUCTION

This report details the findings of a bat and badger survey completed as part of a planning application for the construction of a Hydrogen Plant and associated access road.

The survey aimed to;

- Examine trees and buildings for bat roosting potential.
- Examine for evidence of badgers including setts, latrines and snuffle holes.

The bat surveys undertaken are in line with recommendations in Chapter 11 of the Bat Conservation Trust ‘Good Practice Guidelines, 3rd edition, 2016 (BCT, 2016) and The Irish Wildlife Manual No. 134 (Marnell, 2022).

A ground level, preliminary bat roost assessment was conducted within the site on the 2nd February 2023 noting all trees and buildings with bat roost potential within the site and along the access route.

For badgers, the site area was walked systematically, with focus on hedgerow and treeline boundaries.

Surveys were conducted by John Curtin. John has over ten years’ experience of carrying out bat surveys and has completed the Bat Conservation Ireland, Bat Detector Workshop and Bat Handling Workshop which are the standard training for the carrying out of bat surveys in Ireland. He follows the Bat Conservation Ireland ‘Good Practice Guidelines’ (Aughney *et al.* 2008). John has previously overseen and conducted a training event for ecologists on identifying bat roosts in trees run by Bat Conservation Ireland.

John holds the following licences.

Description	Licence No
Licence to capture protected wild animals for educational, scientific or other purposes (bats)	C231/2020
Roost disturbance (bats)	Der/Bat 2022-17
Licence to photograph / film wild animals (bats)	06/2021

2 DESKTOP STUDY

2.1 Bats & Badger in Ireland – Legislative Protection

There are two main pieces of legislation which cover wildlife protection in Ireland – the Wildlife Act and the Habitats Regulations. These are outlined below, with particular reference to the protection afforded to bat species in Ireland.

The Wildlife Acts 1976 - 2022 as amended

The primary pieces of national legislation for the protection of wildlife in Ireland are the Wildlife Act (1976) and the Wildlife [Amendment] Act (2000). 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 / badger
- Possess or control any live or dead specimen or anything derived from a bat / badger
- Wilfully interfere with any structure or place used for breeding or resting by a bat / badger
- Wilfully interfere with a bat / badger while it is occupying a structure or place which it uses for that purpose

The Habitats Regulations 1997-2005

The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) seeks to protect rare and vulnerable species and the habitats in which they are commonly found, and requires that appropriate monitoring of populations be undertaken. All bat species found in Ireland are listed under Annex IV of the Directive, while the lesser horseshoe bat is afforded further protection under Annex II. The Habitats Directive has been transposed into Irish law by the European Communities (Natural Habitats) Regulations 1997. All bat species are listed on the First Schedule and Section 23 of the regulations makes it an offence to:

- Deliberately capture or kill a bat
- Deliberately disturb a bat
- Damage or destroy a breeding site or resting place of a bat

Provision is made in the Regulations for the Environment Minister to grant, in strictly specified circumstances set out in that Regulation, a derogation license permitting any of the above activities “where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range”.

2.2 Usage of trees by bats

Trees are a highly important feature of landscapes in that they provide roost sites throughout the year for bats as well as being essential sources of insect prey. Therefore, the removal of trees reduces the availability of shelter and feeding sites for bats (NRA 2005). The use of trees as roost sites is well established. Discovery of such roosts may be established by a variety of means including the use of a

bat detector survey or alternatively by examination of all suitable crevices and cavities; commonly referred as Potential Roost Features (PRF's). Trees most likely to serve as bat roosts should be identified by a bat specialist from a walk-through of the route, from aerial photography or from a tree survey report.

2.3 Site Location

The site for the proposed Hydrogen Plant lies in the townland of Carraun, Co. Mayo.

