

Environmental Impact Assessment Report (EIAR)

Crumhach Wind Farm, Co.
Sligo

Chapter 6 - Biodiversity



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GLOSSARY OF TERMS

Term	Definition
Qualifying Interests	The specific habitats or species for which Special Areas of Conservation (SACs) are designated under the EU Habitats Directive
Biological Q-Rating	A scientific method used to assess water quality in rivers and streams, in Ireland; developed by the EPA
Natural Heritage Area	Areas considered important for the habitats present or areas which hold species whose habitats require protection
Potential Collision Height	The rotor-swept area of the proposed turbines
Proposed Biodiversity Enhancement Area	Area within the Site Boundary set aside exclusively to manage and enhance biodiversity.
Proposed Natural Heritage Area	A site designated under non-statutory protection for its significant wildlife and habitats, representing the initial stage of becoming a fully designated Natural Heritage Area
Special Areas of Conservation	Designated for habitats (e.g., active raised bogs, reefs) and non-bird species listed under the EU Habitats Directive.
Special Conservation Interests	Specific species or habitats for which a site is designated as a Special Protection Area (SPA), primarily focusing on rare, vulnerable, or migratory birds, as well as wetlands
Special Protection Areas	Designated specifically for the protection of wild birds and their habitats under the Birds Directive.

GLOSSARY OF ACRONYMS

Acronym	Definition
AASR	Appropriate Assessment Screening Report
BMEP	Biodiversity Management and Enhancement Plan
BTO	British Trust for Ornithology
DAU	Development Applications Unit
DEM	Digital Elevation Model
DTM	Digital Terrain Model
ECOW	Ecological Clerk of Works
EDNA	Environmental DNA

EQSs	Environmental Quality Standards
GWBs	Groundwater Bodies
IFI	Inland Fisheries Ireland
ITM	Irish Transverse Mercator
JTF	Just Transition Fund
MS	Microsoft
MV	Medium Voltage
NIS	Natura Impact Statement
NHA	Natural Heritage Area
NPWS	National Parks and Wildlife Service
OPR	Office of the Planning Regulator
OTE	Over the Edge Drainage
PCH	Potential Collision Height
pNHA	Proposed Natural Heritage Area
QI	Qualifying Interest
RED	Renewable Energy Directive
SAC	Special Area of Conservation
SCADA	Supervisory Control and Data Acquisition
SCI	Special Conservation Interest
SSCO	Site Specific Conservation Objectives
SNH	Scottish Natural Heritage
SPA	Special Protection Area

6. BIODIVERSITY

6.1 Introduction

This chapter assesses the likely significant effects (both alone and cumulatively with other projects) that the Proposed Project may have on Biodiversity and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. Mitigation by design was applied to the finalised Proposed Project layout wherever possible to avoid impacts on Biodiversity. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Act, 1976 (as amended) and the EU Habitats Directive 92/43/EEC. Impacts on avian receptors are considered in **Chapter 7: Birds** of this EIAR. The full description of the Proposed Project is provided in **Chapter 4: Description of the Proposed Project** of this EIAR.

The chapter is structured as follows:

- The Introduction provides a description of the legislation, guidance and policy context applicable to Biodiversity.
- This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors.
- A description of the Baseline Ecological Conditions and Receptor Evaluation is then provided.
- This is followed by an Assessment of Effects which are described with regard to each phase of the Proposed Project: construction phase, operational phase and decommissioning phase. Potential Cumulative effects in combination with other projects are fully assessed.
- Proposed mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of predicted effects on Biodiversity.

6.1.1 Project Referencing

As detailed in Section 1.1.1 in Chapter 1: Introduction, for the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Project', 'the Site', 'Proposed Wind Farm', 'Proposed Turbines', 'Proposed Grid Connection Route', 'Existing Wind Farm', and 'Existing Grid Connection'. As identified in Section 1.1.1, the construction phase includes for the removal of the existing 23 no. turbines and the construction of the proposed 17 no. turbines and associated infrastructure on site. The operational phase includes for the operation of the proposed 17 no. turbines on site, and the decommissioning phase includes for the decommissioning of the proposed 17 no. turbines on site. The full description of the Proposed Project is detailed in Chapter 4.

