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Rooaunalaghta Green Energy Project

Appendix 6-3

Terrestrial Ecology Report

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BUILT ON KNOWLEDGE

Rooaunalaghta Green Energy Ltd.

Chapter 6 Biodiversity

Appendix 6-3: Terrestrial Ecology Baseline Report

Disclaimer: This report contains sensitive ecological information relating to badger (*Meles meles*), a legally protected species that is subject to persecution. Location specific information should be treated as confidential and redacted before public release.

Woodrow Ref: P00016381

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woodrow

APEM Group

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1. INTRODUCTION

1.1. Background

APEM Group Woodrow was commissioned by Rooaunalaghta Green Energy Ltd., to undertake surveys to inform the terrestrial ecology baseline for the site of a proposed wind farm development at Rooaunalaghta, Co. Mayo. These comprised surveys for mammals (focusing on otter and badger in particular) and assessments of amphibian and reptile suitability. A habitat constraints study completed in 2024 (APEM Group Woodrow, 2024) was used to identify habitat types on site, while a follow up assessment was used to verify Annex I habitat. Detailed quadrat surveys of the turbine locations were completed in 2025, as well as habitat constraints assessment for any areas added to the proposed wind farm site that were not originally covered as part of the initial habitat assessment. Additional surveys for habitats and mammals were carried out along the Grid Connection Route (GCR), as well as the proposed electrical onsite control building and 110 kV substation, located offsite. Furthermore, nodes and pinch points along the Turbine Delivery Route (TDR) were investigated for habitats and mammals.

1.2. Site description

The proposed wind farm site is located approximately 2.5 km southwest of Shrule, Co. Mayo and approximately 3.5 km northwest of Headford, Co. Galway. The lands of the site are primarily comprised of agricultural fields bounded by stone walls, hedgerows and treelines with pockets of scrub and woodland in the eastern half of the site.

The proposed wind farm site is located on either side of the R334 Regional Road, which runs in a northwest-southeast direction connecting Headford and Ballinrobe. The area surrounding the site can be described as rural with a mostly dispersed settlement type (though some clustering at Moyne). The nearest settlements are Moyne village to the southeast of the site and Glencorrib to the northwest, both along the R334.

The proposed wind farm site encompasses an area of approximately 222 ha and comprises a contiguous, irregularly shaped land parcel. The site extends approximately 1.2 km in a north-west/ south-east direction and approximately 3.2 km in a north-east/ south-west direction. Topography across the site ranges in elevation from approximately 25 m to 60 m AOD. Access to the proposed wind farm site is provided directly from the regional road (R334), which connects with the N84 National Secondary Road at Headford, Co. Galway.

1.3. Description of the proposed project

The proposed project comprises the proposed wind farm site together with associated electrical and grid infrastructure and all necessary ancillary works required for its construction, operation and maintenance. The principal components of the proposed project are as follows:

- A wind farm comprising 13 no. wind turbines with associated foundations, hardstanding areas, and internal access tracks;
- A permanent onsite control building;

- 33 kV underground electrical and communications cabling connecting the turbines to the control building;
- A permanent 110 kV electrical substation connecting to the existing overhead line via a loop-in design, including a control building with welfare facilities and associated electrical plant;
- GCR comprising 33 kV underground cable (c. 8.6 km) between the control building and the 110 kV substation, and 110 kV underground cabling connecting the substation to the national electricity grid.
- Temporary works along the TDR to facilitate delivery of turbine components.

Ancillary works associated with the proposed project include site entrances, temporary construction compounds, borrow pit development, drainage and sediment control measures, underground electrical and communications cabling, a lidar unit, worker welfare facilities at the substation, as well as landscaping and reinstatement works.

1.4. Purpose of this report

The purpose of this report is to describe the methods and results of the ecological baseline surveys completed within the ecological study area (see **Figure 1**), and along the proposed GCR (see **Figure 2**) and TDR (see **Figure 4**). The data gathered will inform the Ecological Impact Assessment (EcIA) which is contained within the Environmental Impact Assessment Report (EIAR) Biodiversity Chapter.

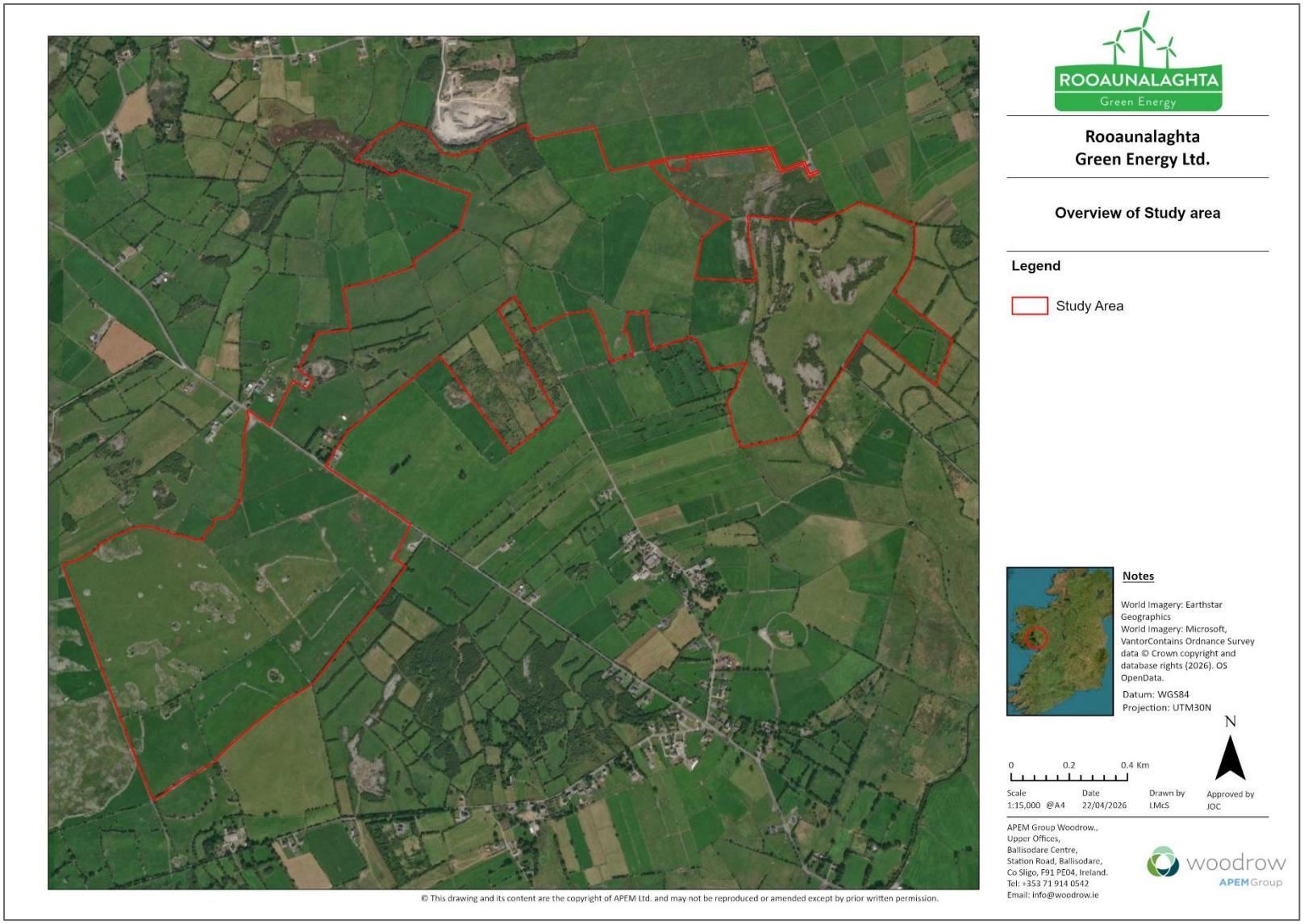


Figure 1: Overview of the main study area (i.e. the proposed wind farm site)

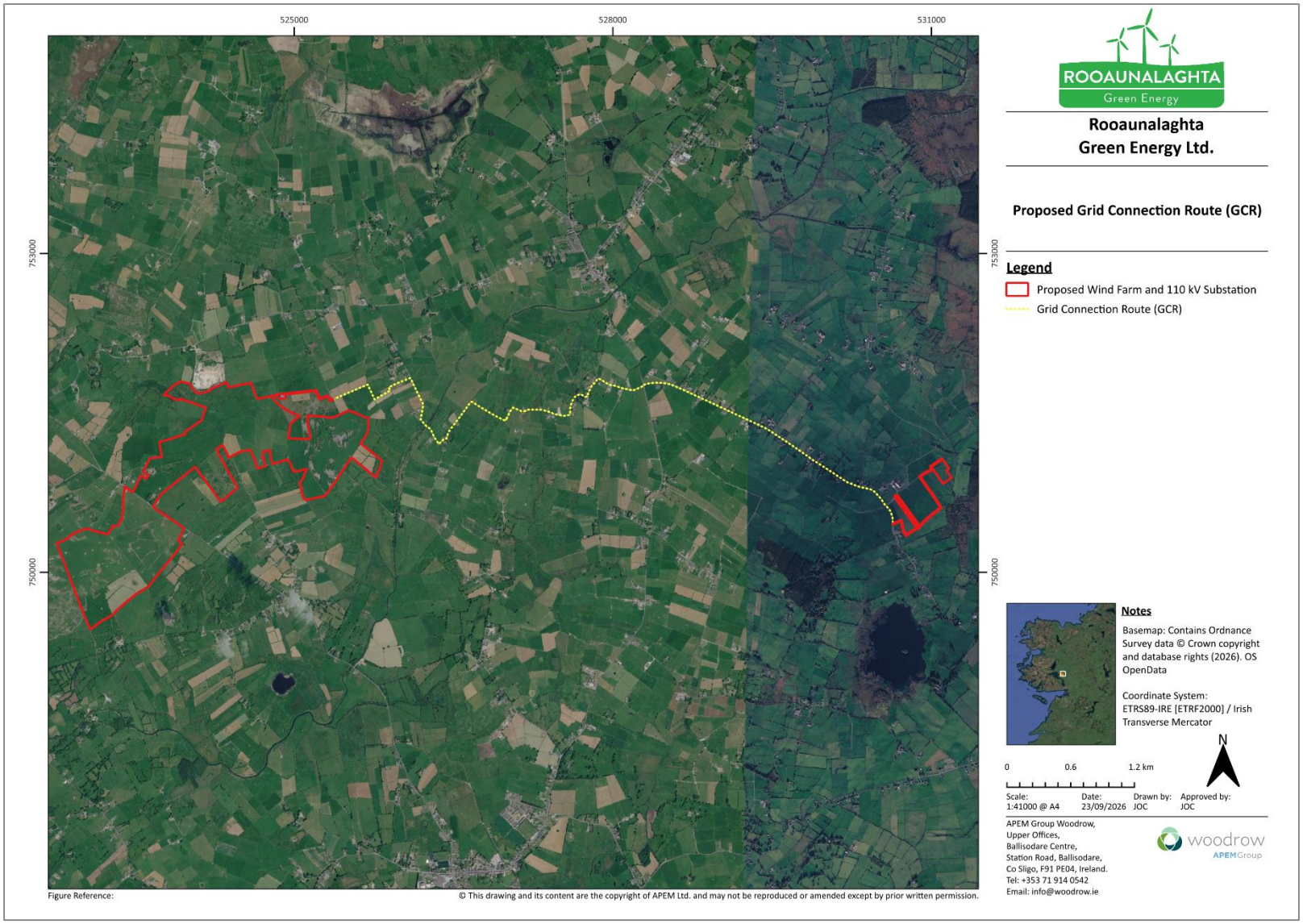


Figure 2: Study area showing the GCR and the proposed 110 kV substation

2. METHODOLOGY

2.1. Desk study

2.1.1. Data sources

A desktop survey was undertaken to gather information on the likely presence and occurrence of species and habitats within the general area prior to the site visits so that a targeted approach to field surveying could be undertaken. Information was gathered online from a variety of sources including the National Biodiversity Data Centre (NBDC), National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA), and Inland Fisheries Ireland (IFI) online databases. The following databases were used:

- NBDC Map Viewer and Datasets[1]
- EPA Map Viewer and Datasets[2]
- NPWS Map Viewer[3]
- NPWS Site Synopses[4]
- Invasive Species Ireland[5]
- Geological Survey of Ireland (GSI) Online Mapping[6]
- Inland Fisheries Ireland - Water Framework Directive Rivers Fish Ecological Status 2008-20227
- Relevant SAC Conservation Objectives and Supporting Documentation
- Relevant NPWS Wildlife Manuals
- County Mayo Heritage and Biodiversity Strategy 2024-2030[8]
- Mayo County Council (2025) Mayo County Development Plan 2022-2028[9]

Records for important and protected species within 2 km of the proposed wind farm site were obtained from the NBDC online database. A 2 km search area was adopted as it aligns with the spatial resolution of publicly available NBDC records and is considered sufficient to identify species records relevant to the local study area. This incorporates several Irish databases, such as the mammal database, along with atlas information for a range of other taxa, covering amphibians, invertebrates and data from the Botanical Society of Britain and Ireland (BSBI). The NPWS Article 17 datasets for Annex I habitats were downloaded from the NPWS website and reviewed. These datasets document Annex I habitats within the site, should they occur. The proposed wind farm site falls within two 10-km grid squares (M24 and M25) and four 2-km grid squares (M25F, M24J, M25K and M25Q). The proposed 110 kV substation, located at Killamanagh, Co. Galway, lies within the 10-km grid square M35.

1 https://maps.biodiversityireland.ie/
2 https://gis.epa.ie/EPAMaps/
3 https://designationsviewer.com/
4 https://www.npws.ie/protected-sites
5 http://www.invasivespeciesireland.com/
6 https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228
7 https://data.gov.ie/dataset/water-framework-directive-rivers-fish-ecological-status-2008-20221
8 Mayo-Heritage-and-Biodiversity-Strategy_Dec_2023.pdf
9 Mayo County Development Plan 2022-2028

Further ecological records extending over an area of 10 km from the proposed wind farm site are presented in **Appendix 6-2** of **EIAR Chapter 6: Biodiversity**.

2.1.2. Designated sites

Internationally designated sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are designated under the EU Habitats Directive (92/43/EEC) and are intended to protect a suite of habitats and species listed in Annex I and Annex II of the Directive. SPAs are designated under the EU Birds Directive (2009/147/EC) and provide protection to birds listed in Annex I of the Birds Directive, as well as populations of migratory species regularly occurring at a site.

Nationally designated sites include Natural Heritage Areas (NHAs) and are designated under the Wildlife Act 1976 (as amended) (the Wildlife Act) as areas considered important due to the habitats present or areas which support plants and animals whose habitat needs protection. Proposed Natural Heritage Areas (pNHAs) are recognised on a non-statutory basis but have not been statutorily proposed or designated. They are of ecological value for their habitats or species.

Shapefiles of designated sites, including SPAs, SACs, NHAs and pNHAs were downloaded from the NPWS website and imported onto QGIS. An arbitrary radius of 15 km was selected within which the initial desktop search of designated sites was completed, informed by DoEHLG (2010) guidance which states:

> *"for projects, the distance could be much less than 15 km, and in some cases less than 100 m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects."*

The potential for connectivity with the proposed project followed the Source-Pathway-Receptor (S-P-R) model, in line with the Office of the Planning Regulator (OPR) Practice Notes PN01 and PN02 (2021), utilising publicly available datasets and professional judgement.

Connectivity to a designated site may extend a significant distance, e.g., where there is hydrological connectivity to a designated site *via* a river network, or where a qualifying feature, such as mobile species, can range and travel over greater distances. Therefore, the Zone of influence[10] (ZoI) depends on the individual ecological feature being considered. In this instance, no additional designated sites beyond 15 km were identified as being connected to the proposed project through relevant ecological or hydrological pathways.

2.2. Field surveys

Field surveys were carried out within the wind farm site and the broader landholding area, including the offsite substation location and GCR (i.e. the proposed project). The study area reflected the proposed wind farm site as it existed at the time of each survey. This site boundary evolved alongside the development design through an iterative process, with surveys helping to inform design refinements (e.g. the habitat constraints study). All iterations of the application site were covered

[10] *"The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities."* Source: CIEEM, 2018.

across the survey programme, ensuring full coverage of the current layout. Surveys were also undertaken at the proposed offsite substation location and along the GCR (**Figure 2**).

Locations along the GCR from the proposed wind farm site to the proposed 110 kV substation were assessed in April 2025 as part of a multidisciplinary, Phase 1-style survey employing a "look see" methodology, undertaken on foot, by bicycle and/or vehicle. These surveys were carried out to identify any features of potential relevance along the GCR corridor.

Temporary works are proposed at a limited number of locations along the TDR, including localised pinch points where measures such as pruning or tree removal may be required. These areas were initially identified through a review of aerial imagery and were subsequently investigated through field surveys for habitats and mammals in May 2026.

Table 1 provides a summary of all surveys undertaken.

Details concerning surveys for birds, bats and aquatic ecology are reported in separate baseline reports and will not be repeated here.

Table 1: Terrestrial surveys conducted for the proposed project

Survey type	Survey date	Surveyors
Fossitt 2000 Level 3 classification (habitat constraints study)	16-18 July 2024	MC, FM, EV
Annex I assessment along access track	30 August 2024	MC
Mammal surveys	07-11 April 2025	AW, BM
Amphibian and reptile suitability assessment	07-11 April 2025	BM
Control station habitat mapping	14 April 2025	AW
GCR – Phase 1 style survey	14 April 2025	AW
Proposed substation location – Phase 1 style survey	23 April 2025	DMcA
Trail camera surveys (see **Table 2**)	10-29 April 2025 10 April - 07 May 2025 29 April - 08 May 2025	JOC, AW, BM, DMcA
Follow-up assessment of identified Annex I habitats	11 May 2025 23 July 2026	BK
Vegetation quadrat surveys	24 June - 02 July 2025	EV
TDR – Phase 1 style survey	20 May 2026	AA
Lepidoptera (butterflies) – walked transects	15 June 2026 25 June 2026 16 July 2026 12 August 2026	DL

Survey type	Survey date	Surveyors
Bryophyte survey of selected stone wall sections	23 July 2026	Dr Rory Hodd (Nimbosa Ecology)

2.2.1. Habitat surveys

The scope of habitat surveys was informed by a desk-based study employing satellite imagery to ascertain habitat types. ArcGIS Pro and QGIS were used to access satellite imagery for the maps produced in this document.

ArcGIS Pro was used to draw polygons that delineate the habitats identified in the satellite imagery. These habitats were provisionally classified to recognised Level 3 habitat types outlined by Fossitt (2000). Information of the proposed wind farm site and its associated habitats gathered during the desk study allowed some general assumptions to be made concerning the likelihood of specific habitat classifications aligning with those represented in the satellite imagery. These delineations were confirmed or updated during the habitat survey of the proposed wind farm site by an experienced ecologist.

Habitat surveys of the site and proposed turbine locations were undertaken during the optimal survey season between May and September 2024, as per the dates set out in **Table 1**. A follow-up habitat survey was carried out in April 2025 of the proposed electrical control station location. Targeted detailed botanical quadrat surveys were undertaken at proposed turbine locations in June and July 2025.

The proposed wind farm site and perimeter were surveyed on foot, ecological features of interest were recorded, and habitats were confirmed or updated from the initial desktop study delineation. The location of each habitat type was mapped using ESRI Survey123 and QGIS, with habitat polygons, photographs, and notes on vegetation assemblages and species composition captured using GPS-enabled devices. Detailed surveys for Fossitt (2000) Level 3 habitats with the potential to support EU Habitats Directive Annex I habitats were undertaken according to the methodology set out in **Section 2.2.1.1**.

During the habitat surveys, consideration was given to identifying important or protected habitats and habitats that could be used by protected species.

Locations along the proposed GCR and TDR were assessed for the habitats they supported. This involved surveying the proposed routes on foot and/or by vehicle to record habitats present along the works corridor, with particular focus on areas along the TDR where pinch points may necessitate localised habitat or vegetation clearance to facilitate access. Consideration was given to identifying important or protected habitats, as well as those that support protected species, in addition to the presence of any invasive alien species (IAS) that may occur along these routes.