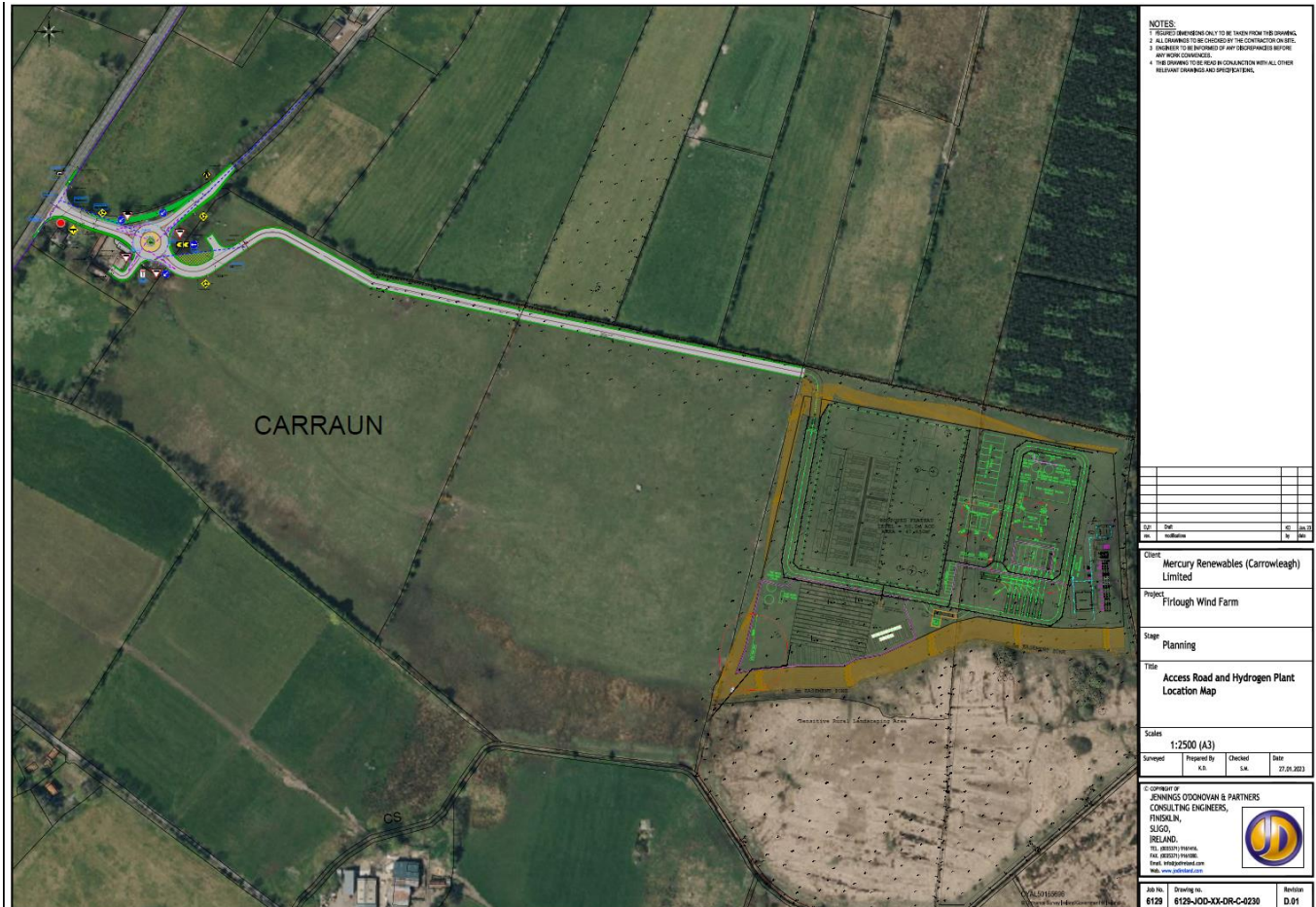


Figure 2-1: Site Layout

2.4 Preliminary ground level roost assessment February 2023

Trees within and adjacent to the site access road and site outline were examined for potential to host bat roosts on 2nd February 2023 following guidelines set out in the Bat Tree Habitat Key (Andrews, 2016).

- Andrews H. (2018) *“Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals” - Bat Tree Habitat Key*. Pelagic Publishing
- Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London
- Andrews H. *Surveying Trees for Bat Roosts: Encounter Probability v. Survey Effort* 2015
- Andrews H et al. 2013. *Bat Tree Habitat Key*. AECOL, Bridgwater
- Hundt L. (2012) *Bat Surveys: Good Practice Guidelines*, 2nd edition, 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.
- National Roads Authority (2005), *Guidelines for the Treatments of Bats Prior to the Construction of National Road Schemes*.
- Mitchell-Jones, Tony & McLeish, Andrew. (2004). *Bat Workers' Manual*.