In addition:

- 'Key Ecological Receptor' (KER) is defined as a species or habitat occurring within the zone of influence of the development upon which likely significant effects are anticipated.
- Zones of Influence' (ZOI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZOIs differ depending on the sensitivities of particular habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach.

- “Enhancement Area” is used where areas without impact from the Proposed Project are intended to be changed to a more favourable conservation status.

6.1.2

Requirements for Ecological Impact Assessment

National Legislation

The Wildlife Act 1976 (as amended) is the principal piece of legislation governing protection of wildlife in Ireland. The Wildlife Act provides strict protection for species of conservation value. The Wildlife Act conserves wildlife (including game) and protects certain wild creatures and flora. These species are therefore considered in this report as ecological receptors.

Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) are heritage sites that are designated for the protection of flora, fauna, habitats and geological sites. Only NHAs are designated under the Wildlife (Amendment) Act 2017. These sites do not form part of the Natura 2000 network of European sites and the AA process, or screening for same, does not apply to NHAs or pNHAs. Proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated¹ However, these sites are considered to be of significance for wildlife and habitats as they may form statutory designated sites in the future (NPWS, 2020).

The Flora (Protection) Order 2022 S.I. No. 235 lists the species, hybrids and/or subspecies of flora protected under Section 21 of the Wildlife Acts. It provides protection to a wide variety of protected plant species in Ireland including vascular plants, mosses, liverworts, lichens and stoneworts. Under Flora Protection Order. It is illegal to cut, pick, collect, uproot or damage, injure or destroy species listed or their flowers, fruits, seeds or spores or wilfully damage, alter, destroy or interfere with their habitat (unless under licence).

National Policy

Ireland's 4th National Biodiversity Action Plan 2023-2030 (Department of Housing, Local Government and Heritage, 2024) (the “NBAP”²). The NBAP strives for a “whole of government, whole of society” approach to the governance and conservation of biodiversity. It demonstrates Ireland’s continuing commitment to meeting and acting on its obligations to protect Ireland’s biodiversity for the benefit of future generations and will implement this through a number of key targets, actions and objectives.

The Wildlife (Amendment) Act 2023 introduced a new public sector duty on biodiversity. The legislation provides that every public body, as listed in the Act, is obliged to have regard to the objectives and targets in the NBAP. The NBAP sets out five key objectives as follows:

- **Objective 1: Adopt a Whole-of Government, Whole of Society Approach to Biodiversity.** Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan.
- **Objective 2: Meet Urgent Conservation and Restoration Needs.** Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government.

¹ <https://www.npws.ie/protected-sites/nha> (accessed December 2025).

² Ireland's 4th National Biodiversity Action Plan 2023-2030. Available at https://www.npws.ie/sites/default/files/files/4th_National_Biodiversity_Action_Plan.pdf

- **Objective 3: Secure Nature's Contribution to People.** Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy.
- **Objective 4: Enhance the Evidence Base for Action on Biodiversity.** This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts.
- **Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives.** Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity

European Legislation

Habitats and species of European importance are provided legal protection under the EU Habitats Directive 92/43/EEC (the Habitats Directive) and the EU Birds Directive 2009/147/EC (the Birds Directive) this legislation forms the cornerstone of Europe's nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites (hereafter referred to as European sites³) and the strict system of species protection. Both the Habitats and Bird Directives have been transposed into Irish law by Part XAB of the Planning and Development Acts 2000 (as amended) (from a land use planning perspective) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011).