2.2.1.1. Annex I habitat surveys

Annex I refers to the Habitats Directive list of habitat types that are considered threatened in the EU. Detailed Annex I habitat assessments were undertaken on areas of exposed rock, calcareous heath, and grassland during the optimal survey season (see **Table 1**).

An initial assessment of the Annex I habitats recorded was made in August 2024, and a follow-up assessment was carried out in May 2025 to evaluate their status. The Annex I habitat assessments followed the approach outlined in Wilson and Fernandez (2013) for limestone pavement, Martin *et al.* (2018) for Annex I grasslands and Perrin *et al*. (2014) for upland habitats including heath.

2.2.1.2. Irish Vegetation Classification surveys

Detailed botanical surveys were undertaken at 15 locations collecting relevé data using the Irish Vegetation Classification survey methodology (Perrin, 2024). These surveys were targeted at the proposed locations of the turbines at the time of the survey. The collection of data and subsequent analysis allows for the classification of vegetation communities rather than the habitat types recorded using the Fossitt (2000) methodology. providing more detailed analysis than the habitat classification. Following the field surveys, the botanical data gathered from the quadrats assessments were used to perform a vegetation analysis using the web classification tool ERICA (Perrin, 2020). This tool uses cluster analysis to assign each of the quadrats a degree of similarity to each community of the IVC. It then attributes to each quadrat the vegetative community with which it has the strongest membership.

In cases where the software was unable to assign a sufficiently representative IVC community to a quadrat, the Fossitt classification system was used as an alternative based on the field assessment and quadrat data, to ensure habitats were represented accurately.

2.2.1.3. Invasive plant species

The presence of any IAS was recorded during all habitat surveys conducted at the study area and along the proposed GCR, with particular attention paid to species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011, as amended). Surveys were based on best practice guidance methodology (NRA, 2010).

2.2.1.4. Bryophyte surveys

A targeted bryophyte survey of selected stone walls within the proposed wind farm site was undertaken on 23 July 2026. The stone walls surveyed are shown on **Figure 3**, while the survey methodology and results are presented in full in **Biodiversity Chapter Appendix 6-8**.

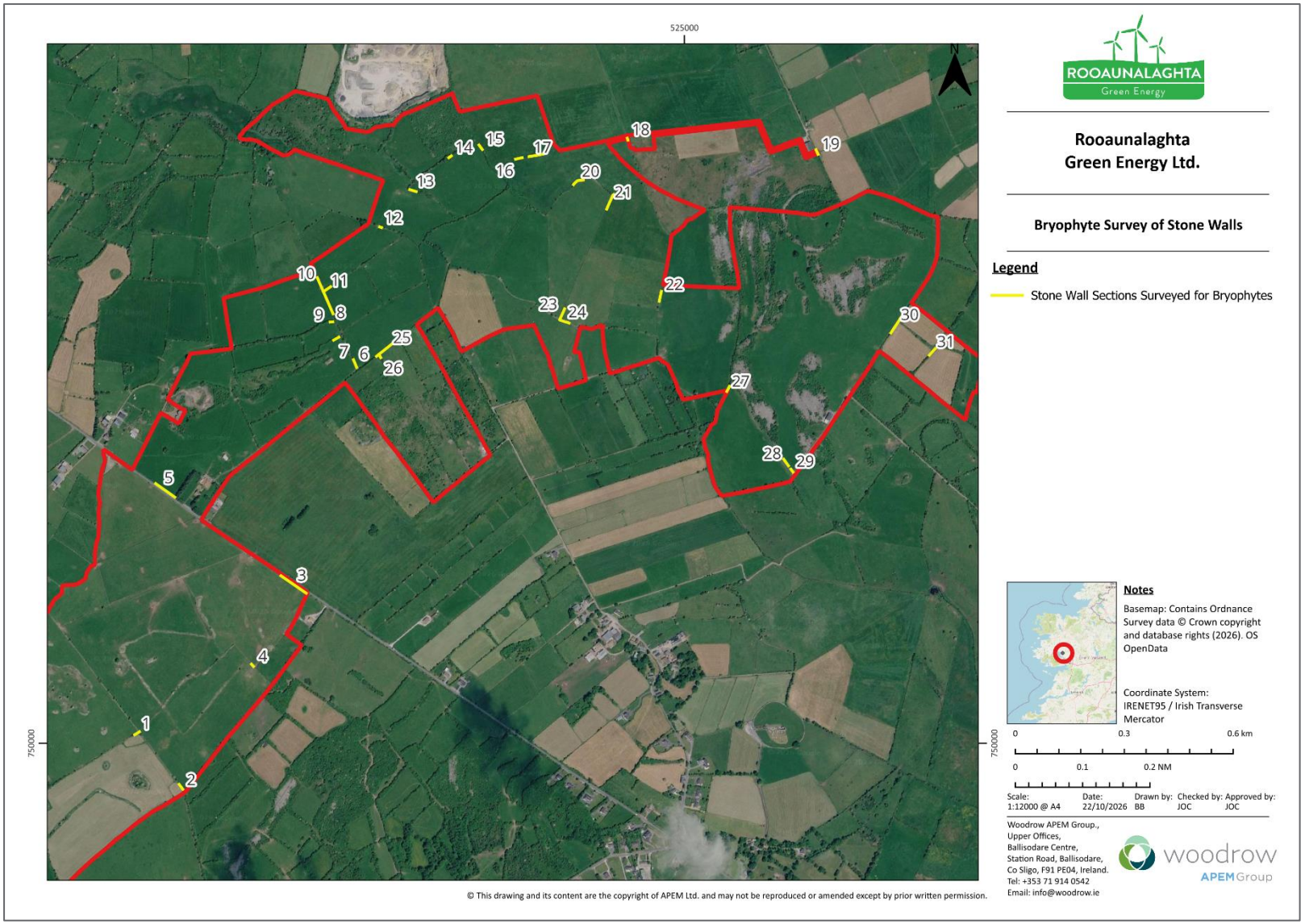


Figure 3: Stone wall sections surveyed during bryophyte survey (for survey details see Biodiversity Chapter Appendix 6-8)

2.2.2. Mammal surveys (excluding bats)

The study area, encompassing the proposed wind farm site, offsite substation and appropriate survey buffers, was systematically surveyed for mammal species. Target species included those protected under the Wildlife Act, species listed under Annex II, Annex IV and Annex V of the Habitats Directive, as well as Irish Red-listed species (Marnell *et al*., 2019). Based on the availability of habitat types within the study area, particular consideration was given to the detection of badger (*Meles meles*) and their setts (Smal, 1995), as well as Eurasian otter (*Lutra lutra*) and their resting places such as couches, layups or holts (Reid *et al*., 2013).

Taking into consideration existing records of species within the 10-km grid squares encompassing the site (refer to **Section 3.1**), surveys were carried out to identify evidence of other mammals which were considered likely to occur in the area, including pine marten (*Martes martes*), Irish stoat (*Mustela erminea hibernica*) Irish hare (*Lepus timidus hibernicus*), pygmy shrew (*Sorex minutes*), red squirrel (*Sciurus vulgaris*) and European hedgehog (*Erinaceus europaeus*). Trail cameras were deployed at mammal features of interest such as burrow entrances (see **Table 2**). All trail camera deployments were carried out under photography licence obtained from NPWS (Licence No: 74/2023).

Table 2: Trail camera deployments targeting mammal features of interest

Deployment date	Retrieval date	Description of area	Image
10/04/2025	29/04/2025	Facing small disused burrow (circled in red) on the opposite side of riverbank.	
11/04/2025	07/05/2025	Single burrow entrance located along the boundary of an improved grassland field, with old bedding scattered outside.	

Deployment date	Retrieval date	Description of area	Image
29/04/2025	08/05/2025	Located in scrub / treeline at the corner of an improved grassland field, overlooking a main badger sett comprising at least six entrances.	

Mammal surveys of the proposed wind farm site and surrounding area were undertaken between 07 and 11 April 2025, as per the dates set out in **Table 1**. A separate survey of the proposed substation location was undertaken on 22 April, with a return visit on 29 April to deploy trail cameras. This involved surveying all suitable badger habitat within the proposed infrastructure area, as well as an area extending 50 m from the proposed substation boundary (see **Section 2.2.2.1**). The survey included an inspection of drainage ditches and potential aquatic features within and adjacent to the substation footprint for signs of otter, focusing on areas that could provide opportunities for resting and foraging.

Mammal surveys were incorporated into the habitat assessments undertaken for the proposed TDR and GCR, with particular focus on protected species such as badger and otter. Particular attention was paid to mammal trails intersecting the proposed routes. Where trails were recorded, adjacent habitat within 25 m of the alignment was inspected to establish whether they originated from, or were associated with, nearby badger setts or other resting places that may be sensitive to disturbance.

2.2.2.1. Badger

Badger surveys were carried out in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) *Competencies for Species Survey: Badger* (2013) and the Irish survey guidelines for the *Treatment of Badgers prior to the Construction of National Road Schemes* (National Roads Authority [NRA], now Transport Infrastructure Ireland [TII], 2006). The methodology included the following:

- Surveying of all suitable habitat, including an area extending 50 m from the proposed construction corridor, or 150 m where piling or blasting are proposed.
- Walking the survey area systematically and checking all suitable areas such as hedgerows and patches of scrub for evidence of badger activity.
- Recording of badger activity that included:
    - Badger sett locations, which were recorded using the ArcGIS Survey 123 app, along with geo-referenced photographs. Where possible, the dimensions of the sett entrances were also recorded as well as the direction of tunnelling.
    - Badger sett activity level, as determined by the following criteria:
        - Active: well-worn entrance, fresh excavation, scratch marks, strong smell.

    - Inactive: partially or completely blocked, and which requires a considerable amount of excavation for reoccupation.
    - Unsure: leaves and twigs and/or plants mosses at entrance (may be partially used).
- Any other badger signs, which included hairs, latrines (i.e. holes dug in the ground containing faeces), snuffle holes (i.e. signs of foraging), footprints and trails.

Other guidance documents consulted for the badger survey included Harris *et al*. (1989), Smal (1995) and Natural England (2007). **Table 3** details the different types of badger setts that can be encountered and criteria on how to define these in the field.

Table 3: Summary of badger sett types and definitions

Sett type	Definition
Main	• Larger well-established sett with several entrances (1-38, average 6 to 7) • Well used paths to and from sett and between sett entrances • Typically, in continuous use and where cubs are raised
Annex	• Secondary large sett close to main sett (<150 m away) and connected to main sett *via* several well used paths • Several entrances however may not be in use all the time
Subsidiary	• Usually >50 m from main sett with 5 or less entrances (1 to 8, average 2 to 3) • Not continuously active, and no obvious path connecting them with another sett
Outlier	• Often only a single entrance (1 to 5, average 1 to 2) • May be located some distance from the main sett • Little spoil visible, no obvious paths • May only be used sporadically • May also be used by foxes and rabbits

2.2.2.2. Otter

Surveys for otter were also completed as per Irish guidelines for the *Treatment of Otters prior to the Construction of National Road Schemes* (National Roads Authority (NRA), now Transport Infrastructure Ireland (TII), 2008). Surveys covered all surface water features within the proposed project, including the Black River (EPA Code: 30B02), which flows to the east of the proposed wind farm site. Here, a linear survey area extending 150 m upstream and downstream of the site (subject to accessibility) was assessed for otter. Survey effort was concentrated here, as previous observations and desk study records indicated that this watercourse was most likely to support otter within the study area.

To account for the presence of otter holts (i.e. otter dens), especially natal holts, riparian habitats were also surveyed up to 50 m from the watercourse edge where appropriate and where access allowed. The survey method involved the following:

- Walking the survey area systematically and checking all suitable areas (e.g. watercourses including suitable drainage ditches, riparian areas, areas under bridges) for otter activity, and identifying potential holt locations.
- Recording any otter signs, such as spraints (droppings), feeding remains, anal jelly, couches, slides (i.e. access points to watercourses) and footprints.
- Recording trails and determining whether they may lead to holt locations.

Survey timings were selected to avoid periods of high flow rates that follow heavy rain, which can wash away otter prints and spraints, thus making it more difficult to survey for this species and collect evidence.

The survey area was covered by two ecologists, each assigned a separate stream or riverbank. In certain instances, and where accessibility permitted, sections of the watercourse were waded, whereby one ecologist entered the water while the other covered the adjacent bank. The ecologist on the bank maintained close proximity and regular communication with the surveyor in the water for health and safety purposes.

In addition to these surveys, targeted otter surveys were carried out on 08 April 2025 where the TDR and GCR involved bridge crossings, i.e., along a proposed watercourse crossing on the Black River (EPA code: IE_WE_30B020300) and along the proposed crossing of the Shancloon Stream (EPA Code: IE_WE_30B020200), as far as practicable (see **Section 0**). The surveys followed a similar methodology as previous described and were completed during daylight hours and optimal weather conditions. Particular attention was given to vegetated banks, undercut tree roots, and areas under bridges or culverts, which could provide suitable resting or breeding habitat.

2.2.2.3. Other mammals

Mammal surveys also recorded any observations or evidence of other mammals of conservation concern that may be using the study area e.g. pine marten, Irish stoat, pygmy shrew, red squirrel and hedgehog.

2.2.3. Amphibians and Reptiles

Only two species of amphibian and one species of reptile have the potential to occur within the study area: common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*) and common lizard (*Zootoca vivipara*). Amphibian and reptile suitability surveys were undertaken alongside mammal surveys carried out in April 2025. Initial scoping and walkover surveys, though not specifically designed to assess suitability for newt, did not record any waterbodies of sufficient permanence or significance to support a breeding newt population within the study area. However, to fully rule out the presence of breeding newt within the proposed works corridor, it was decided to carry out targeted habitat suitability assessments concurrently with suitability surveys for common lizard. Habitat suitability was assessed based on the criteria outlined in Meehan (2013), as shown below in **Table 4**.

In Ireland, common lizard are mainly associated with heathland, bog, and coastal habitats (Farren *et al*., 2010), however they may also occur in limestone-influenced landscapes where suitable microhabitats are present, including stone walls and rocky features (ENFO, 2005; Lyne, 2023). While the study area primarily consists of productive agricultural pastureland, the limestone areas and rock piles on site, offer some suitability in the form of rocky crevices that lizard could avail of for cover and basking (Edgar *et al*., 2010). Moreover, NBDC records (the latest dated 2019) show common lizard occurring within 2 km of the site. As such, suitability assessments were also completed as part of wider herpetofauna surveys performed on site, to gain a better understanding of the overall habitat suitability for common lizard.

These assessments followed habitat criteria outlined in the NRA (2009) guidelines, which identify key features such as south-facing basking areas with structurally diverse vegetation, suitable refuges like dense ground cover or rock crevices, nearby foraging grounds with abundant prey, and free-draining

hibernation sites with sun exposure (see **Table 5**). In applying these criteria, consideration was also given to the habitat requirements for reptiles as outlined by Edgar *et al*. (2010).

Table 4: Conditions needed for suitable breeding newt habitat (Meehan, 2013)

Criteria	Condition
Water-flow	Very slow-moving or still water (essential)
Vegetation	Some aquatic vegetation present
Fish	Very few or no fish present
Age	Sites over five years in age
Size	Sites of a manageable size (essential - no lakes). Typically, small to medium ponds

Table 5: Habitat features to which common lizard require access (adapted from NRA, 2008)

Feature	Description
Basking Sites	South-facing slopes and hedge banks or areas with micro-topographic variation, and with structurally diverse mosaics of vegetation and exposed substrates
Refuges	Places of shelter including patches of dense vegetation, rock and soil fissures, log piles and mammal burrows
Foraging areas	Features with a high concentration of prey
Hibernacula	Free-draining structures, usually with a sunny aspect, including a similar range of features as are used as refuges (above)

2.2.4. Invertebrates

2.2.4.1. Lepidoptera (butterflies)

Habitat surveys of the proposed wind farm site were undertaken on various dates between July 2024 and July 2025 (see **Table 1**). Additional bryophyte surveys were completed in July 2026. Devil's-bit scabious, the larval food plant of marsh fritillary (*Euphydryas aurinia),* was recorded locally within a mosaic habitat of HD1 dense bracken / GS1 dry calcareous and neutral grassland / HH2 dry calcareous heath (see **Section 3.3.15**).

However, the habitat was characterised by extensive bracken and dwarf shrub cover (c. 25%), with evidence of grazing pressure. On this basis and given the localised occurrence of devil's-bit scabious, the area was not considered likely to support significant breeding habitat for marsh fritillary. Consequently, a dedicated habitat suitability assessment and larval web survey were not considered necessary.

Desk study records identified a number of threatened butterfly species within the two 10-km squares encompassing the proposed project (see **Biodiversity Chapter Appendix 6-2**). Consequently, targeted

butterfly surveys were undertaken to determine the use of potentially suitable habitats that may be affected by the proposed project.

Butterfly transects were undertaken on 15 and 25 June, 16 July and 12 August 2026, following a methodology adapted from the Irish Butterfly Monitoring Scheme (NBDC, 2026). Surveys focused on habitats considered suitable for butterflies and potentially affected by the proposed project, principally the HD1/GS1/HH2 habitat mosaic surrounding the proposed onsite control station and areas of GS1 mosaic habitat in the vicinity of T5.

Surveys involved walking fixed transects of approximately 1 km (see Appendix 6-3) and recording all butterflies observed, together with their abundance, within 2.5 m on either side of the transect. Records were collected as point data. Surveys were typically completed between 11:00 and 17:00 under suitable weather conditions, and when temperatures exceeded 13°C.

2.3. Survey Limitations

As the primary habitat surveys (i.e. quadrat surveys) at the proposed wind farm site were undertaken in late June and July (2025), they occurred outside the flowering period of early flowering plant species (April to June). As such, these plants were identified using vegetative keys where required. Moreover, a separate site visit undertaken in May 2025 to follow up on Annex I habitats identified during the 2024 constraints survey, which represent the primary habitat sensitivity within the study area, further addressed this limitation. Undertaking site visits on a number of dates also mitigated the impact on plant identification following periods of livestock grazing (with higher grazing pressure requiring more plants to be identified using vegetative characters) as swards were seen in different states. Together, these measures ensured that survey timing did not affect accurate habitat classification.

The reaches of the Black River to the east of the proposed wind farm site and at the GCR crossing point are naturally confined by limestone bedrock, resulting in steep rocky banks partially covered with scrubby vegetation. These conditions made certain sections of the survey area inaccessible due to health and safety considerations. In these areas, banks and instream features such as boulders were observed using binoculars and, where feasible, inspected further by wading instream. Consequently, it is considered that the surveys adequately assessed all suitable otter habitat.

Assessment of the proposed GCR crossing along the Shancloon Stream (EPA Code: IE_WE_30B020200) was undertaken as far as practicable. While some evidence of recovery was observed, the channel had clearly been subject to modification with limited ecological viability. Upstream of the crossing, the watercourse comprised predominantly standing water with instream macrophyte growth and overgrown riparian margins. These habitat conditions, along with restricted access caused by dense scrub vegetation, informed the extent to which the watercourse could be surveyed at this location.