Conditions on day of survey were cold, dry and sunny. All trees were assessed from ground level using binoculars examining for high potential roost features (PRF's). Such features include;

- Knot-Holes – dead branch
- Flush-Cuts – chainsaw cut of branch
- Tear-Outs – wind or snow, often well below canopy
- Double-Leaders - 2 stems of equal diameter emerge from same spot, cavity is located below split. Increased chance of roost where entrance hole is small
- Wounds & Cankers - Rough edge, indistinct shape of entrance
- Butt-Rot - decay at the base of a tree
- Hazard-Beams - longitudinal splits in lateral limbs and (less frequently) upright stems allowing light to be seen through the gap typically found on Quercus, Salix and horse chestnut
- Subsidence, Shearing & Helical-Splits - typically on the convex side of a bend
- Lightning-Strikes – from crown to base.
- Impact-Shatters – branch hit by falling tree etc.
- Desiccation-Fissures – dead wood
- Transverse-Snaps – branch / stem snapped however still attached
- Lifting-bark
- **Unions** – 2 independent branches (or double leader) fuses. Frequently Beech and Scots pine
- Ivy - typically where the root forms a mat against the tree – rare for bat usage

Each tree was assessed and ranked from category 1 – 4 (refer to Table 2-1 below).

Table 2-1 Categorise each tree according to Bat Conservation Trust 2 ed. (Hundt *et al*, 2012):

Tree Category	Description
1	Trees with multiple, highly suitable features capable of supporting larger roosts
2	Trees with definite bat potential but supporting features suitable for use by singleton bats;
3	Trees have no obvious potential although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features which may have limited potential to support bats;
4	Trees have no potential.

3 BAT SURVEY FINDINGS

3.1 Survey Constraints

There were no survey constraints as the preliminary tree roost survey and the badger survey were conducted within the optimum period for such surveys.

3.2 Preliminary Ground Level Roost Assessment

Results from the preliminary survey are outlined in table 3-1 below. In total 60 trees were assessed, 24 of which were categories 1 and 2. All category 1 and 2 trees were found close to the western entrance by the road. No trees with potential to host a bat roost was found within the site where the Hydrogen Plant is proposed to be located.

Table 3-1: Results of Preliminary ground level roost assessment (Cat 1 and 2) trees.

Number	Lat	Lon	Category	Name	Description
3	54.14936	-9.08889	1	Sycamore	Large tree with tear offs. Not looking great but each could have potential
5	54.14929	-9.08899	2	Sycamore	Tear off to be checked
7	54.14928	-9.0886	1	Sycamore	One large cavity low. Don't need to climb
8	54.1493	-9.08852	2	Sycamore	Crack in bark and cavities
9	54.14934	-9.08851	2	Sycamore	Tear offs
14	54.14945	-9.08837	2	Sycamore	One cut off me quick check
17	54.14953	-9.08826	1	Sycamore	Large cavity low. No need to climb
18	54.14958	-9.0882	1	Sycamore	Low branch with rot. Trees have corvid nests. Cavity 6m up.
19	54.14967	-9.08812	1	Sycamore	Small cavities low on tree. Big cavity up higher.
21	54.14972	-9.08798	1	Sycamore	Rot feature and cut off.
24	54.14983	-9.08798	1	Sycamore	Split in bark.
30	54.14993	-9.08791	2	Sycamore	Double leader.
33	54.14984	-9.0881	2	Ash	Low cavity.
36	54.14977	-9.08833	2	Sycamore	Large tree. Two downward pointing cut off should be checked.
41	54.14972	-9.08854	2	Sycamore	Large tree with small cut offs.
43	54.14971	-9.08863	1	Ash	Low cavity.
48	54.1497	-9.08949	2	Sycamore	Small joint to check
49	54.14974	-9.0897	1	Sycamore	Check cut off
50	54.14978	-9.08976	1	Sycamore	check rot
52	54.14976	-9.08984	1	Ash	Small canker cavities
53	54.14976	-9.08989	1	Sycamore	Check cut offs
56	54.14957	-9.0901	1	Ash	Check cut offs
59	54.14955	-9.09012	2	Ash	Large tree with tear off. Climb
60	54.14952	-9.09008	2	Sycamore	Small cavity low.