Annex I of the Habitats Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. Annex II of the Directive lists animal and plant species (e.g. marsh fritillary, Atlantic salmon, and Killarney fern) whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten. Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both Annex II and Annex IV. The disturbance of species under Article 12 of the Habitats Directive (and in particular avoidance of deliberate disturbance of Annex IV species, particularly during the period of breeding, rearing, hibernation and migration and avoidance of deterioration or destruction of breeding sites or resting places) has been specifically assessed in this EIAR.

The Birds Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (Article 2). According to Recital 1 of the Birds Directive, Council Directive 79/409/EEC on the conservation of wild birds was substantially amended several times and in the interests of clarity and rationality, the Birds Directive codifies Council Directive 79/409/EEC. Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3). A subset of bird species has been identified in the Directive and are listed in Annex I as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4).

In summary, the species and habitats provided National and International protection under these legislative and policy documents have been considered in this Ecological Impact Assessment. A

detailed assessment of the likelihood of the Proposed Project having either a significant effect or an adverse impact on any relevant European Sites (i.e. SACs, Candidate Special Area of Conservation (cSACs), SPAs or Candidate Special Protection Areas (cSPAs) has been carried out in the Appropriate Assessment (AA) Screening Report and Natura Impact Statement. A separate assessment has not been carried out in this chapter, to avoid duplication of assessments. However, the relevant conclusions have been cross-referenced and incorporated.

In addition to the above, the following legislation applies with respect to habitats, fauna, invasive species and water quality in Ireland and has been considered in the preparation of this chapter:

- The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971)
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 which give further effect to EU Water Framework Directive (2000/60/EC).
- The following legislation applies with respect to non-native species - Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).

6.1.3

Review of Relevant Guidance and Sources of Consultation

The assessment methodology is based primarily upon the National Road Authority (TII) 's *Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2* (TII, 2009a)³ and the survey methodology is based on the TII Guidelines on *Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (TII, 2009b)⁴. Although these survey methodologies relate to road schemes, these standard guidelines are recognised survey methodologies that ensure good practice regardless of the development type.

In addition, the following guidelines were consulted in the preparation of this document to provide the scope, structure and content of the assessment:

- (CIEEM, 2018)⁵. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

This assessment has been carried out in accordance with the Environmental Impact Assessment guidance as outlined in **Section 1.2.1** of **Chapter 1: Introduction of the EIAR**.

In addition to the above, the following legislation applies with respect to habitats, fauna and water quality in Ireland and has been considered in the preparation of this report:

- The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971)
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 which give further effect to EU Water Framework Directive (2000/60/EC).

³ (TII, 2009a)- *Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2*. Available at <https://www.tii.ie/media/kzldoawo/guidelines-for-assessment-of-ecological-impacts-of-national-road-schemes.pdf>

⁴ (TII, 2009b)- *Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes*. Available at <https://www.tii.ie/media/4nthqz3a/ecological-surveying-techniques-for-protected-flora-and-fauna-during-the-planning-of-national-road-schemes.pdf>

⁵ (CIEEM, 2018)-*Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal*. Available at <https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf>

The following legislation applies with respect to non-native species:

- Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).
- European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024)

This assessment has been prepared with respect to the various planning policies and strategy guidance documents listed below:

- Sligo County Development Plan 2024-2030⁶
- Ireland's 4th National Biodiversity Action Plan 2023-2030⁷
- Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032⁸

6.1.4 Statement of Authority

This EIAR chapter has been prepared by Julie Kohlstruck (B.Sc. and M.Sc. Landscape Ecology). Julie has over 5 years' experience in ecological consultancy and has worked on Appropriate Assessments and Ecological Impact Assessments for a range of project types, including renewable energy infrastructure. This report has been reviewed by Rachel Walsh (B.Sc., MCIEEM). Rachel is a Senior Ecologist with 6 years' experience in ecological consultancy and has worked on multiple ecological assessments for large scale projects including renewable energy and water infrastructure.