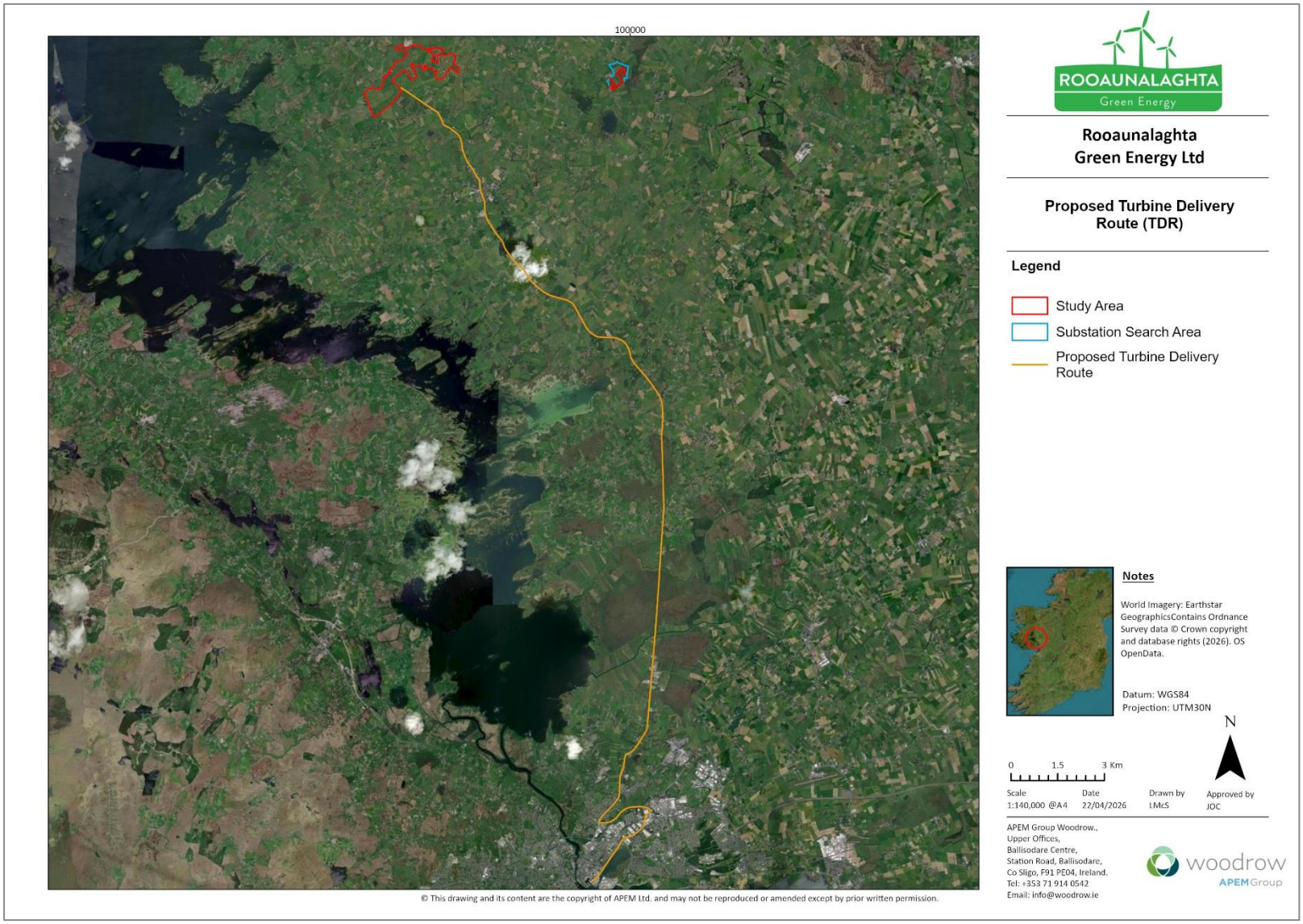


Figure 4: Location of the Turbine Delivery Route in relation to the proposed project

2.4. Evaluating Ecological Features

Ecological features identified within the proposed project, such as habitats and species, are evaluated in terms of geographic hierarchy of importance. The criteria to evaluate ecological features in this way is set out in the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine* published by the CIEEM (CIEEM, 2018). The categories used for this ecological evaluation have been adapted from Transport Infrastructure Ireland (TII, formerly National Roads Authority (NRA)) guidance on *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (TII, 2009) and are listed in **Table 6**.

Table 6: Frame of reference used to determine the value of ecological features

Importance	Criteria
International Importance	• 'European Sites' including Special Areas of Conservation (SACs), Site of Community Importance (SCIs), or Special Protection Area (SPAs). • Proposed Special Area of Conservation (pSAC) or proposed Special Protection Area (pSPA). • Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	• Sites, habitats and species populations of importance in a national context. • Site designated or proposed as a Natural Heritage Area (NHA) in Ireland. • Site designated as an Area of Special Scientific Interest (ASSI) in Northern Ireland. • National or statutory Nature Reserve. • Undesignated site fulfilling the criteria for designation as an Area of Special Scientific Interest (ASSI) or National Nature Reserve.

	• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve.
	• Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
	• Site containing 'viable areas'[11] of the habitat types listed in Annex I of the Habitats Directive.
	• Resident or regularly occurring populations (assessed to be important at the national level in Ireland) of the following:
	  ○ Species protected under the Wildlife Acts; and/or
	  ○ Species listed on the relevant Red Data list.

County / Regional Importance	• Area of Special Amenity.
	• Area subject to a Tree Preservation Order.
	• Area of High Amenity, or equivalent, designated under the County Development Plan.
	• Resident or regularly occurring populations (assessed to be important at the County level) of the following:
	  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
	  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
	  ○ Species protected under the Wildlife Acts Ireland); and/or
	  ○ Species protected under the Wildlife (Northern Ireland) Order 1985; and/or
	  ○ Species listed on the relevant Red Data list.
	• County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.
	• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
	• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
	• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
	• SLNCIs supporting county important populations of species, or viable areas of semi-natural habitats identified as Northern Ireland Priority Habitats.

Local Importance (Higher Value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared.
	• Resident or regularly occurring populations (assessed to be important at the Local level) of the following:
	  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
	  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
	  ○ Species protected under the Wildlife Acts; and/or
	  ○ Species listed on the relevant Red Data list.
	• Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality.
	• Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

11 A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

	• SLNCIs supporting locally important habitat assemblages and /or locally important populations of Northern Ireland Priority Species Sites, habitats and species populations of importance in a parish and district context, including Locally important populations of Northern Ireland Priority Species or Habitats.
Local Importance (Lower Value)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites or features containing non-native species that are of some importance in maintaining habitat links.

The status of a species requiring protection at an international level does not necessarily impose an 'International' conservation value on any single example of that species found at a site. Approaches to attributing nature conservation value to species have been previously developed for groups such as birds and bats.

3. BASELINE ECOLOGICAL CONDITION

The following section describes the existing ecological baseline, including survey results within the proposed wind farm site, the proposed 110 kV substation, and areas along the proposed TDR and GCR. This is based on the desk study, habitat surveys, mammal surveys, and reptile and amphibian suitability surveys undertaken in accordance with the methodology outlined in the previous section.

3.1. Existing Ecological Records

Records of protected species and species of notable conservation concern, as well as any IAS within 2 km of the proposed wind farm site are provided in **Table 7**.

Table 7: Species of conservation interest in Ireland recorded within 2 km of the proposed wind farm site (Source: NBDC)

Species[12]	Scientific Name	Habitats Directive Annex II / IV[13]	Wildlife Act[14]	Red List Status[15]	Most recent record
Mammals					
Eurasian badger	*Meles meles*	N	Y	LC	2013
Eurasian otter	*Lutra lutra*	Y	Y	LC	2011
Irish hare	*Lepus timidus hibernicus*	N	Y	LC	2023
Irish stoat	*Mustela erminea hibernica*	N	Y	LC	2015
Pine marten	*Martes martes*	N	Y	LC	2021
West European hedgehog	*Erinaceus europaeus*	N	Y	LC	2020
Reptiles					
Common lizard	*Zootoca vivipara*	N	Y	LC	2019
Amphibians					
Common frog	*Rana temporaria*	N	Y	LC	2018
Plants					

12 Key to Red List Status: CR = Critically Endangered; NT = Near Threatened; VU = Vulnerable; LC = Least Concern; DD = Data Deficient

13 https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/managing-and-protecting-natura-2000-sites_en

14 https://www.irishstatutebook.ie/eli/1976/act/39/enacted/en/html#zza39y1976

15 https://www.npws.ie/publications/red-lists

Species[12]	Scientific Name	Habitats Directive Annex II / IV[13]	Wildlife Act[14]	Red List Status[15]	Most recent record
Autumn lady's-tresses	*Spiranthes spiralis*	N	N	NT	2020
Dense-flowered orchid	*Neotinea maculata*	N	N	NT	2010
Frog orchid	*Coeloglossum viride*	N	N	NT	2011
Greater knapweed	*Centaurea scabiosa*	N	N	NT	2011
Spring gentian	*Gentiana verna*	N	N	NT	2010
Limestone fern	*Gymnocarpium robertianum*	N	Y	CR	2019
Wood bitter-vetch	*Vicia orobus*	N	Y	VU	2019
Invasive Alien Species					
European rabbit	*Oryctolagus cuniculus*	-	-	-	2017
Brown rat	*Rattus norvegicus*	-	-	-	2017

3.2. Designated Sites

3.2.1. Internationally designated sites

There are a limited number of internationally designated sites within the surrounding environs of the proposed project, including Cloughmoyne SAC [000479] that adjoins the proposed wind farm site and another, Lough Corrib SAC [000297] that occurs within close proximity (i.e. c. 150 m). A total of 14 SACs were identified within the ZoI of the proposed project, which is currently considered to extend up to 15 km. No SACs located beyond 15 km were identified as having potential connectivity with the proposed project through relevant ecological or hydrological pathways. A full list of these sites is provided in **Table 8**.

SPAs are not included within the designated sites section of the Terrestrial Ecology Report, as sites designated for ornithological interests are considered separately within the Ornithology Report. This avoids duplication between the two assessments.

3.2.2. Nationally designated sites

One nationally designated site (NHA), and 25 pNHAs are within 15 km of the proposed project. These are provided in **Table 9**.

Table 8: Special Areas of Conservation (SACs) within 15 km of the proposed project

European site [site code]	Qualifying Interests (* denotes priority habitat)	Closest distance to the proposed project[16]
Special Area of Conservation (SAC)		
Cloughmoyne SAC [000479]	Limestone pavements [8240]	Adjoining
Lough Corrib SAC [000297]	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210] Petrifying springs with tufa formation (Cratoneurion) [7220] Alkaline fens [7230] Limestone pavements [8240] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Bog woodland [91D0]	147 m

16 Hydrological connections indicated in river kilometres, 'rkm'

European site [site code]	Qualifying Interests (* denotes priority habitat)	Closest distance to the proposed project[16]
	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Salmo salar* (Salmon) [1106] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Najas flexilis* (Slender Naiad) [1833] *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	
Shrule Turlough SAC [000525]	Turloughs [3180]	c. 1.8 km
Mocorha Lough SAC [001536]	Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210]	c. 2.7 km
Clyard Kettle-holes SAC [000480]	Turloughs [3180] Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210]	c. 6.8 km
Kildun Souterrain SAC [002320]	*Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	c. 7.5 km
Gortnandarragh Limestone Pavement SAC [001271]	Limestone pavements [8240]	c. 8.8 km
Ardkill Turlough SAC [000461]	Turloughs [3180]	c. 10.4 km
Skealoghan Turlough SAC [000541]	Turloughs [3180]	c. 10.6 km
Greaghans Turlough SAC [000503]	Turloughs [3180]	c. 10.6 km

European site [site code]	Qualifying Interests (* denotes priority habitat)	Closest distance to the proposed project[16]
Kilglassan/Caheravoostia Turlough Complex SAC [000504]	Turloughs [3180]	c. 11.4 km
Lough Carra/Mask Complex SAC [001774]	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) [6210] Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Hamatocaulis vernicosus* (Slender Green Feather-moss) [6216]	c. 11.5 km
Ross Lake and Woods SAC [001312]	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	c. 12.8 km
Ballymaglancy Cave, Cong SAC [000474]	Caves not open to the public [8310] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303]	c. 12.8 km

Table 9: Natural Heritage Areas and proposed Natural Heritage Areas located within 15 km of the Site

Site name [site code]	Feature of conservation interest (* denotes priority habitat)	Closest distance to the proposed project[17]
Natural Heritage Areas (NHA)		
Oughterard District Bog NHA [002431]	Peatlands [4]	c. 13.8 km
Proposed Natural Heritage Areas (pNHA)		
Cloughmoyne pNHA [000479]	Cloughmoyne is located approximately 5 km north-west of Headford in Co. Mayo. The site lies on the south-west slope of a low limestone ridge and spreads southwards to include a fen and lake. The site is situated in the townland of Ballisnahyny (just west of the Cloughmoyne townland).	Adjoining
Lough Hacket pNHA [001294]	The main habitat of this site is the lake itself, which is surrounded to the west by reedswamp, areas of freshwater marsh as well as lowland wet grassland. The eastern side of the lake has improved grassland. The site is an area of ornithological importance for wintering wildfowl, including golden plover.	c. 1.0 rkm
Shrule Turlough pNHA [000525]	Large, highly oligotrophic turlough, with thick marl and peat deposits. There is no above-ground outflow from the turlough. The turlough floods regularly and it seems to show little modification due to the drainage efforts. Peat cutting no longer occurs but cattle graze on reclaimed peat margins and around the swallow holes.	c. 1.8 km
Rostaff Turlough pNHA [000385]	The importance of Rostaff Turlough is primarily ornithological with nationally important numbers of Greenland white-fronted geese and shoveler. The site also has a number of notable populations of breeding birds. The site is a bird sanctuary.	c. 2.0 rkm
Mocorha Lough pNHA [001536]	Mocorha Lough includes a large area of fen vegetation that is dominated by great fen-sedge (*Cladium mariscus*). The scarce moss *Drepanocladus cossonii* has been recorded in the north of the site. The site supports locally important numbers of wetland birds, especially snipe and mallard.	c. 2.7 km
Turlough O'Gall pNHA [000331]	Turlough O'Gall is distinct in vegetational terms in having large areas of both sedge heath and limestone grassland - the rock outcrops and pools add habitat diversity. Its unmodified drainage adds to its conservation value.	c. 2.7 km

[17] Hydrological connections indicated in river kilometres, 'rkm'

Site name [site code]	Feature of conservation interest (* denotes priority habitat)	Closest distance to the proposed project[17]
Castle Hackett Souterrain pNHA [002038]	This site consists of a man-made, stone, underground passageway which dates from between 500 and 1200 A.D. Bats have been seen at this site each winter since 1985. As well as being a regular hibernation area, this site is notable as it is one of the few lesser horseshoe bat sites in County Galway.	c. 3.6 km
Turlough Monaghan pNHA [001322]	Turlough Monaghan is basically a dry turlough with little physical variation except for the outcrops of bedrock. The vegetation, however, is quite diverse, with ten community types in a relatively small area. The site is of local scientific and conservation value.	c. 4.1 km
Knockmaa Hill pNHA [001288]	Knockmaa hill is of interest because it is a good example of deciduous woodland on thin limestone soil. Similar sites are rare in this part of the country. The occurrence of species-rich limestone pavement vegetation at the top of the hill adds significantly to the interest of the site.	c. 4.7 km
Turloughcor pNHA [001788]	Turloughcor is located in a lowland karstic limestone area. A small lake, Doolough is the centre of the siteThe main interest of this site is ornithological. In excess of 500 wigeon graze the grassland around the turlough, with lesser numbers of teal and mallard. Mute Swan, mallard and lapwing breed at the site.	c. 5.5 km
Lough Corrib pNHA [000297]	The shallow, lime-rich waters of the southern basin of Lough Corrib support one of the most extensive beds of stoneworts (charophytes) in Ireland. These *Chara* beds are an important source of food for waterfowl. Lough Corrib is also an internationally important site that regularly supports in excess of 20,000 wintering waterbirds including an internationally important population of wintering pochard (10,107).	c. 5.6 rkm
Killower Turlough pNHA [000282]	This turlough is situated in an area of carboniferous limestone, with large amounts of Marl underlying thin soils. The main habitats are the turlough itself, as well as lowland grassland, wet, dry and improved, heath and reedswamp. The designation of this site as an pNHA rests purely on its regional importance for waterfowl.	c. 5.7 km
Belclare Turlough pNHA [000234]	Belclare turlough shows considerable diversity, with a range of plant communities from the oligotrophic north-eastern corner to the eutrophic south-east. Further habitat diversity is introduced with the presence of scrub. The birdlife, including wintering wildfowl and Greenland white-fronted goose, adds to the scientific and conservation value of the site.	c. 5.9 km

Site name [site code]	Feature of conservation interest (* denotes priority habitat)	Closest distance to the proposed project[17]
Clyard Kettle-Holes pNHA [000480]	This site comprises a number of small lakes and turloughs developed between stony hillocks in the jumbled topography of the moraines west of Kilmaine, Co. Mayo. The main plant community in the kettle-holes at Clyard townland is Cladium fen, dominated by great fen-sedge (*Cladium mariscus*), with black bog-rush (Schoenus nigricans) and slender sedge (*Carex lasiocarpa*).	c. 6.8 km
Gortnandarragh Limestone Pavement pNHA [001271]	The site consists of an exposed limestone plateau flanked with scrub. Parts of the pavement exhibit a well-developed system of clints and grykes, while other parts are shattered, with much loose rock. Gortnandarragh is valuable as an example of limestone pavement and because the bog on the site is the type locality and only known station for *Entoloma jennyi*.	c. 8.8 km
Rathbaun Turlough pNHA [000215]	Rathbaun turlough has a simple topography and, as a result, contains large areas of three plant communities: dry *Carex nigra*, species poor *Potentilla repens* community and Wet Annuals which contains both red goosefoot (*Chenopodium rubrum*) and Northern yellow-cress (*Rorippa islandica*), two rare plant species.	c. 9.0 km
Greaghans Turlough pNHA [000503]	Greaghans Turlough is notable for the occurrence of a large area of vegetation dominated by annual plant species. Turloughs are listed on Annex I of the E.U. Habitats Directive and are of conservation significance. The presence of the rare Northern yellow-cress (*Rorippa islandica)* and of a large flock of wintering whooper swan add significantly to the importance of the site.	c. 9.6 km
Ardkill Turlough pNHA [000461]	The variation in topography/hydrology creates a good diversity of vegetation types within a small area. The site contains common meadow-rue (*Thalictrum flavum*), a species known only from this site in Co. Mayo, as well as a number of other uncommon species. A species of parasitic wasp (*Mesoleptus hibernica*) has been described as new to science from Ardkill Turlough. Taken together, all these features combine to make it a site of high conservation value.	c. 9.8 km
Skealoghan Turlough pNHA [000541]	The vegetation of the turlough is quite diverse, several pairs of lapwing breed at the site and some wintering waterfowl are likely to visit the turlough. Skealoghan Turlough is of conservation interest for its diversity of vegetation types, particularly the oligotrophic (nutrient-poor) sedge communities.	c. 10.5 km
Kilglassan/Caheravoostia Turlough Complex pNHA (000504)	This site comprises two turloughs separated by a rise of land which includes a pond and a small floating fen. It is of interest as it is a relatively large turlough complex with considerable habitat diversity. The wetness of the site and the lack of grazing in the central parts provides good habitat for breeding waders. The extensive area of wetland vegetation that occurs in the turlough basins is notable.	c. 10.6 km

Site name [site code]	Feature of conservation interest (* denotes priority habitat)	Closest distance to the proposed project[17]
Lough Carra/Mask Complex pNHA [001774]	This site has good examples of nine habitats listed on Annex I of the E.U. Habitats Directive, four of which are listed with priority status. Some of these habitats are amongst the best examples of their kind in the country. It is also selected for two Annex II mammal species and an Annex II moss. The site is of ornithological importance for both wintering and breeding birds. A relatively large number of rare or localised plant and animal species occur, including the glacial relict Arctic char.	c. 11.5 km
Ballymaglancy Cave, Cong pNHA [000474]	Ballymaglancy Cave is a linear stream cave which supports a population of lesser horseshoe bat. As 50 bats have been recorded hibernating here, this is a site of international importance. Ballymaglancy is the most suitable hibernation site for bats in the Cong district, as it offers a number of low, dry passageways near the cave entrance.	c. 12.3 km
Ross Lake And Woods pNHA [001312]	The main habitat on this site is a medium-sized lake which has a limestone bed covered by deposits of precipitated marl and a shoreline of marl-encrusted limestone boulders. The site is of importance because it contains a good example of a hard water lake, and for the internationally important population of lesser horseshoe bat, which occurs. The presence of otter and breeding common gull is also of note.	c. 12.9 km
Oughterard National School pNHA [002082]	This site consists of a two-storey primary school which is used as a nursery site by approximately 300 Leisler's bats (*Nyctalus leisleri*). The bats roost in two sites in the roof. This probably the largest Leisler's nursery colony in Ireland and possibly in Europe. Although the Leisler's bat is considered common in Ireland, the number of safe nursery roosts are small.	c. 13.2 km
Altore Lake pNHA [000224]	The site is underlain by limestone with a thin covering of free-draining sandy boulder clay. This site is of importance because of the occurrence of Greenland white-fronted geese and the presence of otters. The site also provides habitat diversity with a small area otherwise surrounded by improved grassland.	c. 14.6 km

3.3. Habitats

The review of NPWS Article 17 datasets showed the occurrence of Annex I habitat [8240] limestone pavement* within the proposed wind farm site[18]. Field surveys of the site confirmed this and also the presence of further Annex I habitats as described in the following sections and **Table 10**.