Potential of trees and buildings to host a bat roost

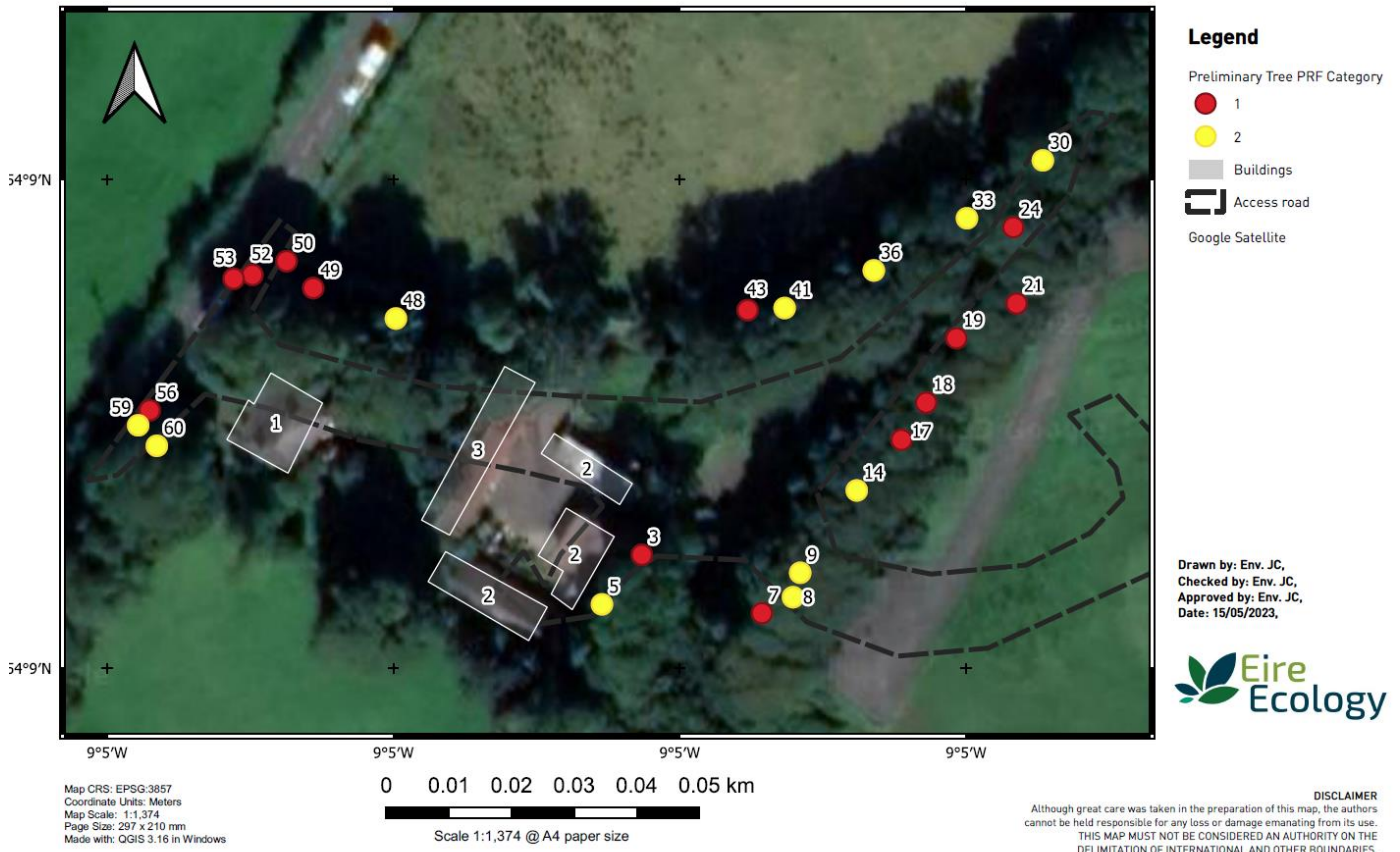


Figure 3-1: Initial potential roost feature survey of trees and buildings along access routes

3.3 Preliminary assessment of buildings along access road.

A number of buildings can be found by the western entrance to the site. These consist of an occupied dwelling and four sheds. The house and sheds were examined both inside and outside. The dwelling has good potential to host a bat roost with potential entrances into the roof-space by gaps in fascia. An internal search of the attic however showed a lot of cobwebs (an indicator that bats are not flying around in the roof space) and no bats. No bat droppings or other evidence of bats were found.

All sheds were also examined. Three sheds had some potential to host a void dwelling bat such as Brown Long-eared where timber sits on timber. However, no bats were found.

3.4 Within Site

There are no features within the site for the Hydrogen Plant suitable for use as a roost by bats.