The baseline terrestrial ecological surveys were undertaken by Rachel Minogue (B.Sc., Environmental Science), Fiona Kileen (BSc, Env), Tom Peters (B.Sc., M.Sc.), Colin Murphy (B.Sc., M.Sc.), Katy Beckett (B.Sc., M.Sc.), Matthew Kieran (B.Sc.), Julie Kohlstruck (B.Sc., M.Sc.), Niamh Rowan (B.Sc.) and Rudraksh Gupta (B.Sc., M.Sc.) throughout 2023, 2024 and 2025. Details of bat surveyors are provided in **Appendix 6-2**. Triturus Environmental Ltd carried out aquatic baseline surveys as detailed in **Appendix 6-3**.

6.2 Methodology

The following sections describe the methodologies followed to establish the baseline ecological condition of the Site and surrounding area. Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM, 2018).

6.2.1 Desk Study

The desk study undertaken for this assessment included a thorough review of available ecological data including the following:

- Review of the National Parks and Wildlife Service (NPWS) Article 17 maps (2019).
- Review of the National Parks and Wildlife Service (NPWS) Article 17 reports (2025).

⁶ Sligo County Development Plan 2024-2030. Available at <https://www.sligococo.ie/cdp/>

⁸ Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032. Available at <https://www.nwra.ie/rses/>

- Review of online web-mappers: NPWS⁹, EPA maps¹⁰, Water Framework Directive (WFD) and Inland Fisheries Ireland (IFI)¹¹.
- Review of IFI Reports, where available
- Review of supporting documentation for European Designated Sites and Nationally Designated Sites.
- Data on potential occurrence of rare plant and bryophytes – as per NPWS online map viewers; Flora Protection Order 2022 Map Viewer¹². Bryophytes.
- Review of relevant Plans, including the National Biodiversity Action Plan (NBAP) 2023-2030 and the All-Ireland Pollinator Plan 2021-2025.
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper.
- Review of the Irish Wetland data base web-mapper¹³.
- A data request was sent to the NPWS on the 05/09/2025 for records of Rare and Protected Species for the hectads in which the Proposed Project is located and a response was received on the 01/10/2025.
- Desk sources reviewed in relation to data on bat species in the area are included in **Appendix 6-2**.
- Potential for in-combination effects have been considered in **Chapter 2: Background to the Proposed Project** of this EIAR and **Section 6.5** Cumulative Impact of this Chapter. This was informed by a review of the EIARs/NISs prepared for other plans and projects occurring in the wider area.

6.2.2 Scoping and Consultation

MKO undertook a scoping exercise during preparation of this EIAR, as described in **Chapter 2, Section 2.7** of this EIAR.

Copies of all scoping responses are included in **Appendix 2-1** of this EIAR. The recommendations of the consultees have informed the EIAR preparation process and the contents of this chapter. **Table 2-5 & Table 2-6** in Chapter 2 of this EIAR describes where the comments raised in the scoping responses received have been addressed in this assessment. **Table 6-1** below provides a list of the organisations consulted with regard to biodiversity during the scoping process and notes where scoping responses were received.

⁹ <https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba> Accessed December 2025

¹⁰ <https://gis.epa.ie/EPAMaps/> Accessed November 2025

¹¹ <https://ifigis.maps.arcgis.com/apps/webappviewer/index.html?id=9a31fedb077c4fb2991184842b7ef025> Accessed December 2025

¹² <https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e> Accessed December 2025

¹³ https://wetland.maps.arcgis.com/apps/instant/sidebar/index.html?appid=0b602456f4e54b2b808b9cf8d6472cad¢er=-7.4933;53.6737&level=7&hiddenLayers=19354f31539-layer-9;19354f31539-layer-8;19354f3153a-layer-10;19354f31537-layer-7;WMI_Import_Jul_2020_4824