The habitats recorded within the site and the total area of each habitat type are shown in **Table 9**. A description of each habitat is provided in the following sections. The distribution of habitats within the site is shown in **Figure 5** and **Figure 6**. Refer to **Appendix II** for images corresponding to each habitat type recorded within the site.

Table 10: Habitat code and classifications following Fossitt (2000)

Habitat Code	Habitat Classification	EU Habitats Directive Annex I Habitat	Approximate area [ha] or Length [km] within the survey area
BL1	Stone walls and other stonework	No	20.98 km
BL3	Buildings and artificial surfaces	No	1.24 ha
ED2	Spoil and bare ground	No	0.12 ha
ED3	Recolonising bare ground	No	1.59 ha
ED4	Active quarries and mines	No	0.48ha
ER2	Exposed calcareous rock	8240 - Limestone pavements*	11.44 ha
ER2/GS1 mosaic	Exposed calcareous rock / Dry calcareous and neutral grassland	8240 - Limestone pavements* 6210 - Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*)	0.07 ha
ER2/WN2 mosaic	Exposed calcareous rock / Oak-ash-hazel woodland	8240 - Limestone pavements*	6.06 ha
FL6	Turloughs	3180 – Turloughs*	0.39 ha
FW4	Drainage ditches	No	0.39 km
GA1	Improved agricultural grassland	No	175.03 ha

[18] The extent of this area corresponds to the large majority of the extent of ER2/WN2 habitat identified on the northeastern section of the proposed wind farm site during habitat surveys, as illustrated in **Figure 5** of this report. Source: NPWS, 2019. Available at: https://storymaps.arcgis.com/collections/EU_Habitats_Directive_Annex_Habitats_Article_17_Report_2019_–Terrestrial Habitats

Habitat Code	Habitat Classification	EU Habitats Directive Annex I Habitat	Approximate area [ha] or Length [km] within the survey area
GA2	Amenity grassland (improved)	No	0.61 ha
GS1	Dry calcareous and neutral grassland	6210 - Semi-natural dry grassland and scrubland facies on calcareous substrates (F*estuco-Brometalia*)	8.56 ha
GS2	Dry meadows and grassy verges	6510 - Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)	2.10 ha
HD1/GS1/HH2 mosaic	Dense bracken / Dry calcareous and neutral grassland / Dry calcareous heath	6210 - Semi-natural dry grassland and scrubland facies on calcareous substrates (F*estuco-Brometalia*) 4030 - European dry heaths 5130 - *Juniperus communis* formations on heaths or calcareous grasslands	1.37 ha
HD1/WS1	Dense bracken / Scrub	No	1.11 ha
WL1	Hedgerows	No	2.51 km
WL2	Treelines	No	6.00 km
WN2	Oak-ash-hazel woodland	No	2.32 ha
WS1/WN2 mosaic	Scrub / Oak-ash-hazel woodland	No	0.74 ha

*Indicates Annex I Priority Habitat

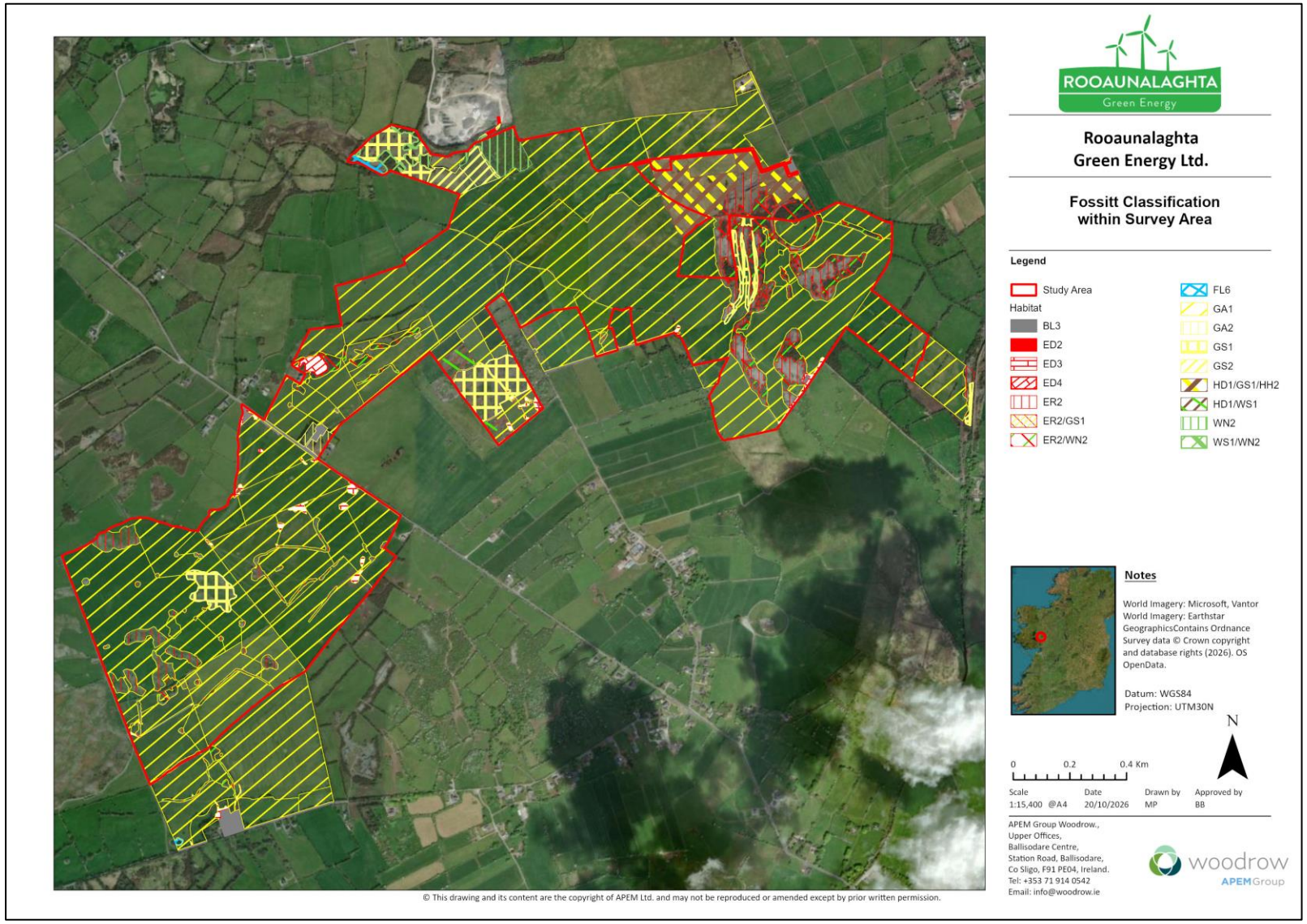


Figure 5: Overview of habitats recorded within the study area (not including linear habitats)

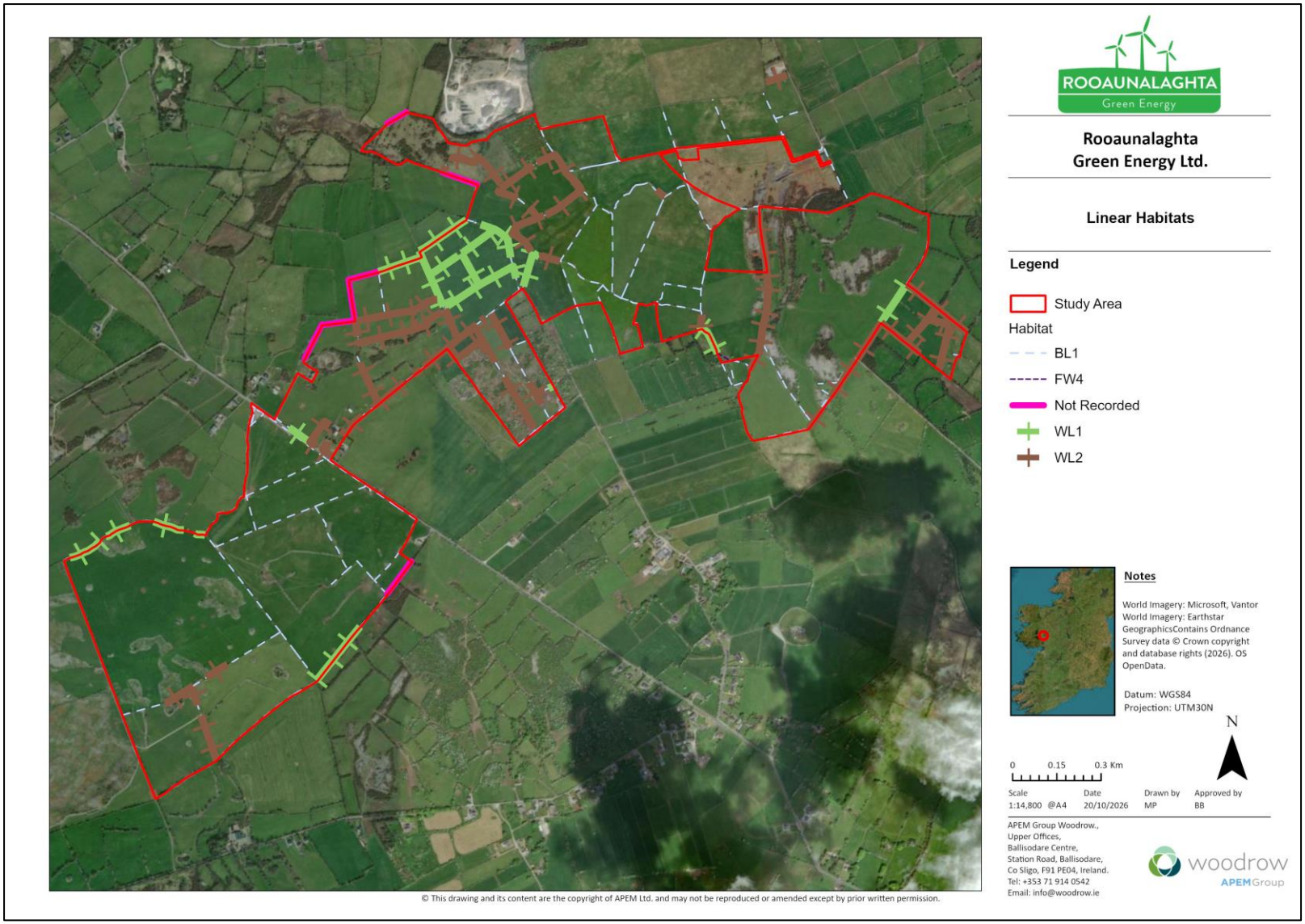


Figure 6: Overview of linear habitats recorded within the study area

3.3.1. BL1 Stone walls and other stonework

Traditional dry stonewalls are used to delineate field boundaries across the proposed wind farm site. They are composed of locally sourced limestone and are substantial in height often measuring 1.2 m in height and 1 m in width. Stone walls may support a diverse flora potentially with abundant lichens, bryophytes and ferns. A diversity of bryophyte species was also noted along the stone walls.

Species recorded along this habitat type included bramble (*Rubus fruticosus* agg.), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), Atlantic ivy (*Hedera hibernica*) and polypody (*Polypodium* spp.).

Selected sections of the stone walls were subjected to detailed bryophyte survey on 23 July 2026 (see **Appendix 6-8**). A total of 50 species of bryophyte (43 mosses and 7 liverworts) were identified across 31 stone wall sections surveyed, primarily consisting of typical common species of lowland limestone stone walls. The common mosses flat neckera (*Neckera complanata*), thickpoint grimmia (*Schistidium crassipilum*) and silky wall feather-moss (*Homalothecium sericeum*) were recorded from almost all walls surveyed. However, 14 species were found on only one of the surveyed walls. The species richness varied greatly across the walls surveyed depending on a range of factors including exposure, shading, level of disturbance and size, variety and shape of the rocks that make up the wall. 25 species were recorded from the most species-rich wall surveyed, while only five species were recorded from the most species-poor wall, with species-richness averaging at 11 species per wall across all walls surveyed. Six walls were found to support 15 or more species of bryophyte.

None of the species recorded are included within the Flora (Protection) Order (2022) or on the most recent bryophyte Red Data list (Hodgetts and Lockhart, 2025). Two species listed as Nationally Scarce in Ireland were found to occur, namely lesser striated feather-moss (*Plasteurhynchium striatulum*) and elegant grimmia (*Schistidium elegantulum*). Lesser striated feather-moss was listed as Near Threatened in Ireland until the 2025 update of the Red Data list, when its status was downgraded to Least Concern due to the discovery of additional populations. The network of stone walls within the site represents a feature of Local (Higher) Importance. As such, the habitat feature will be brought forward into the impact assessment.

3.3.2. BL3 Buildings and artificial surfaces

Several buildings, primarily farm sheds and associated yards, and derelict buildings occur within the proposed wind farm site. Due to the limited habitat value of such built structures, 'Buildings and artificial surfaces' is considered to be feature of Local (Lower) Importance. As such it is not considered an important ecological feature and will not be brought forward into the impact assessment from a habitats perspective.

3.3.3. ED2 Spoil and bare ground

Bare ground occurs along access roads that do not have adequate vegetation cover to be considered under the ED3 Recolonising bare ground category. This habitat includes any areas of bare ground that are either very transient in nature or persist for longer periods of time because of ongoing disturbance or maintenance. Once the disturbance ends, spoil is readily colonised by plants (and becomes ED3 recolonising bare ground). This habitat category does not include natural and artificial exposures of

calcareous bedrock and loose rock such as limestone pavement (which are classified as ER2 Exposed calcareous rock).

The bare ground has limited habitat value due to a depauperate flora and is therefore considered to be of Local (Lower) Importance. As such it is not considered an important ecological feature and will not be brought forward into the impact assessment.

3.3.4. ED3 Recolonising bare ground

This habitat occurs along access points to fields, around animal feeders, access routes and previously disturbed areas near quarries, where bare ground has revegetated but cannot yet be considered under other categories due to relatively low vegetation cover in comparison to other habitats such as grasslands.

Species recorded in this habitat comprise common grasses such as annual meadow-grass (*Poa annua*), Yorkshire-fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera*), perennial rye-grass (*Lolium perenne*), crested dog's-tail (*Cynosurus cristatus*) and soft-brome (*Bromus hordeaceus*).Broadleaved species include greater plantain (*Plantago major*), dandelion (*Taraxacum officinale* agg.), daisy (*Bellis perennis*), creeping thistle (*Cirsium arvense*), pineappleweed (*Matricaria discoidea*), shepherd's-purse (*Capsella bursa-pastoris*), ribwort plantain (*Plantago lanceolata*), common ragwort (*Jacobaea vulgaris*), cat's-ear (*Hypochaeris radicata*), common mouse-ear (*Cerastium fontanum*), germander speedwell (*Veronica chamaedrys*), knotted pearlwort (*Sagina nodosa*), common nettle (*Urtica dioica*) and redshank (*Persicaria maculosa*).

This habitat is of limited value due to the depauperate flora and is therefore considered to be of Local (Lower) Importance. As such it is not considered an important ecological feature and will not be brought forward into the impact assessment.

3.3.5. ED4 Active quarries and mines

The proposed wind farm site has two areas falling under this habitat category. The species in the drier areas, higher up and on the sides of one of the quarries comprise of species typical to surrounding GA1 Improved agricultural grassland (see **Section 3.3.11**). Where water has gathered on the bottom of the quarry, this has been colonised by species such as creeping bent, common spike-rush (*Eleocharis palustris*), brooklime (*Veronica beccabunga*), water-cress (*Nasturtium officinale*), carnation sedge (*Carex panicea*), Yorkshire-fog, pondweed (*Potamogeton* sp.), meadow thistle (*Cirsium dissectum*), marsh foxtail (*Alopecurus geniculatus*) and horsetail (*Equisetum* sp.).

This habitat is of limited value due to depauperate flora and is therefore considered to be of Local (Lower) Importance. As such it is not considered an important ecological feature and will not be brought forward into the impact assessment.

3.3.6. ER2 Exposed calcareous rock

This habitat type occurs as areas of limestone pavement covering approximately 11.44 ha scattered throughout the proposed windfarm site either on its own ('exposed' limestone pavement), or as part of a habitat mosaic with either GS1 dry calcareous and neutral grassland or WN2 oak-ash-hazel woodland and scrub (described further in **Sections 3.3.7** and **3.3.8**). Two different types of limestone

pavement occur based on their morphology: shattered pavement with areas of loose rubble; and block pavement with well-defined structure of clints (loose stone flags) and grikes (vertical fissures) (Wilson and Fernandez, 2013).

Species recorded within this habitat type included the grasses creeping bent, red fescue *(Festuca rubra*), downy oat-grass (*Avenula pubescens*), blue moor-grass (*Sesleria caerulea*), sweet vernal-grass (*Anthoxanthum odoratum*), quaking-grass (*Briza media*) and crested dog's-tail. Sedges included glaucous sedge (*Carex flacca*), while ferns included wall-rue (*Asplenium ruta-muraria*), maidenhair spleenwort (*Asplenium trichomanes*), hart's-tongue fern (*A. scolopendrium*), black spleenwort (*A. adiantum-nigrum*) and rusty-back (*A. ceterach*). Broadleaved herbs included fairy flax (*Linum catharticum*), lady's bedstraw (*Galium verum*), cat's-ear, wild thyme (*Thymus drucei*), wall lettuce (*Mycelis muralis*), wood sage (*Teucrium scorodonia*), herb-Robert (*Geranium robertianum*), shining cranesbill (*Geranium lucidum*), mouse-ear hawkweed (*Pilosella officinarum*), wild strawberry (*Fragaria vesca*), common ragwort, broad-leaved helleborine (*Epipactis helleborine*), early purple-orchid (*Orchis mascula*), common milkwort (*Polygala vulgaris*), harebell (*Campanula rotundifolia*), common bird's-foot trefoil (*Lotus corniculatus*), carline thistle (*Carlina vulgaris*), white clover (*Trifolium repens*), lesser trefoil (*Trifolium dubium*), tormentil (*Potentilla erecta*), common mouse-ear, red clover (*Trifolium pratense*), yarrow (*Achillea millefolium*), self-heal (*Prunella vulgaris*), common nettle, and slender St. John's wort (*Hypericum pulchrum*). Shrubs present included holly (*Ilex aquifolium*), burnet rose (*Rosa spinosissima*), blackthorn, hawthorn and hazel (*Corylus avellan*a).

This habitat type corresponds to the Annex I priority habitat [8240] limestone pavements*. The vegetation composition of the exposed limestone pavement in the eastern part of the proposed windfarm site includes frequent positive indicator species, indicating that the quality of the habitat is high; as such it was assessed as Annex I Limestone pavements* in 'Favourable' condition. Limestone pavement in favourable condition is of National ecological importance. However, the species diversity of the limestone pavement habitat is significantly reduced in the west of the proposed windfarm site where grazing pressures are much higher. As such, the limestone pavement in the west of the proposed wind farm site was assessed as Annex I limestone pavements* in 'Unfavourable' condition. However, as the cause of the unfavourable condition could be addressed through changes of management, then this habitat is also considered to be a feature of National Importance for the impact assessment.

3.3.7. ER2 Exposed calcareous rock / GS1 Dry calcareous and neutral grassland

The Exposed calcareous rock also occurs in a mosaic with dry calcareous and neutral grassland, with areas of more continuous grass sward, but this only covers approximately 0.07 ha. The species composition was similar to that described above for ER2 Exposed calcareous rock.

This habitat type corresponds to the Annex I priority habitat [8240] Limestone pavements*. The vegetation composition of the exposed limestone pavement in the east of the proposed wind farm site includes frequent positive indicator species, indicating that the quality of the habitat is high; as such it was assessed as Annex I Limestone pavements* in 'Favourable' condition. Limestone pavement in favourable condition is of National ecological importance.