4 BADGER SURVEY

An assessment of badgers was conducted within and adjacent to the site. In particular, the woodlands to the east of the site were judged to have highest potential to host a badger sett. Tracks, latrines and snuffle holes were also searched for. No evidence of badger was recorded anywhere within or surrounding the site.

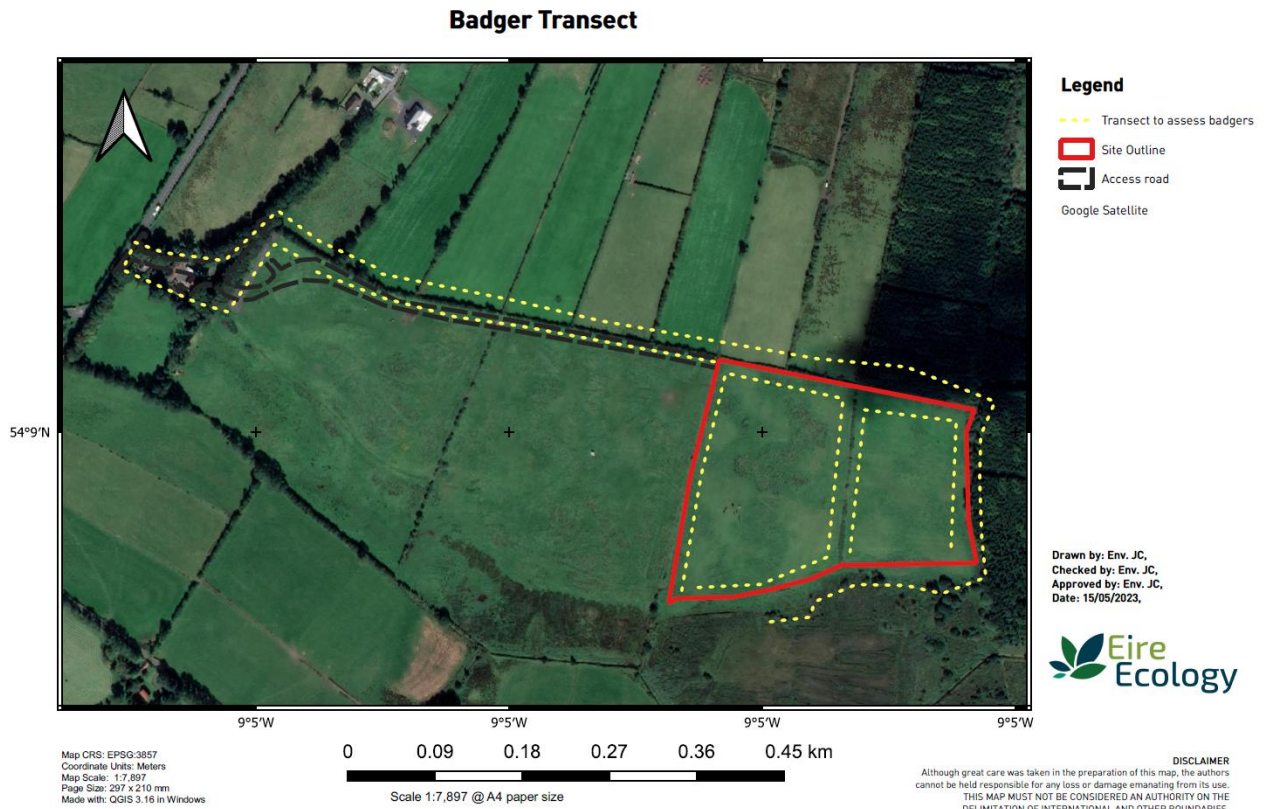


Figure 4-1: Route of transect used for badger survey, February 2023.

5 CONCLUSION

This report details the findings of a bat survey conducted on trees and buildings potentially impacted by the access route and within the site of the proposed Hydrogen Plant.

Surveys were conducted in February 2023, which is within the optimum time of year to conduct such surveys (as trees are without leaves). No bats or bat roosts were found. However, 24 trees were noted with some bat potential. In addition, several buildings were examined and while they showed some potential for usage by bats no evidence was found.

In order to confirm the presence of bat roosts, trees ranked categories 1 and 2 would need to be climbed and all prfs examined using torch and endoscope. In addition, a night-time detector survey should be conducted on sheds with potential to host a Brown Long-eared bat roost.

A badger survey was carried out on same site but no evidence of badger presence was found.