Table 6-1 Organisations consulted with regard to biodiversity

Consultee	Date of Response	Response Summary	Addressed in Chapter Section
Bat Conservation Ireland	07/10/2024	No comment	N/A
Butterfly Conservation Ireland	No response received	N/A	N/A
Birdwatch Ireland	No response received	N/A	N/A
Department of Housing, Local Government and Heritage: Development Applications Unit (includes National Parks & Wildlife Service and the National Monuments Service)	09/09/2024	NPWS consultation detailed in Section 6.2.2.1	6.2.2.1
Inland Fisheries Ireland	No response received	N/A	N/A
Irish Peatland Conservation Council	No response received	N/A	N/A
Irish Wildlife Trust	9 September 2024	No comment	N/A
Sligo County Council: Environment Department		The Proposed Project will be assessed for its potential impact on Natura 2000 sites	6.4.5 and the accompanying NIS
The Heritage Council	No response received	N/A	N/A

6.2.2.1 Consultation with National Parks and Wildlife Service

Members of the Project Team, including Environmental Scientists, Ecologists and Ornithologists met with the National Parks and Wildlife Service (NPWS) on the 10th February 2026 to discuss the Proposed Project. The main topics discussed in the meeting included the following:

- An overview of the Proposed Project.
- Ecological surveys which have been undertaken to date and their findings.
- Ornithology surveys which have been undertaken to date and their findings.
- The Key Ecological Receptors identified at the Site.
- Proposed plans for habitat enhancement and management measures.

The outcome of the meeting included the following feedback and recommendations from the NPWS:

- The classification of peatland habitats was discussed, and it was highlighted that Irish Vegetation Classification (IVC) should be used not only for areas of direct habitat loss, but also for surrounding areas to assess the impact of habitat loss within the wider area. Peatland assessment and classification should follow the National Survey of Upland

Habitats (NSUH) Guidance¹⁴ but use IVC classifications. The assessment should demonstrate use of the mitigation hierarchy in site design and layout. A detailed description of the Methodology used, and the baseline survey results is provided in **Chapter 6.2.3** and **Chapter 6.3.2 of this EIAR with detailed botanical data in Appendix 6-1.**

- The NatureScot guidance¹⁵ should be used to determine the status of peatland habitats within the proposed Enhancement Areas, acknowledging that it can only be imperfectly applied to Irish habitat mapping. NSUH assessment should be used to assess the habitat condition. Publicly available habitat data should also be incorporated into the assessment and larger, continuous areas of blanket bog are considered more ecologically significant than isolated habitat blocks. These assessments should be used to inform the appropriate restoration measures. A detailed baseline of the habitats found in the habitat management area and its connection to the wider landscape is provided in **Appendix 6-4.**
- It was highlighted that the EIAR should clearly describe how turbine micro-siting was informed by habitat sensitivity. The rationale and logic behind habitat assessment and layout decisions should be explicitly documented in the EIAR. The impacts on sensitive habitats have been fully considered, and appropriate mitigation measures have been incorporated into the project design, as set out in **this Biodiversity Chapter, and Chapter 4- Description and Chapter 9: Hydrology and Hydrogeology, and the Construction Environmental Management Plan (CEMP) in Appendix 4-5.**
- The proposed BMEP should be detailed and prepared by an ecologist, with provisions for long-term management, mechanisms for adaptive management and detailed monitoring at set intervals following NSUH condition assessment methodologies and interim monitoring following less detailed assessments such as the acres score cards. Details of the Monitoring Plan including timelines and success measures are provided in the BMEP Appendix 6-4.
- It was highlighted that for floating roads in peaty and upland areas, detailed construction methodologies are required and need a high level of oversight at the design stage and in advance of construction. Emphasis should be placed on secondary drainage design and prevention of upland flooding. Best practice in floating road construction is often poorly implemented and must be clearly demonstrated. The appropriate use of collector drains, culverts, and oversight by an Ecological Clerk of Works (ECoW) is required. The hydrological impacts have been fully considered, and appropriate mitigation measures have been incorporated into the project design, as set out in **this Biodiversity Chapter, Chapter 4: Description of the Proposed Project and Chapter 9: Hydrology and Hydrogeology, and the Construction Environmental Management Plan (CEMP).**
- The area to the southeast of the proposed Enhancement Area is a state-owned part of the Ox Mountains Bogs SAC and also designated as a Nature Reserve and Ramsar Site and needs to be discussed in the EIAR. The impact of the Proposed Project on Designated Sites has been assessed within this **Biodiversity Chapter** and the **Natura Impact Statement (NIS)**. It was noted that the forestry block south of the proposed Enhancement Area is owned by Coillte
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¹⁴ Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014). *Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. Irish Wildlife Manuals, No. 79. NPWS. Available at <https://www.npws.ie/sites/default/files/publications/pdf/TWM79.pdf>*