3.3.8. ER2 Exposed calcareous rock / WN2 WN2 Oak-ash-hazel woodland

Areas of woodland on limestone pavement were classified and assessed as 'limestone pavement (wooded)' following NPWS guidance (Wilson and Fernandez, 2013) and recorded as a mosaic of ER2 Exposed calcareous rock and WN2 Oak-ash-hazel woodland. This habitat covers approximately 6.06 ha of the EIAR study area. In addition to the species recorded in ER2 Exposed calcareous rock (listed above), this mosaic habitat also featured relatively abundant hazel, along with frequent hawthorn (*Crataegus monogyna*), rowan (*Sorbus aucuparia*), holly, silver birch (*Betula pendula*). Ground flora included blue moor grass, dog violet (*Viola riviniana*), wild thyme, common milkwort, wood sorrel (*Oxalis acetosella*) and wild strawberry.

This habitat type corresponds to the Annex I priority habitat [8240] Limestone pavements*. The vegetation composition in wooded limestone pavement at the proposed wind farm site includes frequent positive indicator species, indicating the quality of the habitat is high and as such will be assessed as Annex I Limestone pavements* in 'Favourable' condition.

The vegetation composition of the exposed limestone pavement in the east of the site includes frequent positive indicator species, indicating that the quality of the habitat is high; as such it was assessed as Annex I Limestone pavements* in 'Favourable' condition. Limestone pavement in favourable condition is of National Importance and will be brought forward for impact assessment.

3.3.9. FL6 Turloughs

There is an area of turlough that extends out of the northern boundary of the proposed wind farm site. Within the site it covers approximately 0.39 ha. The entire area was dry at the time of survey (in July 2026) with no standing water; the ground was damp, but not significantly wet. The vegetation occupying the site was composed principally of tall swamp-type vegetation corresponding to Fossitt habitat FS1 Reed and large sedge swamps, variously dominated by grey bulrush (*Schoenoplectus lacustris*) and large sedges – determined to be dominated by the hybrid sedge (*Carex X involuta)* (the hybrid between bottle sedge (*Carex rostrata*) and bladder sedge (*Carex vesicaria*)). Towards the margins, the vegetation becomes more herb-rich, dominated by creeping bent, silverweed (*Potentilla anserina*), tufted vetch (*Vicia cracca*) and hairy sedge (C*arex hirta*), with meadowsweet (*Filipendula ulmaria*) and marsh pennywort *(Hydrocotyle vulgaris*). There is a good diversity of vegetation communities present, although no rare plants were recorded.

Tree trunks in the adjacent scrub woodland and boundary walls up to 1m above ground level were observed to support Smaller Lattice-moss (*Cinclodotus fontinaloides*), characteristic of turloughs and described by the Bryological Society of Britain and Ireland publication, Mosses and Liverworts of Britain and Ireland: a Field Guide (Atherton *et al.* [eds], 2010) as inhabiting 'intermittently but frequently submerged rocks, tree roots and stonework beside rivers and lakes' and 'avoiding markedly acidic waters'. 'Algal paper', a flaky whitish residue, was also observed on walls and trees, similarly at up to 1m above the ground surface.

The findings of the 'Survey of Potential Turloughs (O'Neill and Martin, 2015) which represents the current published Irish guidance on the assessment of turloughs, state that during that survey, 'Sites where the vegetation consisted mainly of swamp-type vegetation…were deemed not to be turloughs as the vegetation was indicative of ground that remains permanently waterlogged'. However, consultation with historic maps (accessed via the Geohive Map Viewer (Tailte Éireann, 2026) which

label the area as 'subject to flooding') and the landowner (who confirmed that the area contains standing water for only a small portion of the year); along with the karstic nature of the surrounding geology, suggest that this area is a true turlough. This is also backed up by the vegetation communities present, which are stated by Fossitt (2000) and IVC (Perrin, 2024) to be characteristic of turlough vegetation. The presence of algal paper and the characteristic smaller lattice-moss provide further evidence for the classification of the area as a true turlough. Although the species assemblage was not diverse within the waterbody, this habitat type is considered to be a feature of National Importance and will be brought forward for impact assessment. This is due to turloughs being considered virtually unique to Ireland (Fossitt, 2000). The turlough appeared to be in good condition. However, some signs of nutrient enrichment, including algal paper and marginal growth of nettles, were observed. It is understood (from discussions with the landowner) that for some time the turlough was receiving drainage from the nearby quarry, although this appears to have now ceased.

3.3.10. FW4 Drainage ditches

Fields at the proposed 110 kV substation location are bounded and traversed by FW4 drainage ditches, c. 1–1.5 m wide, with soft, silty substrates. While some of these features are mapped as 1st order watercourses, extensive modification for agricultural drainage purposes, including over deepening and straightening, has resulted in slow flowing, heavily vegetated channels. These ditches are vegetated primarily with coarse grasses and reeds, with species such as Fool's-water-cress (*Helosciadium nodiflorum*) and horsetail, and intermittent riparian cover in the form of scrub (e.g. bramble) (see **Appendix II**, **Plate 9**). The main drainage ditches are crossed at several locations by existing farm tracks. Drains occur within the proposed wind farm site, including a short section (c. 50 m) of drainage ditch within the eastern portion of the site, which is hydrologically connected to, and ultimately drains to, the Rooaunalaghta Stream (EPA Code: 30R03).

Drainage ditches within the proposed project are considered to be features of Local (Higher) Importance.

3.3.11. GA1 Improved agricultural grassland

The majority of the grassland (approximately 175 ha) within the study area, comprising the proposed wind farm site and the proposed 110 kV substation, best aligns with a moderately species-diverse version of (GA1) improved agricultural grassland. Species diversity has been significantly reduced (in comparison to semi-natural grassland types) through agricultural practices, including enrichment from agricultural inputs and overgrazing from sheep (which is evident by the proliferation of thistle across the site). However, the influence of the underlying limestone bedrock remains evident in the flowering plants noted throughout the sward. The sward height is variable, c. 5-20 cm.

Species recorded within this habitat type include the grass species perennial rye-grass, Yorkshire-fog, creeping bent, red fescue and crested dog's-tail. Herbs included white clover, red clover, lesser trefoil, creeping thistle, yarrow, common mouse-ear, dandelion, meadow buttercup (*Ranunculus acris*) and cuckoo flower (*Cardamine pratensis*).

A total of 15 no. relevés (see **Table 15 -** Table **17**) were collected from areas proposed for turbine construction within improved agricultural grassland for analysis using the IVC (see **Section 3.3.21**).

This habitat is considered to be a feature of Local (Lower) Importance, and therefore it is not considered to be an important ecological feature and will not be brought forward for impact assessment.

3.3.12. GA2 Amenity grassland (improved)

A small area of GA2 amenity grassland is found within a private garden in the proposed wind farm site. The species include common species such as annual meadow-grass, perennial rye-grass, dandelion and daisy.

This habitat is of limited value due to depauperate flora and is therefore considered to be of Local (Lower) Importance. As such, it is not considered an important ecological feature and will not be brought forward into the impact assessment.

3.3.13. GS1 Dry calcareous and neutral grassland

Dry calcareous and neutral grassland occurs as a habitat in its own right covering approximately 8.56 ha, and as part of a mosaic with other habitat types (especially ER2 Exposed calcareous rock described in **Section 3.3.7** and HH2 Dry calcareous heath described in **Section 0**). Unlike GA1 Improved agricultural grassland (**Section 3.3.11**), these swards are typically species-rich, with grasses contributing up to 50% of the sward, with a good diversity of flowering plants throughout the sward as well as a well-developed bryophyte layer. The sward was composed of species including quaking grass, glaucous sedge, fairy flax, lady's bedstraw, wild thyme, carline thistle, mouse-ear hawkweed, harebell and common bird's-foot trefoil. A well-developed bryophyte layer also occurs. Mature shrubs are scattered sparsely across the habitat.

Due to the presence of a high number of positive indicator species listed in the Annex I criteria, this area of dry calcareous and neutral grassland likely corresponds to Annex I habitat [6210] semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*) in 'Favourable' condition. Therefore, this habitat type is considered to be a feature of National Importance and will be brought forward for impact assessment.

3.3.14. GS2 Dry meadows and grassy verges

Towards the north of the proposed windfarm site several fields of GS2 Dry meadows and grassy verges occur covering approximately 2.10 ha. Species present include grasses such as common bent (*Agrostis capillaris*), red fescue, cock's-foot *(Dactylis glomerata*), Yorkshire-fog, sweet vernal-grass and timothy (P*hleum pratense*), with herbaceous species such as red clover, lady's-bedstraw, ribwort plantain, yarrow and yellow rattle *(Rhinanthus minor*). Along the eastern margin of the habitat the sward becomes more rank adjacent WN2 Oak-ash-hazel woodland. Tall, rank grasses, such cock's-foot, false oat-grass (*Arrhenatherum elatius*) and Yorkshire-fog, are most prevalent here, along with more competitive neutral grassland species such as common knapweed and meadow vetchling (*Lathyrus pratensis*).

Within these fields small areas of localised habitat variety occur including a small wetter area supporting abundant silverweed with common couch (*Elymus repens*), water mint (*Mentha aquatica*), meadowsweet and common nettle. A very small rocky embankment that supports dry calcareous and

neutral grassland (GS1), with species such as blue moor-grass, cat's-ear, lady's-bedstraw, quaking-grass and wild carrot *(Daucus carota*).

The majority of this area appears likely to correspond with the EU Annex I habitat [6510] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) on the basis of species composition. The sward contained eight of the positive indicator species listed for this habitat type (Martin *et al.*, 2018), two of which, yellow rattle and common bird's-foot-trefoil, are classed as 'high-quality indicators. The vegetation would pass the condition monitoring criteria for the habitat (Martin *et al.*, 2018) and would be considered to be in favourable condition. Therefore, this habitat type is considered to be a feature of National Importance and will be brought forward for impact assessment.

3.3.15. HD1 Dense bracken / GS1 Dry calcareous and neutral grassland / HH2 Dry calcareous heath

Dense growth of bracken (*Pteridium aquilinum*) was recorded in the north of the proposed windfarm site where it formed a mosaic with GS1 Dry calcareous and neutral grassland and HH2 Dry calcareous heath. Dwarf shrub cover was approximately 25% but the shrubs are stunted suggestive of grazing. As such, the vegetation is quite grassy with a diverse forb component indicative of the underlying calcareous bedrock. The heathland component of the vegetation corresponds with the Annex I habitat [4030] European dry heaths. Significant expanses of bracken intrude into the heathland, but these areas were not mapped separately as dense bracken because overall cover does not exceed 50%. As bracken is not listed as a negative indicator in the assessment criteria for Annex I habitat [4030] - European dry heaths, it is simply considered here as a component of the heathland habitat (Wilson and Fernandez 2013). No limestone intrusions were noted within the heathland habitat.

Species recorded within this habitat type include heather (*Calluna vulgaris*), sweet vernal grass, false oat grass, sheep's-fescue *(Festuca ovina*), purple moor-grass (*Molinia caerulea*), heath bedstraw (G*alium saxatile*), lady's bedstraw, bird's-foot trefoil, tormentil (*Potentilla erecta*), glaucous sedge, wild thyme, devil's-bit scabious *(Succisa pratensis*), heath spotted-orchid (*Dactylorhiza maculata*), common spotted orchid (*Dactylorhiza fuchsii*), common knapweed (*Centaurea nigra*), heath milkwort (*Polygala serpyllifolia*), eyebright (*Euphrasia officinalis*) and ox-eye daisy (*Leucanthemum vulgar*e).

Due to the presence of a high number of positive indicator species listed in the Annex I criteria, this area of dry calcareous heath likely corresponds to the Annex I habitat [4030] European dry heaths. The grassland component shows some potential correspondence to the Annex I habitat [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates *(Festuco-Brometalia*) but it was not possible to assess it separately due to the mosaic nature of the habitat types represented and the influence of high levels of grazing at the time of the survey. This habitat type is considered to be a feature of County / Regional Importance and will be brought forward for impact assessment.

3.3.16. HD1 Dense bracken / WS1 Scrub

Dense bracken with cover levels exceeding 50% also occurs in a mosaic with woody scrub. The scrub is dominated by a diverse shrub layer with canopy heights less than 4 m. Species recorded within this habitat type include hazel, hawthorn, rowan, holly and silver birch.

Where bracken dominates the area, it is of limited value due to depauperate flora, however in a mosaic with scrub the ecological value of the habitat is enhanced. This habitat type is considered to be of Local (Higher) Importance and will be brought forward for impact assessment.

3.3.17. WL1 Hedgerows

The total length of hedgerows growing within the proposed wind farm site was recorded as approximately 2.51 km. Hedgerow species are dominated by hawthorn, hazel and blackthorn. Hedgerows across the site are largely associated with stonewalls (mapped as a separate habitat – see **Section 3.3.1**) and act as field boundaries. Hedgerows are much sparser in the south of the site with occasional shrubs distributed along the stonewalls.

The network of hedgerow field boundaries within the site, supports biodiversity that would otherwise be limited given the agricultural nature of the surrounding area. Hedgerows represent a key ecological feature for fauna, including shelter for a range of birds, small mammals and invertebrates, and also provide a foraging habitat for bats which feed on the flying insects associated with such features. These linear habitats form a continuum along which fauna can safely move to other areas for foraging or shelter.

Overall, the network of hedgerows within the site represents a feature of Local (Higher) Importance. As such, hedgerows as habitat features will be brought forward into the impact assessment.

3.3.18. WL2 Treelines

Treelines are defined as greater than 5 m in height but less than 4 m wide at the base and typically occur along field or property boundaries and include tree-lined roads and overgrown hedgerows that are dominated by trees. The total length of treelines growing within the survey area was recorded as approximately 6.05 km. Treelines across the site include species similar to those present in the hedgerows (**Section 3.3.17**), such as ash (*Fraxinus excelsior*), hazel, hawthorn and blackthorn.

The treelines and hedgerows within the site combine to form a network of field boundaries, supporting biodiversity that would otherwise be limited given the agricultural nature of the surrounding area. As described for hedgerows in **Section 3.3.17**, these linear tree and shrub features provide valuable habitats including shelter for a range of birds, small mammals and invertebrates, and also provide a foraging habitat for bats which feed on the flying insects associated with such features. Overall, the network of treelines within the site represents a feature of Local (Higher) Importance. As such, treelines as habitat features will be brought forward into the impact assessment.

3.3.19. WN2 Oak-ash-hazel woodland

This habitat type occurs in distinct woodland parcels which have been somewhat protected from sheep grazing by stone walls. There is evidence of browsing from cattle within woodland parcels. The woodland canopy reaches a height of c. 4-5 m tall and as such is somewhat stunted as it lacks the upper canopy which is usually formed in this habitat type by mature ash and pedunculate oak (*Quercus robur*). The canopy is closed and as such the ground flora is typical of that found in woodland habitats. In addition, the highly shaded conditions allow for a well-developed bryophyte layer which covers the limestone boulders.

Species recorded within this habitat type include hazel, ash, hawthorn, holly, blackthorn, Atlantic ivy (*Hedera hibernica*), bramble (*Rubus fruticosus* agg.), dog violet *(Viola* spp.), wood sorrel, wood avens (*Geum urbanum*), herb-Robert (*Geranium robertianum*), primrose (Primula vulgaris), lords-and-ladies (*Arum maculatum*), hairy brome (*Bromopsis ramosa*), Common tamarisk-moss (*Thuidium tamariscinum*) and fox-tail feather-moss (*Thamnobryum alopecuru*m).

Although this woodland category does not correspond to any Annex I habitat, it is very limited in extent in Ireland and should be regarded as being of conservation importance (Fossitt, 2000). This habitat type is considered to be of Local (Higher) Importance and will be brought forward for impact assessment.

3.3.20. WN2 Oak-ash-hazel woodland / WS1 Scrub

This habitat type is confined to the north of the proposed project, where grazing pressure is somewhat reduced. The scrub is dominated by a diverse shrub layer with canopy heights less than 4 m. The canopy is open and as such the ground flora is more representative of dry calcareous grassland than woodland flora. Species recorded within this habitat type include Hazel, hawthorn, rowan, holly, silver birch, blue moor-grass, dog violet, wild thyme, crested dog's-tail, common milkwort, wood sorrel, wall lettuce, quaking grass, bird's-foot trefoil, wild strawberry.

This habitat type is considered to be of Local (Higher) Importance and will be brought forward for impact assessment.

3.3.21. Irish Vegetation Classification surveys

Fifteen relevés of habitat data were collected from the proposed wind farm site during June and July 2025 at locations proposed for turbines at that time or previously identified for turbine construction (see **Figure 7**). All of these plot locations had been identified during the Fossitt survey as being GA1 improved agricultural grassland. As described in **Section 2.2.1.2**, the vegetation recorded within the quadrats was assessed using the web classification tool ERICA (Perrin, 2020). The outputs of the analysis assigned each of these quadrat samples to vegetation communities described in the IVC (Perrin, 2024).

GL2C *Holcus lanatus – Lolium perenne* grassland

The IVC community GL2C *Holcus lanatus* (Yorkshire-fog) - *Lolium perenne* (perennial rye-grass) was assigned to the quadrat datasets collected at the locations of turbines T6, T7, T10, T11 and T12. This habitat type was also recorded to the west of T9 but in a different field parcel. Sample locations are shown in **Figure 7**.

This community is a very species-poor grassland assemblage: there are only a few constant species, and it is of relatively low conservation value. Yorkshire-fog and perennial rye-grass form the bulk of the GL2C swards at the proposed wind farm site, alongside species such as white clover. The perennial rye-grass and white clover are indicative of the agriculturally-improved nature of the community.

The GL2C grassland is a variable semi-improved community of wet pastures and meadows found commonly across the lowlands of Ireland (Perrin, 2024). It occurs on gleyed or drained mineral soils that are fairly acidic and, despite the agricultural improvement, the vegetation suggests that they are only mildly fertile.

GL3B *Lolium perenne – Trifolium repens* grassland

The IVC community GL3B *Lolium perenne* (perennial rye-grass) - *Trifolium repens* (white clover) was assigned to the quadrat data sets collected at the locations of turbines T1, T2, T3, T4, T5 and T13. The community was also assigned to data from two quadrats located between turbine locations T6 and T8 (see **Figure 7**).

This community represents semi-improved and improved swards on well-drained mineral soils or gleys of relatively high fertility and base-richness and is found throughout Ireland (Perrin, 2024). This is a fairly species-poor grassland community. Due to its improved/semi-improved nature it is not recognised to have significant conservation value.

At the proposed wind farm site, perennial rye-grass is typically the predominant grass species in this community, along with crested dog's-tail, Yorkshire-fog, and to a lesser extent cock's-foot and sweet vernal grass. White clover and common mouse-ear are both indicative of improved grassland and are constant components in this community. While the cover of forbs can be quite high, at the site it is largely composed of white clover, along with modest contributions from common mouse-ear, ribwort plantain and creeping buttercup (*Ranunculus repens*). These other herbs include species associated with improved swards and more intensive farming, such as creeping thistle, with their broadleaved herbs not contributing much cover.

The vegetation near T8 was not assigned to a vegetation community, as analysis determined it to be transitional, where the vegetation falls within the scope of the IVC scheme but does not relate to the core definition of any of the vegetation communities. This vegetation sample, however, showed the closest affinity with the GL3B community. This area was classified as GA1 Improved agricultural grassland using Fossitt (2000).



Figure 7: IVC relevé locations

3.4. Mammals

The study area, comprising the proposed main wind farm site and offsite 110 kV substation, was investigated for mammal activity between April and May 2025. Special attention was given to field boundaries, particularly those comprising hedgerow and treelines, as well as areas of woodland and scrub. Riparian areas of the Black River to the east of the proposed wind farm site were also searched for signs of otter, including an area extending c. 150 m upstream and downstream of the initial wind farm boundary. The proposed wind farm site is largely unsuitable for burrowing species due to the dominance of stone walls and bedrock close to or at the surface across most of the site; however, pockets of woodland and scrub were considered potentially suitable for badger and other species such as pine marten and red squirrel.

Overall, mammal activity was extremely low across the study area during dedicated mammal surveys, with most mammal observations to date being incidental sightings during routine walkover surveys for birds and habitats, the majority of which were fox (*Vulpes vulpes*). An exception to this was along the Black River, which showed notable otter activity confirmed by the presence of spraints (i.e. droppings) on a number of bankside boulders. The substation location had the highest concentration of mammal activity, dominated by the discovery of an active main badger sett.

3.4.1. Badger (*Meles meles*)

Details on badger setts identified within the study area are provided in **Appendix IV – Badger Setts.** The NBDC data for the four 2-km grid squares in which the proposed project is located included previous records of badger, with the most recent record dating to 2013.