¹⁵ <https://www.nature.scot/doc/peatland-action-technical-compendium>

6.2.3 Field Surveys

Comprehensive surveys of the biodiversity of the Site were undertaken to inform this Biodiversity Chapter of the EIAR. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies and guidance followed. Surveys were carried out throughout 2023, 2024, 2025, and 2026 and are summarised in **Table 6-2** below.

Table 6-2: Ecology Surveys Informing the EIAR

Survey Type	Dates	Appendix
Multi-disciplinary walkover (incl. habitats)	> 21/06/2023 > 04/07/2023 > 02/08/2023 > 02/07/2024 > 03/07/2024 > 16/09/2025 > 17/09/2025 > 18/09/2025.	N/A
Detailed Botanical Surveys	> 02/07/2024 > 03/07/2024 > 16/09/2025 > 17/09/2025 > 18/09/2025 > 26/03/2026 > 13/05/2026	Botanical Report, Appendix 6-1
Badger/Mammal survey	> 21/06/2023 > 04/07/2023 > 02/08/2023 > 02/07/2024 > 03/07/2024 > 16/09/2025 > 17/09/2025 > 18/09/2025.	N/A
Bat Surveys	Surveys were undertaken in 2023, 2024, 2025 and 2026 Full details of dates of surveys for manual activity surveys and emergence surveys, static detector surveys, and daytime bat habitat appraisal surveys, are presented in Appendix 6-2.	Bat Report, Appendix 6-2
Aquatic surveys (including otter)	Surveys were undertaken in 2024 Full details of dates of aquatic surveys including fisheries and habitat assessment, Q- Value & Electric Fishing are presented in Appendix 6-3.	Aquatics Report, Appendix 6-3
Terrestrial Surveys of Proposed Grid Connection	> 16/09/2025 > 17/09/2025 > 18/09/2025.	N/A
Terrestrial Surveys of Proposed Turbine Delivery Route	> 02/03/2026	N/A
Detailed habitat assessment of the Enhancement Area	> 19/02/2026	Biodiversity Management and Enhancement Plan (BMEP), Appendix 6-4

6.2.3.1 Multi-disciplinary Walkover Surveys (as per TII Guidelines, 2009)

Multidisciplinary walkover surveys were undertaken within the Site on the dates outlined in **Table 6-2** above. Surveys were undertaken within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011)¹⁶. A comprehensive walkover of the entire Site was completed with incidental records also incorporated from other dedicated species/habitat specific surveys. During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) was conducted.

The walkover surveys were also designed to detect the presence, or likely presence, of a range of protected species. The survey included a search for mammal signs (bats, badger, red squirrel etc.) and areas of suitable habitat to support these species, potential features likely to be of significance to bats and additional habitat features for the full range of other protected species that are likely to occur in the vicinity of the Proposed Project (e.g. otter etc.). Bird species observed during the multi-disciplinary surveys were also recorded.

The multi-disciplinary walkover surveys comprehensively covered the entire Site and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. These surveys were carried out in accordance with the TII *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (TII, 2009).

As part of the multidisciplinary surveys, a search for potential suitable habitat for Marsh fritillary (*Euphydryas Aurinia*) was carried out as per TII (2009b). This included a search for devil's-bit scabious (*Succisa pratensis*) which is the food plant for the larval stage of this species. No suitable stands of devil's-bit scabious were recorded; therefore no further assessments such as habitat condition assessments or larval web surveys were undertaken.

Other targeted survey methodologies undertaken within the Site are described in the following subsections.

6.2.3.2 Dedicated Habitat and Vegetation Composition Surveys

All habitats recorded on Site and described in this Biodiversity chapter have been classified in accordance with Fossitt (2000)¹⁷. Detailed botanical surveys/relevé assessments of the Site were undertaken. Full details of all the botanical surveys and results are provided in **Appendix 6-1** and an assessment of the potential for the site to support Annex I habitats is also provided in this Appendix.

Detailed botanical surveys/relevé assessments of the Proposed Project were also undertaken throughout multidisciplinary walkover surveys carried out on the dates detailed in **Table 6-2** above. These surveys provided an understanding of the baseline and informed further survey work following finalisation of the Site layout.

The habitat assessment surveys described in this report have been undertaken with reference to the following guidelines and interpretation documents:

¹⁶ (Smith *et al* 2011)- *Best Practice Guidance for Habitat Survey and Mapping*. Available at https://www.heritagecouncil.ie/content/files/best_practice_guidance_habitat_survey_mapping_onscreen_version_2011_8mb.pdf

¹⁷ (Fossitt 2000)- *A Guide to Habitats in Ireland*. Available at <https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf>

- Commission of the European Communities (2013) *Interpretation manual of European Union habitats*. Eur 27. European Commission DG Environment.¹⁸
- NPWS (2025). *The Status of EU Protected Habitats and Species in Ireland*. Volume 2: *Habitat Assessments*. Unpublished NPWS report. Edited by: Domhnall Finch, Aoife Delaney, Fionnuala O'Neill and Deirdre Lynn
- Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018), *The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats*. Irish Wildlife Manuals, No. 102. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.¹⁹
- O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013), *The Irish semi-natural grasslands survey 2007-2012*. Irish Wildlife Manuals, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.²⁰
- Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014). Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. Irish Wildlife Manuals, No. 79. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.²¹

Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2019), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

6.2.3.2.1 Vegetation composition assessment

Detailed habitat classification and assessment was undertaken by MKO at targeted locations within the Site, with relevés undertaken within representative habitats at each turbine base and associated Proposed Wind Farm infrastructure, see **Appendix 6-1** for all relevé data. The extent of each habitat on Site was mapped using the field maps app. A representative photograph was also taken for each of the habitats recorded on site, including all relevés. The location of all quadrats is shown on **Figure 1-1** of **Appendix 6-1**.

The survey results were then analysed in accordance the Irish Vegetation Classification (IVC) system. The IVC is a project with aims to classify, describe, and map in detail all aspects of natural and semi-natural vegetation in Ireland within a single, unified framework. The National Vegetation Database (NVD), upon which the IVC is based, holds data for over 30,000 relevés and is the core resource upon which the classification system is based.

A fundamental requirement of the IVC is to "aid in definition and identification of EU Habitat Directive (92/43/EEC) Annex I habitats" and to 'inform the planning process, for example through environmental impact assessments.

The Engine for Relevés to Irish Communities Assignment (ERICA)²² is a web application for assigning vegetation data to communities defined by the Irish Vegetation Classification (IVC). Data can be uploaded, checked for errors and analysed and the results can then be downloaded. ERICA works with

¹⁸ (EC 2013)- *Interpretation Manual of European Union Habitats*. Available at https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/espacios-protegidos/doc_manual_intp_habitat_ue_tcm30-207191.pdf

¹⁹ Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018), *The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats*. Irish Wildlife Manuals, No. 102. NPWS Available at <https://www.npws.ie/sites/default/files/publications/pdf/TWM%20102%20Annex%201%20Grasslands.pdf>