Badger activity within the proposed wind farm site was generally limited, with a handful of trails recorded, including two west of T7 and one along the Black River (EPA code: 30B02), which may also have been used by badger. One latrine (i.e. hole dug in the ground containing faeces) was also observed in a dried-up area of Ballisnahyny Turlough in the northwest of the site. A single entrance burrow with old, discarded bedding material outside, was recorded in the corner of a field hedgerow bounded by GA1 improved agricultural grassland. The sett is located c. 55 m from the proposed borrow pit footprint, c. 78 m from the temporary turbine assembly area at T7, and c. 98 m from the turbine hardstand at T7. Two badger observations were captured by trail camera during 26 days of monitoring at this location, both of which were outside the sett entrance.

These records suggest that the individuals may have been investigating the sett, however no significant interaction was observed. While discarded bedding material is consistent with badger usage, the footage indicates that this is likely an outlier sett, taken up sporadically, perhaps during the maternity period. Another single-entrance sett was identified incidentally during a breeding bird walkover survey in May 2024 on the opposite side of the site, c. 390 m from the proposed project in the southwest.

At the proposed 110 kV substation location, a main sett comprising six entrances was recorded within an area of treeline / scrub at the corner of a dairy field (GA1), c. 102 m northeast from the proposed substation footprint. An additional entrance was found 123 m from the proposed substation and is considered likely to be connected. A clan of badger was confirmed using the sett following trail camera monitoring. The group comprised of at least seven individuals, including cubs. A small number of trails

were also recorded adjacent to the substation location, two of which were considered likely to be badger in origin. These were located to the north and west of the main sett, on the northern side of the treeline bordering the field proposed for the substation. A return visit in March 2026 identified fresh discarded bedding material, this confirmed that the sett remained active and in continued use.

Given that badger is a protected species under the Wildlife Act (1976) as amended (2000), the badger population within the study area is considered to be a feature of Local (Higher) Importance and will be brought forward to the impact assessment stage.

3.4.2. Otter (*Lutra lutra*)

The NBDC database for the four 2-km grid squares (M25F, M24J, M25K, and M25Q) covering the proposed wind farm site contained no previous otter records; however, otter have been recorded within 2 km of the site (within the 10-km grid square M24). Surveys of the study area confirmed recent otter activity, with otter spraint found along the Black River (EPA Code: IE_WE_30B020300), which runs c. to the east of the proposed wind farm site.

Three instances of otter spraint were recorded c. 60 m downstream of the proposed project (see **Figure 8**; **Appendix V**, **Plate 13**). A cavity in the bedrock on the right-hand bank was also noted as a potential holt location, however no other signs were observed. A return visit in November 2025 found the cavity was no longer visible, likely submerged during high winter flows. Ultimately, fluctuating water levels rendered monitoring at this location difficult. A second, smaller burrow was identified midway up the right-hand bank of the river. It appeared disused and was monitored using a trail camera, but no significant footage was recorded. Due to the river's hydromorphological characteristics (i.e. steep rocky banks), there appears to be limited potential for lay-up or resting sites (e.g. couches), at least within the stretch nearest the proposed wind farm site.

The evidence gathered suggests that otter utilise the Black River and adjacent riparian habitat as part of a wider home range. This is due to the high foraging potential of the Black River, supported by ample prey availability. One incidental sighting of an otter feeding during a breeding bird survey in May 2024, c. 500 m southeast of the proposed wind farm site, further supports this conclusion. Aquatic surveys undertaken in November 2025 also confirmed the presence of otter c. 6 river kilometres (rkm)[19] downstream of the wind farm site, through remnants of a spraint and anal jelly, indicating that otters are likely utilising the full extent of the Black River. No other significant features such as holts, couches or slides were observed incidentally.

Following the design process informed by ecological consultation, the proposed project boundary currently lies >150 m from the Black River, while the proposed site infrastructure is a minimum of c. 280 m away at its nearest point.

No clear evidence of breeding otter was found during field surveys, and as such, it is concluded that otters are primarily utilising the Black River and areas immediately adjacent to the river for hunting and commuting purposes. However, the Black River is designated as a European Site forming part of the River Corrib SAC (Site Code: 000297). Otter is a Qualifying Interest (QI) of this European Site, with a resident or regularly occurring population considered to be one of the best in the country. As a

19 River kilometres (rkm) is a measure of distance, in kilometres, along the path of a watercourse

result, this species will be brought forward to the impact assessment stage as a feature of International Importance.

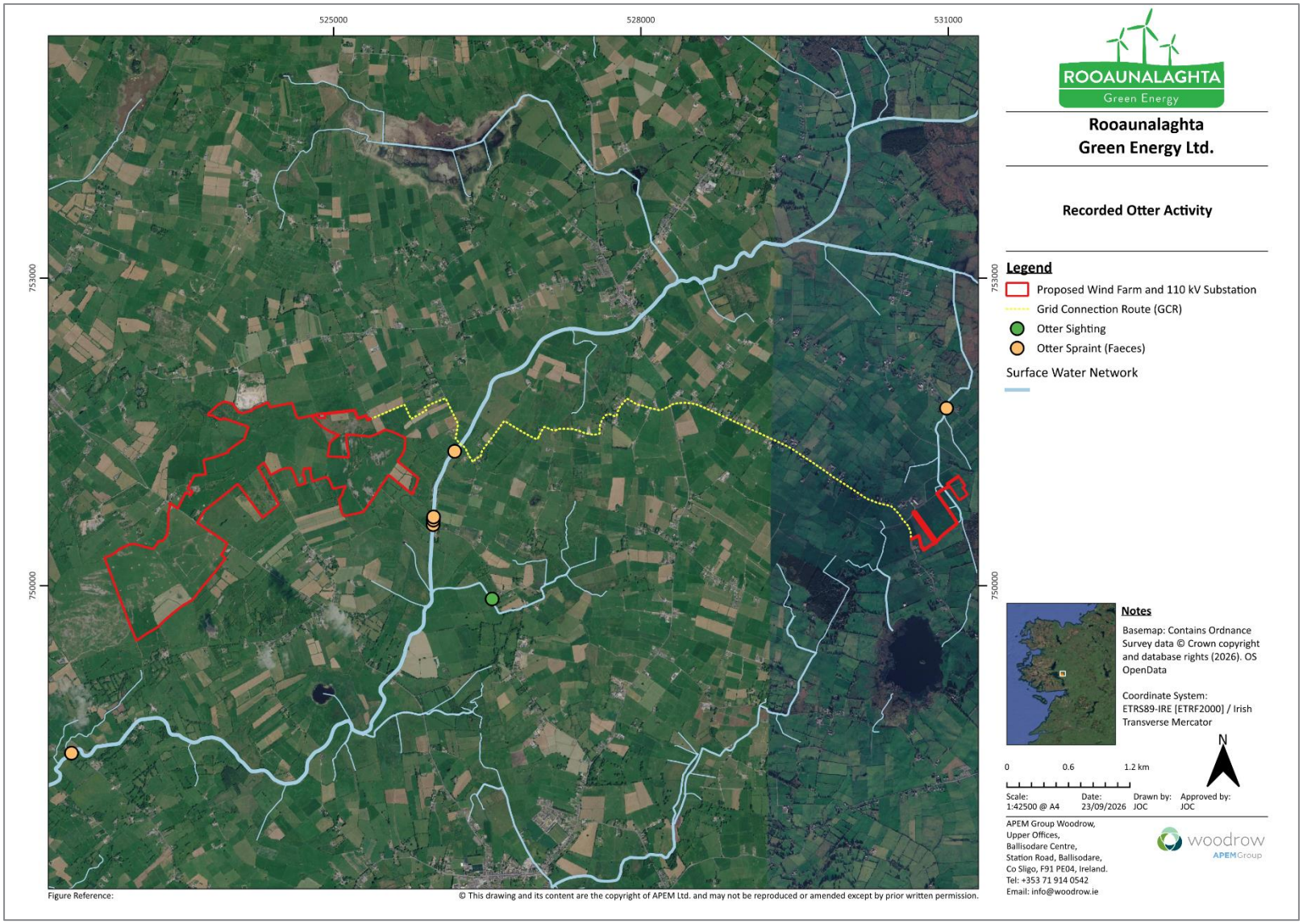


Figure 8: Evidence of otter activity within the study area

3.4.3. Other mammals

Figure 9 illustrates the locations within the study area where evidence of other protected mammal activity was recorded.

3.4.3.1. Pine marten (*Martes martes*)

Although no pine marten NBDC records exist within the 2-km grid squares encompassing the proposed wind farm site, a 2021 record occurs approximately 2 km southeast of the site (Grid Square: M24I). No direct observations of pine marten were made within the study area, although small pockets of woodland and treeline occur that could be considered suitable. No evidence of pine marten was captured on trail camera footage, and the only indication of possible use was one suspected scat (dropping) observed atop a stone wall in the middle of the site (see **Appendix V**, **Plate 15**). Furthermore, no dens or signs of denning were identified during the surveys. Although some suitable habitat exists, most trees within the study area do not contain the cavities or hollows typically used by pine marten for denning. It is noted, however, that they may also share den sites with badger.

Despite the limited evidence of pine marten within the study area, they are a protected species under the Wildlife Act (1976) as amended (2000) and are therefore considered a feature of Local (Higher) Importance to be brought forward to the impact assessment stage.

3.4.3.2. Hedgehog (Erinaceus europaeus)

The NBDC data for the four 2-km grid squares in which the proposed wind farm site is located revealed previous records of hedgehog, the most recent dating to 2020. Hedgehog were not detected during any of the onsite surveys; however, habitat suitability for hedgehog was noted, and as such, the study area is considered to provide potential resting and breeding habitat for the species. On this basis, hedgehog are brought forward to the impact assessment stage as a feature of Local (Higher) Importance.

3.4.3.3. Irish hare (*Lepus timidus hibernicus*)

Irish hare were directly observed within the proposed wind farm site, although most sightings were recorded incidentally during habitat and bird survey walkovers. Three encounters occurred during targeted mammal surveys in April 2025, two of which were along the south-west boundary. The study area provides suitable resting and breeding habitat capable of sustaining the species. Accordingly, Irish hare have been assigned a value of Local (Higher) Importance and are therefore brought forward to the impact assessment stage.

3.4.3.4. Irish stoat (*Mustela erminea hibernica*)

No evidence of stoat was observed during the targeted mammal surveys completed in April 2025. However, two incidental observations were made during the broader study period: the first in June 2024 during the deployment of a static bat detector, when an individual was seen chasing rodent prey, and the second during aquatic surveys of the proposed GCR in April 2025. The latter sighting involved an individual crossing a road c. 500 m from the proposed wind farm (see **Section 3.7.3**).

These sightings, along with NBDC records confirming the species' presence within the wider study area, and its protection under the Wildlife Act 1976 (as amended), indicate that Irish stoat are an ecological feature of Local (Higher) Importance. As such, they are brought forward for impact assessment.

3.4.3.5. Pygmy shrew (*Sorex minutus*)

No evidence of pygmy shrew was recorded within the study area; however, some areas provided suitable habitat for protected small mammals, particularly where ground cover was present along the margins of hedgerows or heath. Despite the absence of field evidence, pygmy shrew have been assigned a value of Local (Higher) Ecological Importance based on habitat suitability and their legal protection under the Wildlife Act, 1976 (as amended).

3.4.3.6. Red squirrel (*Sciurus vulgaris*)

Red squirrel typically show a preference for coniferous forests but can also occur in mixed woodland habitats comprising both coniferous and deciduous species, provided these areas offer extensive, connected woodland. No evidence of red squirrel was recorded within the survey area, nor was any suitable habitat identified. On the basis of limited habitat suitability, the study area is not considered to contribute to the local red squirrel population. Considering this, red squirrel are assigned Local (Lower) Ecological Importance and are not considered further in the impact assessment.

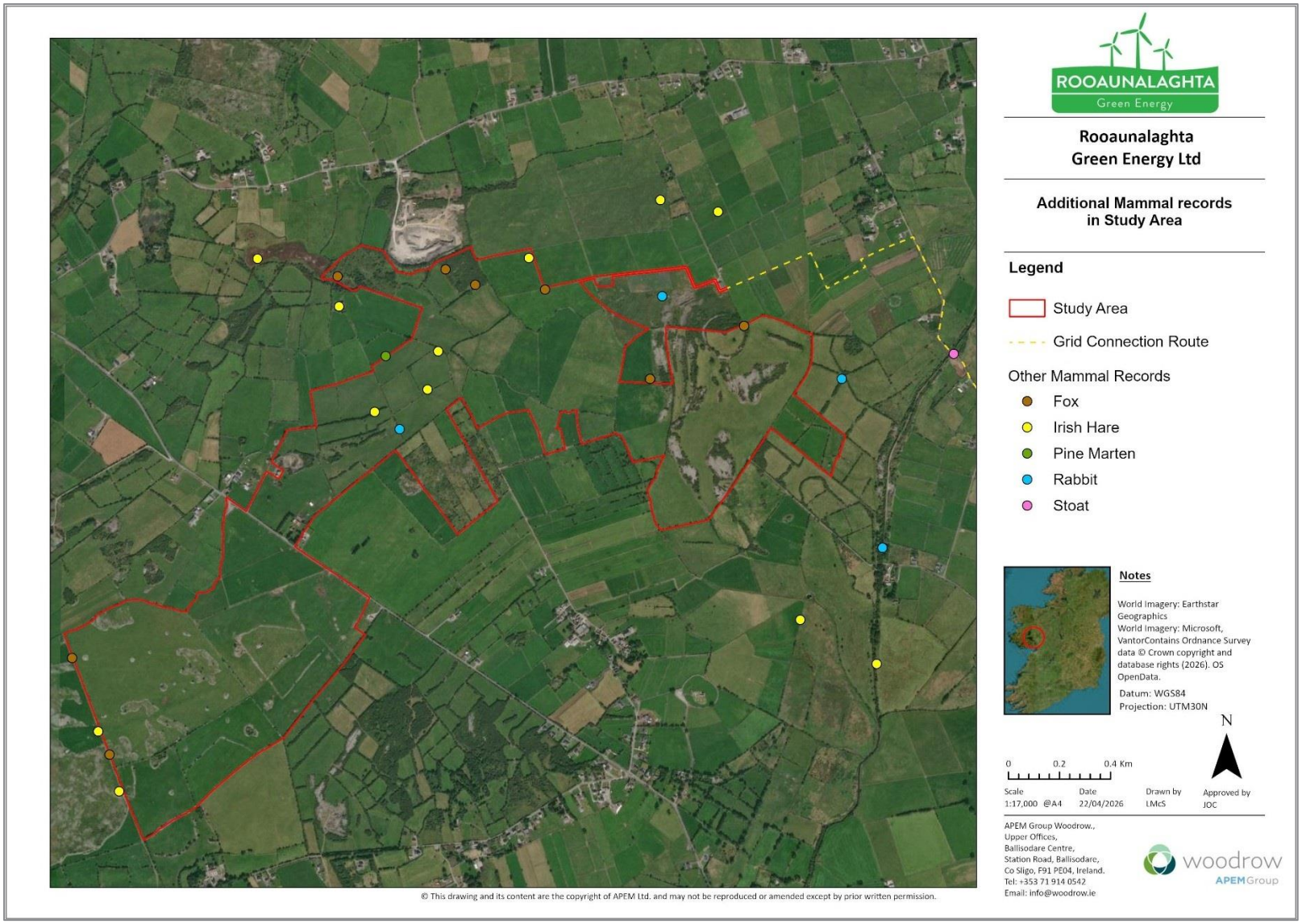


Figure 9: Other mammals recorded within the study area

3.4.4. Invasive Species

One North American mink (*Neovison vison*) was incidentally observed emerging from a stone wall within the proposed wind farm site during a routine bird survey. This non-native species is classified as invasive in Ireland and is known for its negative ecological impacts, particularly on ground-nesting birds, small mammals, and aquatic species. Mink are opportunistic predators and have contributed to the decline of vulnerable native fauna. As such, this species is classified as a High Impact Invasive Species[20].

Other non-native species recorded included rabbit (*Oryctolagus cuniculus*). Signs such as droppings and burrows were noted during the targeted mammal surveys, and one individual was observed when flushed between T5 and T6. Rabbit are classified as a Medium Impact Invasive Species.

3.5. Amphibians and Reptiles

There were no NBDC records of smooth newt (*Lissotriton vulgaris*) within the study area (see **Section 3.1**). All standing waterbodies assessed were considered to have poor to below-average suitability for newt during the suitability assessment, with the exception of two adjacent ponds on the southern periphery of the study area, which were rated as excellent despite some livestock access.

Following design iterations and given that the proposed site infrastructure is located >250 m from these ponds with no hydrological connectivity to the site, a targeted survey (e.g. dusk torchlight survey) was not considered necessary. No evidence of smooth newt was recorded at any other location within the study area.

Common frog (*Rana temporaria*) tadpoles were recorded within the same pond considered suitable for smooth newt. While no other evidence of frog was noted within the study area, existing NBDC records (the latest dated 2018), coupled with the suitability of this area, indicate potential for the species.

Only two NBDC records of common lizard (*Zootoca vivipara*) were identified near the proposed wind farm site: one c. 1.1 km to the east and the other c. 1.5 km to the south-east, with the most recent recorded in 2019. No lizard were observed during the wider herpetofauna suitability surveys, nor were any incidental sightings made during walkover or habitat surveys over the three-year study period. Limited areas of suitable habitat for common lizard were recorded within the site. Small pockets of suitable habitat for common lizard were present within the site, mainly in the form of rock piles and scattered limestone outcrops offering potential basking and shelter opportunities. However, the site is predominantly managed as improved agricultural grassland (GA1) (see **Section 0**) and is tightly grazed by cattle, horses, and sheep. As a result, much of the study area offers only limited suitability for common lizard, primarily due to a lack of structural diversity and a restricted availability of invertebrate prey.

Based on the above, and taking a precautionary approach, smooth newt, common frog, and common lizard are considered features of Local (Higher) Importance and are therefore brought forward to the impact assessment stage.

20 https://invasives.ie/assessed-species/

3.6. Invertebrates

3.6.1. Lepidoptera (butterflies)

Desk study records indicated that dingy skipper (*Erynnis tages*), grayling (*Hipparchia semele*), marsh fritillary (*Euphydryas aurinia*), small heath (*Coenonympha pamphilus*) and dark green fritillary (*Speyeria aglaja*) have been recorded within the two 10-km squares encompassing the proposed project during the last ten years (see **Appendix 6-2** of **EIAR Chapter 6: Biodiversity**).

Site-specific surveys recorded a total of 10 butterfly species across the four survey visits. These comprised meadow brown (*Maniola jurtina*), painted lady (*Vanessa cardui*), speckled wood (*Pararge aegeria*), common blue (*Polyommatus icarus*), red admiral (*Vanessa atalanta*), small heath, small tortoiseshell (*Aglais urticae*), ringlet (*Aphantopus hyperantus*), small white (*Pieris rapae*) and small copper (*Lycaena phlaeas*).

Of these, only small heath is currently considered Near Threatened on the Irish Red List (Regan *et al*., 2010), with the remaining species classified as Least Concern. Small heath was recorded on eight occasions across two survey visits, with a single record obtained on 25 June 2026 and the remaining records obtained on 16 July 2026. The majority of records occurred within a mosaic of HD1 dense bracken, GS1 dry calcareous and neutral grassland, and HH2 dry calcareous heath habitats surrounding the proposed onsite control station. Based on the above, small heath is considered features of Local (Higher) Importance and are therefore brought forward to the impact assessment stage.

3.7. Grid Connection Route and Turbine Delivery Route

3.7.1. Habitats

The GCR will extend from the onsite control building at the proposed wind farm site to the proposed 110 kV substation located in the townland of Killamanagh, near Caherlistrane, Co. Galway. From the substation, the route heads generally west along local roads, following the L2104 before reaching a crossroads at the N84. It then crosses the N84 and continues along the L21044 through the townland of Wakefield, before merging with the L6127 and travelling north. From there, the route veers offline to the west through GA1 improved agricultural grassland, connecting to the onsite control building located in the north-east of the proposed wind farm site.

Terrestrial habitats along the route primarily comprise GA1 Improved agricultural grassland, BL1 Stone walls and other stonework, BL3 buildings and artificial surfaces, WL1 hedgerows, and WL2 treelines. Three water features will be crossed: one is a FW4 drainage ditch, and the other two are the Black River and Shancloon Stream, which corresponds to FW2 Depositing lowland river (a Local (Higher) Importance habitat).

The proposed TDR follows the existing road network from Galway Docks through Galway City, continuing along the N84 to Headford and the R334 towards Cross. Eight river crossings occur along the route, but no bridge modifications are required. Temporary works are proposed at one location along the TDR, comprising a localised pinch point within Galway City where footpath reinforcement may be required. All potential pinch points along the TDR were initially identified through a review of

aerial imagery and were subsequently investigated through targeted field surveys undertaken in May 2026.

Terrestrial habitats along the TDR are mostly limited to linear roadside features associated with the existing road network, including stone walls, hedgerows and treelines, and improved grassland verges, all of which are common and of low ecological value.

3.7.2. Invasive plant species

A small number of invasive alien plant species were recorded along the GCR corridor. This included rock cotoneaster (*Cotoneaster horizontalis*) growing on a stone wall along the south side of the road, extending c. 7-8 m in length, with a smaller patch present on the opposite wall. A long linear line of cherry laurel (*Prunus laurocerasus*) was noted within private land, with the nearest plants located c. 5-6 m from the road and others c. 10 m away. In addition, a single location supporting several sycamore trees (*Acer pseudoplatanus*) was recorded just off the road along the route.

Winter heliotrope (*Petasites fragrans*) was also recorded near the proposed entrance to the proposed substation site, forming a 20 m stretch along the road verge, c. 3 m wide. NBDC (2026) lists cherry laurel as High-Risk Invasive Species but does not provide an invasive species risk category for either rock cotoneaster or winter heliotrope. However, Invasive Species Ireland (2026) includes rock cotoneaster on its Amber List, indicating that it may represent a potential threat to native species or habitats, including impacts on European Sites or objectives of the Water Framework Directive (WFD). Winter heliotrope is also included on the Amber List, categorised as an Uncertain Risk species, reflecting insufficient data at present to confirm adverse impact (or lack of impact).

The locations of all invasive alien plant species recorded along the GCR are provided in **Figure 10**.

Localised occurrences of invasive alien plant species were identified along the TDR. These include butterfly bush (*Buddleja davidii*), including a larger stand in proximity to a derelict structure, and a linear stand of winter heliotrope extending for c. 50 m within one area.

3.7.3. Mammals

The GCR was subject to Phase 1 style surveys, which included searches for mammals and signs of mammal activity. In addition, a dedicated otter survey was undertaken at the GCR crossing point over the Black River, following the methodology outlined in the main mammal section of this report (see **Section 2.2.2**).

Some mammal activity was recorded along GCR in the form of a well-defined trail, suggesting regular crossing by species such as fox and badger. However, no other evidence of badger setts or mammal burrows was identified along the GCR corridor. Along the TDR, evidence comprised a single inactive burrow near Moyne Bridge (Area 17) and two additional trails likely used for commuting mammals.

Evidence of otter activity, including two dried spraints, was recorded in an area of poached ground (trampled and bare soil from livestock access) along the right-hand bank of the Black River near its intersection with the GCR, suggesting occasional use of this watercourse for commuting or foraging. No holts were observed. A partial search of the Shancloon Stream (EPA Code: IE_WE_30B020200), downstream of the proposed 110 kV substation, also revealed evidence of otter activity, including a relatively fresh spraint and a potential slide (a point used for access to the stream).

An Irish stoat was observed crossing the road during these surveys, close to the point where the GCR intersects the Black River (see **Figure 9**).

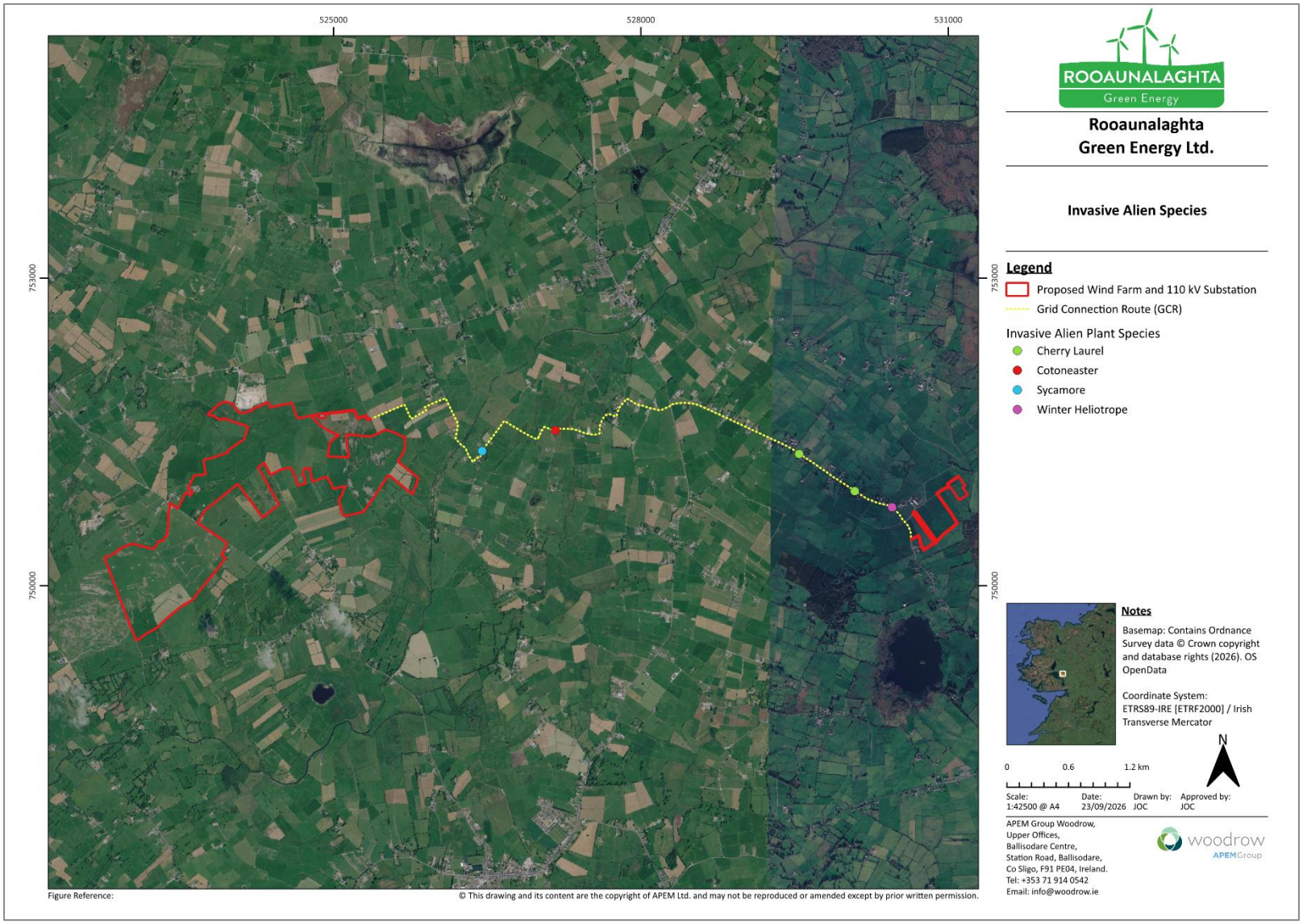


Figure 10: Invasive alien plant species recorded along the GCR

4. Summary

4.1. Habitats

The majority of habitats recorded within the proposed wind farm site are comprised of GA1 Improved agricultural grassland, ER2 exposed calcareous rock, GS1 dry calcareous and neutral grassland and WN2 oak-ash-hazel woodland, with the semi-natural habitats often occurring in a mosaic. Linear boundary habitats comprised BL1 stone walls, WL1 hedgerows and WL2 treelines. Annex I habitats on the site include [8240] Limestone pavements*; [6210] Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*); [6510] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*); [4030] European dry heaths; and two areas of [3180] Turloughs near the boundary of the proposed wind farm site (refer to **Table 11**).

4.2. Mammals

While mammal activity was generally limited overall, the study area provides suitable habitat for several species and is considered to contribute to local mammal populations. A summary of mammals recorded within the study area and their ecological evaluation is shown in **Table 12**.

4.3. Amphibians and Reptiles

Amphibian and reptile suitability surveys were completed across the study area. While no direct sightings were recorded, except for common frog tadpoles, some suitable habitat exists within the wider area, particularly standing waterbodies for amphibians and scattered rock features for common lizard (refer to **Table 13**).

4.4. Invertebrates (Lepidoptera)

A total of 10 butterfly species were recorded during the targeted surveys completed in 2026. Of these, small heath was the only butterfly species recorded that is currently classified as Near Threatened on the Irish Red List (refer to **Table 14**).

Table 11: Ecological evaluation of habitats occurring at the proposed wind farm site

Habitat Code	Habitat classification (Fossitt, 2000)	Basis of Evaluation	Highest Evaluation / Importance	IEF brought forward into impact assessment stage? Yes/No
BL1	Stone walls and other stonework	Limestone stone walls marking field boundaries. Holds historical value.	Local (Higher) Importance	Yes
BL3	Buildings and artificial surfaces	Various agricultural buildings and abandoned structures. Note: buildings were assessed separately for suitability as bat roosts	Local (Lower) Importance	No
ED2	Spoil and bare ground	Bare ground associated with access tracks. Note: utilisation by reptiles and amphibians assessed separately.	Local (Lower) Importance	No
ED3	Recolonising bare ground	Previous bare ground that is re-vegetated with herbaceous species.	Local (Lower) Importance	No
ED4	Active quarries and mines	Two open quarries where levels of disturbance inhibit colonisation by plants.	Local (Lower) Importance	No
ER2	Exposed calcareous rock	[8240] - Limestone pavements* Limestone pavements are both geologically and biologically important resources and are designated as a Priority Annex I habitat, for which the EU has a particular responsibility for conservation due to their rarity. However, species diversity on limestone pavement is significantly reduced where grazing pressures are much higher. Where the habitat is in unfavourable condition it considered restorable to favourable condition if the habitat management was changed.	National Importance	Yes

Habitat Code	Habitat classification (Fossitt, 2000)	Basis of Evaluation	Highest Evaluation / Importance	IEF brought forward into impact assessment stage? Yes/No
ER2 / GS1	Exposed calcareous rock / Dry calcareous and neutral grassland mosaic	[8240] - Limestone pavements* Limestone pavements are both geologically and biologically important resources. 'Exposed' limestone pavement in a mosaic with species-diverse calcareous grassland.	National Importance	Yes
ER2 / WN2	Exposed calcareous rock / Oak-ash-hazel woodland mosaic	[8240] - Limestone pavements* 'Wooded' limestone pavement with a canopy of scrub and trees covering the pavement. Limestone pavements are both geologically and biologically important resources.	National Importance	Yes
FL6	Turloughs	[3180] – Turloughs* Ephemeral waterbody occupying basin or depression in limestone areas, and where water levels fluctuate markedly during the year.	National Importance	Yes
FW2	Depositing / lowland rivers	The GCR crosses the Black River.	Local (Higher) Importance	Yes
FW4	Drainage ditches	Network of ditches at the substation, while the GCR crosses and is adjacent to drainage ditches.	Local (Higher) Importance	Yes
GA1	Improved agricultural grassland	Improved and grazed agricultural grassland sward. Low diversity.	Local (Lower) Importance	No
GA2	Amenity grassland (improved)	Grasslands surrounding residential property. Low diversity.	Local (Lower) Importance	No

Habitat Code	Habitat classification (Fossitt, 2000)	Basis of Evaluation	Highest Evaluation / Importance	IEF brought forward into impact assessment stage? Yes/No
GS1	Dry calcareous and neutral grassland	[6210] - Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*). The grassland sward is species-rich, with a high number of positive indicator species listed in the Annex I assessment criteria.	National Importance	Yes
GS2	Dry meadows and grassy verges	[6510] - Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*). The grassland sward is species-rich, with a high number of positive indicator species listed in the Annex I assessment criteria.	National Importance	Yes
HD1 / GS1 / HH2	Dense bracken / Dry calcareous and neutral grassland / Dry calcareous heath mosaic	[4030] - European dry heaths. [6210] - Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*). Mosaic habitat with dry calcareous heath with approximately 25% dwarf shrub cover, with dry calcareous grassland vegetation that is quite grassy but with a diverse forb component as well as dense bracken.	County / Regional importance	Yes
HD1 / WS1	Dense bracken / Scrub mosaic	Mosaic of dense bracken and woody scrub.	Local (Higher) Importance	Yes
WL1	Hedgerows	Network of hedgerows. This habitat will likely support breeding birds, mammals, foraging and commuting bats.	Local (Higher) Importance	Yes
WL2	Treelines	Mature species-rich treelines. This habitat is likely to support breeding birds, mammals, foraging and commuting bats.	Local (Higher) Importance	Yes

Habitat Code	Habitat classification (Fossitt, 2000)	Basis of Evaluation	Highest Evaluation / Importance	IEF brought forward into impact assessment stage? Yes/No
WN2	Oak-ash-hazel woodland	This habitat is likely to support breeding birds, mammals, foraging and commuting bats.	Local (Higher) Importance	Yes
WN2 / WS1	Oak-ash-hazel woodland / Scrub mosaic	This habitat is likely to support breeding birds, mammals, foraging and commuting bats.	Local (Higher) Importance	Yes

Table 12: Ecological evaluation of mammals occurring within the study area

Important Ecological Features (IEF's) identified	Basis of Evaluation	Highest Evaluation/Importance	IEF brought forward into impact assessment stage? Yes/No
Badger	Badger activity within the proposed wind farm site was limited, with occasional trails and a latrine recorded. Two single-entrance setts were identified, one near T7 and another to the southwest of the site. A main sett with six entrances was recorded near the proposed offsite substation, confirmed as active and supporting a clan including cubs.	Local (Higher) Importance	Yes
Otter	Surveys confirmed recent otter activity concentrated along the Black River. No clear evidence of resting or breeding places, however the river offers high foraging potential and forms part of the River Corrib SAC, where otter is a Qualifying Interest, and purported to contain one of the best populations in the country.	International Importance	Yes
Pine marten	No pine marten records exist within the study area. No direct observations, trail camera evidence, or dens were recorded, and only one suspected scat was noted. While some suitable habitat occurs, most trees lack cavities typically used for denning; however, based on habitat suitability, the study area is considered to contribute to the local pine marten population.	Local (Higher) Importance	Yes
Hedgehog	No evidence of hedgehog recorded during field surveys. However, on basis of habitat suitability and existing NBDC records, the study area is considered to contribute to the local hedgehog population.	Local (Higher) Importance	Yes

Important Ecological Features (IEF's) identified	Basis of Evaluation	Highest Evaluation/Importance	IEF brought forward into impact assessment stage? Yes/No
Irish hare	Irish hare was observed on a number of occasions within the study area, mostly incidentally, but also during targeted mammal surveys.	Local (Higher) Importance	Yes
Irish stoat	No evidence of Irish stoat was recorded during targeted mammal surveys, though two incidental sightings occurred during the broader study period.	Local (Higher) Importance	Yes
Pygmy shrew	No evidence of pygmy shrew was recorded during field surveys. On the basis of habitat suitability, the study area is considered to contribute to the local pygmy shrew population.	Local (Higher) Importance	Yes
Red squirrel	No evidence of red squirrel was recorded during field surveys. On the basis of limited habitat suitability, the study area is not considered to contribute to the local red squirrel population.	Local (Lower) Importance	No

Table 13: Ecological evaluation of amphibians and reptiles occurring within the study area

Important Ecological Features (IEF's) identified	Basis of Evaluation	Highest Evaluation/Importance	IEF brought forward into impact assessment stage? Yes/No
Amphibians	The wider area provides suitable habitat, particularly standing waterbodies.	Local (Higher) Importance	Yes
Reptiles	The proposed wind farm site and wider area provide some suitable habitat for common lizard, mainly in scattered rock piles and limestone outcrops used for refuge and hibernation.	Local (Higher) Importance	Yes

Table 14: Ecological evaluation of invertebrates (Lepidoptera) occurring within the study area.

Important Ecological Features (IEF's) identified	Basis of Evaluation	Highest Evaluation/Importance	IEF brought forward into impact assessment stage? Yes/No
Lepidoptera (butterflies) – small heath	Based on the limited habitat suitability onsite, the study area is considered to contribute to the local small heath population.	Local (Higher) Importance	Yes

5. DISCUSSION

Key ecological constraints that have been identified as a result of the terrestrial baseline surveys and that may be impacted by the proposed project are as follows:

- Habitat surveys at the proposed wind farm site recorded the presence of the Annex I habitats [8240] Limestone pavements*; [6210] Semi-natural dry grassland and scrubland facies on calcareous substrates (Festuco-Brometalia); [6510] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*); [3180] Turloughs* and [4030] European dry heaths. These habitat types occur throughout the site but represent only a limited proportion of the site extent, with improved agricultural grassland the most widespread and abundant habitat type. The scheme layout has avoided the majority of the Annex I extents with the exception of one location:
    - An access track towards turbines T7 and T8 from the east and the onsite control station will impact small areas of mosaic habitat comprised of dry calcareous and neutral grassland ([6210] semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*)) and dry calcareous heath ([4030] European dry heaths), along with dense bracken.
    - An access track providing a direct haul route from Lydon quarry to the north and joining the internal access track between T6 and T7, opposite the borrow pit location will impact an areas of dry meadows and grassy verges ([6510] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)).
    - Several habitats have been identified as features of Local (Higher) Importance. Hedgerows and treelines represent habitat types that are limited within the proposed wind farm site and support a wide range of fauna, also providing commuting and foraging habitats for bats, birds and terrestrial mammals. It will be important to maintain these linear features; where these linear features are fragmented, a replanting schedule to maintain their connectivity across the site is recommended.
- Targeted mammal surveys confirmed the presence of badger within the study area. Activity was mainly associated with the proposed 110 kV substation location, where a main sett comprising six entrances was located northeast of the proposed substation footprint. A second sett with a single entrance was recorded within the proposed wind farm site. Monitoring indicated that this is likely an outlier sett used sporadically, possibly during the badger maternity period. Following the iterative design process, all identified badger setts and associated features currently lie >50 m from any proposed infrastructure. Should blasting be necessary, a mitigation plan will be applied in accordance with TII (2006) guidance prior to construction to minimise disturbance to the species.
- Otter were confirmed utilising the study area for foraging and commuting. This was based on one direct sighting and multiple spraint records along the Black River. No breeding or resting sites were identified. The population within the study area is considered part of the Lough Corrib SAC population and, as such, is considered a feature of International Importance.
- Other mammal activity included sightings of Irish hare, as well as indirect evidence of pine marten (i.e. one isolated scat record). Irish stoat was recorded incidentally during a static bat detector deployment in 2024, with an additional sighting also made during the GCR survey in April 2025. Although no hedgehog or pygmy shrew were observed, the study area was considered suitable for these species.
- No direct sightings of smooth newt or common lizard were made during the study period. However, small pockets of suitable habitat occur onsite and within the wider area. Common frog tadpoles were recorded in a pond outside the proposed wind farm site, which was also

considered suitable for smooth newt. Given the limited extent of suitable habitat for common lizard, mitigation will be proportionate and focused on pre-construction checks where rock piles or stone walls are to be removed.

- Targeted butterfly surveys recorded 10 butterfly species, with small heath identified as the only Near Threatened species present; the majority of records were associated with the HD1 dense bracken, GS1 dry calcareous and neutral grassland, and HH2 dry calcareous heath habitat mosaic surrounding the proposed onsite control station.

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APPENDIX I – EVIDENCE FOR TECHNICAL COMPETENCE AND EXPERIENCE

Dr James O'Connor – Senior Ecologist – Project Manager | Report Author (Various Disciplines)

James O'Connor is a senior ecologist with APEM Group Woodrow, who holds a PhD in aquatic sciences with a primary technical specialism in freshwater ecology. He has considerable aquatic field experience, particularly in electrofishing, crayfish and freshwater pearl mussel surveying as well as water quality biological assessments employing benthic macroinvertebrate fauna (e.g. Q-value, SSRS). James has prior experience monitoring wild bird populations with BirdWatch Ireland (BWI) and is heavily involved in ornithological work as part of his role with APEM Group Woodrow. Here, he regularly undertakes vantage point (VP), breeding bird, wetland bird (I-WeBS), and species-specific surveys (e.g. hen harrier). His terrestrial expertise extends to mammal surveys, particularly for otter and badger, which also includes mitigation and monitoring. As a project manager, James manages projects of varying scales and works closely with clients, providing regular consultation and guidance. His reporting experience includes contributions to EIARs, particularly for onshore wind energy developments, as well as the production of AA Screening and NIS reports and various technical reports. He is the first author of five academic peer-reviewed published research papers and has contributed to reports disseminating key research findings to state agencies such as the Irish EPA and Irish county councils.

Qualifications: BSc (Hons) Agriculture and Environmental Management | MSc Applied Environmental Science | PhD Aquatic Sciences.

Brendan Burley – Technical Specialist – Report Author (Habitats)

Brendan is an ecologist with over 26 years' experience working in terrestrial ecology and land management and joined APEM in 2022. Brendan currently undertakes a range of work including eco-hydrological investigations to inform habitat restoration, developing peatland restoration plans, habitat condition assessment and monitoring, and detailed botanical surveys. Brendan has previously worked for Natural England, most recently in the Cheshire to Lancashire area team but also in the past in Devon (2005-2011) and the southeast of England (2002-2005). This work included SSSI condition monitoring as well as developing land management plans and agreements for the maintenance, restoration and creation of priority habitats including blanket bog, as well as lowland and upland fens, heathlands, and grasslands. Brendan spent five years working as a peatland restoration ecologist for Cumbria Wildlife Trust identifying, designing and then of restoration works on blanket bog, lowland raised bog, and fen habitats for private landowners. Brendan has also previously worked in the consultancy sector on a range of infrastructure projects, primarily delivering habitat surveys, including National Vegetation Classification, Phase 1, and River Corridor methodologies, as well as protected species surveys, in a range of habitats including grassland, woodland, wetland and heathland. Brendan has also delivered Biodiversity Net Gain assessments for linear infrastructure schemes.

Qualifications: BSc (Hons) Biology and Geography | MSc Environmental Management | MCIEEM.

Bridget Keehan – Principal Ecologist and Technical Specialist – Technical Review | Habitat Surveys

Bridget Keehan is a professional field botanist, with over 35 years of experience in plant identification. She provides botanical technical expertise to APEM Group Woodrow. Bridget has outstanding habitat classification skills and extensive consultancy experience, undertaking specialist protected habitat and species surveys to inform site assessment s; producing concise habitat maps; collecting and presenting

data and preparing reports. Having worked on over 40 quarry and wind farm sites Bridget has wide experience preparing Compliance Reports, Habitat Management Plans, EcIA and NIS, including provision of mitigation recommendations. With up-to-date practical knowledge of both European and National (NI & ROI) environmental legislation she is proficient in providing advice and developing strategies.

Since 2023, Bridget is also employed by the Botanical Society of Britain and Ireland as their Ireland Officer, a role which includes coordinating botanical recorders across Ireland, undertaking rare plants surveys, organising botanical conferences and field events and providing support with their National Parks and Wildlife Service (NPWS) funded Aquatic Plants Project in Ireland.

Qualifications: BSc (Hons) Botany | ACIEEM.

Damien McAndrew – Bat Ecologist –Report Author | Surveys

Damien McAndrew is an ecologist and bat specialist with APEM Group Woodrow. Damien holds an honours degree in Environmental Science, and his work is primarily focused on bat ecology and bat impact assessment for large-scale development projects, including wind energy schemes. He has undertaken a wide range of bat surveys, including habitat and roost suitability assessments, dusk and dawn emergence and re-entry surveys, and static detector deployment and analysis. Damien has considerable experience analysing bat activity data and applying results within EcIA, NIS and AA Screening reports. His work includes the assessment of collision risk and the development of mitigation measures such as turbine micro-siting, buffer assessments, operational curtailment and habitat enhancement. Damien currently holds a licence to survey bat roosts issued by the Department of Housing, Local Government and Heritage.

Qualifications: BSc (Hons) Environmental Science.

Emmi Virkki – Principal Ecologist – Habitat Surveys | Report Author (Habitats)

An experienced principal ecologist, Emmi has worked for over 10 years in ecological consultancy. As a project manager and field ecologist, she undertakes multidisciplinary surveys, specialising in habitat and flora surveys, botanical identification and conservation assessments, as well as bird, mammal (including bats), amphibian, reptile and invertebrate surveys. She is experienced in preparing biodiversity and habitat management plans, EIARs, Biodiversity chapters of EIARs, and reports to inform the AA process (AA Screening and NIS), having produced reporting to inform complex AA for private entities and local authorities for the last decade.

Qualifications: BSc (Hons) Environmental Biology | MSc (Hons) Environmental Science | Member of the Botanical Society of Britain and Ireland (BSBI) | BSBI Joint Vice-County Recorder for Co. Sligo and Co. Leitrim | Registered Surveyor for the Woodlands of Ireland Native Woodland Scheme | MCIEEM.

Bruno Mels – Ecologist – Amphibian and Reptile Suitability Surveys | Data Analysis

Bruno Mels is an Ecologist and Data Coordinator at Woodrow. He is also a digital illustrator, having designed and created various information boards for UNESCO world heritage sites in the Seychelles. Bruno has a vast amount of experience mapping with both ArcGIS and QGIS, as well as data management using Excel and Access. He is also experienced in undertaking habitat suitability modelling, and statistical analysis and modelling using R and Maxent. He is also competent in modelling species population trends using Stella.

Qualifications: BSc in Biology | MSc in Biology: Biodiversity, Conservation and Restoration.

Betty O'Brien – Senior Ecologist – GCR Surveys

Betty O'Brien is a Senior Ecologist with APEM Group Woodrow. She obtained a 1st Class Honours degree in Zoology from the National University of Ireland, Galway, and later earned a Master's from IADT with a focus on interdisciplinary research methods and systems thinking in the context of nature. These challenging and varied courses allow Betty to approach ecological challenges with both scientific rigour and creative problem-solving, as well as utilizing skills in community engagement and the facilitation of place-based learning to connect people with nature. Since joining Woodrow, she has been involved in a variety of surveying activities, including terrestrial habitat surveys, NUSH peatland surveys, IAS flora and fauna surveys, aquatic habitat surveys, biodiversity audits, and working on development sites as an Ecological Clerk of Works (ECoW). Additionally, she has provided input into ecological reports including EcIA, AA, and Biodiversity Action Plans, and has gained valuable project management experience in relation to BAP projects.

Qualifications: BSc Zoology (Hons) | MA in Design for Change | Qualifying member of CIEEM

Grisel Calcagno – Senior EIA Consultant – Quality and Technical Review

Grisel is a Senior Environmental Consultant with over 3 years' experience in preparing environmental assessments and reports for a wide range of public and private sector projects in Ireland at different stages of development. She has extensive experience preparing EIARs, EIA Screening and Scoping reports, Options Identification and Appraisal reports, preparation and review of CEMPs, Resource and Waste Management Plans (RWMPs), Environmental Constraints and Feasibility reports, and Stakeholder Consultation. She has been involved in various infrastructure projects including high-profile schemes such as greenways, solar farms, flood relief schemes, gas-fired power plants, data centres, and airports, in addition to Active Travel and other road schemes, public realm developments, commercial developments, and underground powerlines, amongst others.

Qualifications: BSc Env | MSc Env (Hons) | Adv. Dip. Planning and Environmental Law (2025) | GradISEP.

Amy Adwan – Senior Ecologist – TDR Survey

Amy is an ecologist with 10 years' experience in the ecological sector in Ireland and is an Associate Member of the CIEEM. Amy has a BSc in Environmental Science from the University of Limerick. Amy is experienced in a broad range of ecological survey techniques and methodology including bats, mammals, freshwater and habitats. Her working knowledge of Irish and EU environmental legislation is extensive, with particular reference to the Habitats Directive and associated case law. Amy regularly prepares AA reporting, as well as legal reviews of same informed by relevant rulings of the Court of Justice of the European Union (CJEU) and European Commission guidance. She holds a bat survey licence issued by the NPWS, covering bat handling, photography, and roost inspections. Her bat-related work includes detailed sonogram analysis, impact assessments, mitigation design, derogation licence applications, and post-consent monitoring and Site supervision (ECoW). In addition to her specialism in bat ecology, Amy routinely undertakes EcIA and PEARs across a range of terrestrial and freshwater habitats.

Qualifications: BSc Env | Member of BSBI, BirdWatch Ireland (BWI) and BCIreland | ACIEEM

Dáithí Lavelle – Ecologist (sub-contractor) – Butterfly Surveys

Dáithí is an ecologist, ornithology surveyor, and environmental educator with extensive experience in biodiversity conservation, ecological fieldwork, and community engagement. He worked with APEM Group Woodrow between 2022 and 2023, undertaking ornithology, habitat, bat, and invertebrate surveys, including butterfly monitoring, as well as delivering biodiversity workshops and outreach programmes. David also operates as an environmental education officer, managing a native woodland and delivering educational programmes on biodiversity, pollination, wildlife, and sustainable land management. His experience spans ecological surveying, habitat management, conservation education, beekeeping, and community engagement, supported by a strong background in environmental training and horticulture. He combines practical ecological knowledge with excellent communication skills and a passion for promoting biodiversity and nature conservation within local communities.

Former Woodrow staff that worked on the proposed project

Adrian Walsh – Ecologist – Mammal and GCR Surveys | Report Author (Mammals and Habitats)

Adrian was an Ecologist with APEM Group Woodrow until November 2025. He completed an honours BSc with a focus on Zoology and an MSc in Wildlife Conservation and Management at University College Dublin. He is a Qualifying Member of the CIEEM. At APEM Group Woodrow, Adrian undertook a variety of surveys including terrestrial mammals, bats and extensive ornithology monitoring. He also authored many EcIAs and AA Screenings. He used a variety of surveying techniques and equipment including longworth, novel and the Mostela camera trapping techniques to survey small mammals, reptile refugia mats and various newt surveying techniques including torchlight surveys and egg searches. He is also an avid ornithologist and volunteers as a surveyor for Birdwatch Ireland for the Irish Wetland Bird Survey (I-WeBS) and the Countryside Bird Survey (CBS).

Qualifications: BSc (Hons) Zoology | MSc Wildlife Conservation and Management | Qualifying member of CIEEM.

Sammy Pooley – Ecology Support and Data Coordinator – Desk Study | Data Analysis and GIS

Sammy Pooley was an Ecology Support and Data Coordinator with APEM Group Woodrow until September 2025. He graduated from the University of Galway in 2024 with a BSc in Environmental Science. While in Galway, Sammy gained valuable experience in data analysis and a range of survey techniques including botanical and freshwater invertebrate surveys. During his final year, he focused on industry standard bird survey techniques, particularly in relation to windfarm development. During his internship with ORCA Ireland Sammy also garnered skills in Marine megafauna and seabird identification and carried out bioacoustics analysis of marine mammal vocalisations in the biodiverse Atlantic Ocean.

Qualifications: BSc Environmental Science | Member of BSBI and Irish Wildlife Trust (IWT).

APPENDIX II – PHOTOGRAPHIC EVIDENCE OF HABITATS



Plate 1: Open ('exposed') area of Annex I Habitat [8240] Limestone pavements* classified in Fossitt as (ER2) Exposed calcareous rock



Plate 2: 'Wooded' Annex I Habitat [8240] Limestone pavements* classified in Fossitt as (ER2) Exposed calcareous rock / (WN2) Oak-ash-hazel woodland mosaic



Plate 3: Open ('Exposed') Annex I Habitat [8240] Limestone pavements* (ER2) transitioning into an area with increased scrub and tree cover



Plate 4: Annex I Habitat [4030] - European dry heaths/ (HH2) dry calcareous heath



Plate 5: Annex I Habitat 6210 - Semi-natural dry grassland and scrubland facies on calcareous substrates (Festuco-Brometalia)/ (GS1) dry calcareous and neutral grassland



Plate 6: (WL1) A hedgerow with a stone wall



Plate 7: (BL1) A stone wall with a hedgerow behind



Plate 8: (GA1) Improved agricultural grassland



Plate 9: (FW4) A drainage ditch, mapped as 1st order watercourse (i.e. Shancloon Stream)

APPENDIX III – RELEVÉ SURVEY DATA

Table 15: Relevé survey data associated with turbine locations T1 – T5

Closest turbine number	T1	T2	T3	T4	T5
Relevé number	EV20250630_T1	EV20250630_T2	EV20250630_T3	EV20250630_T4	EV20250702_T5
ITM coordinates	0523644 0750013	0523200 0750173	0522984 0749910	0522864 0750241	0524235 0751004
Date	30.06.2025	30.06.2025	30.06.2025	30.06.2025	02.07.2025
REPORTING Plot number	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
Size (m²)	2	2	2	2	2
Slope (degrees)	0	0	flat	2	5
Aspect	top	dip	0	S	N
Altitude (m)	33	47	41	57	37
Vegetation height (cm) - Max and mean	60 and 20	60 and 15	50 and 20	50 and 20	60 and 20
Grazing	Sheep and cattle	Sheep and cattle	Sheep	Sheep and cattle	Cattle
Vegetation cover (%)	100	100	100	100	100
Bare ground (%)	1	[Not recorded]	0	0	0
Bryophyte cover (%)	0	0	0	0.5	0
Total no. of spp.	6	10	10	9	14
Species (%)					
Achillea millefolium	0	2	0	5	0
Agrostis stolonifera	3	0	2	0	5
Anthoxanthum odoratum	0	5	0	1	0
Cerastium fontanum	0	3	1	5	5
Cirsium arvense	10	10	0	0	8
Cynosurus cristatus	0	10	1	15	2
Dactylis glomerata	0	0	0	0	2
Deschampsia cespitosa	0	0	1	0	0
Holcus lanatus	0	5	2	13	2
Lolium perenne	80	80	85	75	40
Odontites vernus	0	0	0	0	2

Closest turbine number	T1	T2	T3	T4	T5
Plantago lanceolata	0	0	0	0	10
Poa trivialis	15	10	25	5	5
Ranunculus acris	0	0	1	0	0
Ranunculus repens	0	0	0	0	1
Rumex acetosa	0	0	0	0	5
Taraxacum officinale agg.	3	0	1	3	1
Trifolium repens	30	20	20	20	60
Urtica dioica	0	5	0	0	0
IVC Analysis					
IVC plot type	Assigned	Assigned	Assigned	Assigned	Assigned
IVC community	GL3B	GL3B	GL3B	GL3B	GL3B

Table 16: Relevé survey data associated with turbine locations T6 – T8

Closest turbine number	T6	T6 (old loc.)	T7	T8	T8 (old loc.)
Relevé number	EV20250625_T6	EV20250625_T6 old	EV20250701_T7	EV20250626_T8	EV20250626_T8old
ITM coordinates	0523976 0751226	0524195 0751355	0524512 0751645	0524487 0751318	0524612 0751048
Date	25.06.2025	25.06.2025	01.07.2025	25.06.2025	25.06.2025
REPORTING Plot number	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10
Size (m²)	2	2	2	2	2
Slope (degrees)	5	0	10	flat	5
Aspect	W	flat	N	flat	E
Altitude (m)	42	38	37	36	34
Vegetation height (cm) - Max and mean	50 and 15	75 and 30	25 and 10	30 and 12	15 and 10
Grazing	Yes - sheep and cattle	Open for grazing for cattle and sheep but currently not grazed	Sheep and is cut	Cattle	Cattle
Vegetation cover (%)	100	100	93	100	100
Bare ground (%)	0	0	7	0	0
Bryophyte cover (%)	0	0	0	0	0
Total no. of spp.	7	10	5	7	11

Closest turbine number	T6	T6 (old loc.)	T7	T8	T8 (old loc.)
Species (%)					
Achillea millefolium	0	0	0	0	5
Agrostis stolonifera	5	0	10	0	5
Anthoxanthum odoratum	0	5	10	0	0
Cerastium fontanum	2	1	0	2	0
Cirsium arvense	7	20	0	10	1
Dactylis glomerata	0	1	0	0	1
Deschampsia cespitosa	0	10	0	1	1
Holcus lanatus	10	40	30	0	5
Lolium perenne	80	20	60	80	70
Plantago major	0	0	0	0	2
Poa trivialis	5	5	0	15	15
Ranunculus repens	0	0	0	5	0
Rumex acetosa	0	10	0	0	0
Taraxacum officinale agg.	0	0	15	0	2
Trifolium repens	25	25	0	40	30
IVC Analysis					
IVC plot type	Assigned	Assigned	Assigned	Assigned	Assigned
IVC community	GL2C	GL3B	GL2C	GL3B	GL2C

Table 17: Relevé survey data associated with turbine locations T9 – T13

Closest turbine number	T9	T10	T11	T12	T13
Relevé number	EV20250701_T9	EV20250626_T10	EV20250624_T11	EV20250625_T12	EV20250625_T13
ITM coordinates	0524874 0751451	0525028 0751074	0525284 0750840	0525625 0751055	0525517 0751391
Date	01.07.2025	25.06.2025	24.06.2025	25.06.2025	25.06.2025
REPORTING Plot number	Plot 11	Plot 12	Plot 13	Plot 14	Plot 15
Size (m^2)	2	2	2	2	2
Slope (degrees)	5	15	5	5	5
Aspect	N	S	E	N	SE
Altitude (m)	38	29	32	36	48

Closest turbine number	T9	T10	T11	T12	T13
Vegetation height (cm) - Max and mean	60 and 40	75 and 30	30 and 10	50 and 75	10 and 15
Grazing	None	Cattle	Yes - sheep	No - looks like a hay meadow for cutting	Yes - sheep
Vegetation cover (%)	100	100	100	100	100
Bare ground (%)	0	0	0	0	0
Bryophyte cover (%)	5	0	0	0	0
Total no. of spp.	16	7	8	8	8
Species (%)					
Achillea millefolium	10	0	0	0	0
Agrostis stolonifera	0	0	5	0	0
Anthoxanthum odoratum	10	0	30	15	5
Briza media	5	0	0	0	0
Cardamine pratensis	2	0	0	0	0
Cerastium fontanum	2	0	1	0	5
Cirsium arvense	0	1	25	0	2
Cynosurus cristatus	7	5	0	5	5
Dactylis glomerata	5	5	0	0	0
Deschampsia cespitosa	10	2	0	1	0
Festuca rubra	40	0	0	0	0
Holcus lanatus	15	60	40	80	10
Lolium perenne	5	40	50	15	80
Luzula campestris	2	0	0	0	0
Poa trivialis	5	0	5	15	10
Prunella vulgaris	5	0	0	0	0
Ranunculus acris	5	0	0	0	0
Rumex acetosa	0	0	0	5	0
Trifolium repens	35	5	10	5	25
IVC Analysis					
IVC plot type	Transitional	Assigned	Assigned	Assigned	Assigned
IVC community	GL3B	GL2C	GL2C	GL2C	GL3B

APPENDIX IV – BADGER SETTS

Table 18: Summary of badger sett activity

Deployment period	Description of area	Approximate size of sett entrance	Sett entrance reference	Species recorded	Results of deployment	Photo evidence
11/04/2025 – 07/05/2025	Single burrow entrance located along the boundary of an improved grassland field, with old bedding scattered outside.	30x24 cm		Badger	Two badger records but no sett exit or entry observed.	
29/04/2025 – 08/05/2025	Located in scrub / treeline at the corner of an improved grassland field, overlooking a main badger sett comprising at least six entrances.	Six entrances c. 30x25 cm		Badger, fox	173 badger observation. Including 62 instances of exiting or entering setts.	

APPENDIX V – MAMMAL FIELD SIGNS AND HERPETOFAUNA HABITATS



Plate 10: Badger latrine located in the northwest of the wind farm site, near Ballisnahyny turlough



Plate 11: Mammal trail along the GCR leading to field



Plate 12: Badger trail near the location of the main sett at the proposed 110 kV substation



Plate 13: Otter spraint (faeces) located on the banks of the Black River



Plate 14: Two dried otter spraint adjacent to the GCR crossing point on the Black River



Plate 15: Suspected pine marten scat atop a stone wall within the proposed wind farm site



Plate 16: Pond located to the south of the proposed wind farm site considered suitable for smooth newt



Plate 17: Suitable habitat for common lizard located near T5