²⁰ O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013), *The Irish semi-natural grasslands survey 2007-2012*. Irish Wildlife Manuals, No. 78. NPWS. Available at <https://www.npws.ie/sites/default/files/publications/pdf/TWM-78-Irish-semi-natural-grassland-survey.pdf>

²¹ Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014). *Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland*. Version 2.0. Irish Wildlife Manuals, No. 79. NPWS. Available at <https://www.npws.ie/sites/default/files/publications/pdf/TWM79.pdf>

²² Perrin, 2019, ERICA – Engine for Relevés to Irish Communities Assignment V5.0 User's Manual, Online, Available at: https://biodiversityireland.shinyapps.io/vegetation-classification/w_9cd4889a/manual.pdf, Accessed December 2025.

both quantitative vegetation cover data (such as are recorded in relevés and other types of botanical recording plots) and presence/absence data, such as species lists. ERICA covers grasslands, woodland, duneland, heaths, bogs, fens, mires, freshwater, saline waters, rocky habitats, scrub, strandline, saltmarsh and weed communities (Perrin, 2018). The data collected from the botanical assessments was uploaded to ERICA, analysed and the results data downloaded.

The analysis procedure uses a clustering process to assign classification affinity to vegetation plots based on a degree of membership to each of the communities defined by the IVC. **Table 6-3** details the categorizing types of plots utilising the clustering analysis. This categorizing procedure was utilised to determine if the heath and bog plots within the study area had any affinity to Annex I habitats and whether further assessment was required.

Table 6-3: Categorising types of plots using clustering analysis (after Wiser & de Cáceres, 2013).

Plot Type	Definition
Assigned	The plot has membership ≥ 0.5 for one of the vegetation communities and therefore relates to the core definition of that vegetation community.
Unassigned	The plot has membership ≥ 0.5 for the noise class and is poorly represented by the current classification scheme
Transitional	The plot has membership < 0.5 for all vegetation communities and for the noise class. It falls within the scope of the current classification scheme but does not relate to the core definition of any of the vegetation communities.

Habitats considered to be of ecological significance and in particular having the potential to correspond to those listed in Annex I of the EU Habitats Directive where present were identified and classified as KERs.

6.2.3.2.2 Habitat Condition Assessments

Habitats with potential links to Annex 1 habitats such as blanket bog, wet heath or cutover bog were assessed using the monitoring criteria for upland Annex 1 habitats laid out in Wildlife Manual No. 79 (Perrin *et al.* 2014). The methodology was updated with the use of IVC communities (see Section above) to classify the species assemblage rather than the provisional NSUH classification used in the guidance. Monitoring stops were undertaken in infrastructure locations where habitats were recorded with potential links to Annex 1 habitats and the vicinity of these areas to understand the potential loss of habitat in the context of the condition of the surrounding habitats. This was the case for areas of cutover blanket bog in the vicinity of Turbines T1-T5.

6.2.3.3 Terrestrial Faunal Surveys

The results of the desk study, scoping replies, incidental records of protected species during ecological survey work and multidisciplinary walkover surveys were used to inform the scope of targeted ecological surveys required. Dedicated surveys for badger were undertaken on the dates set out in **Table 6-2** above, with the methodologies followed also provided in the following sections. Dedicated surveys for bats were undertaken across the site and are detailed in the Bat Report in **Appendix 6-2**. Otter surveys were carried out by MKO within the Proposed Wind Farm and along the Proposed Grid Connection Route. Otter surveys were also carried out during the dedicated aquatic surveys as detailed in the Aquatic Report in **Appendix 6-3**. During the multidisciplinary walkover surveys, where observed incidental records of birds, reptiles, amphibians, and invertebrates including butterflies, dragonflies, etc. were recorded.

6.2.3.3.1 Badger Survey

The badger surveys were conducted on the dates outlined in **Table 6-2** above in areas identified as providing potential habitat for badgers (i.e., conifer plantation). The surveys were carried out to determine the presence or absence of badger signs within the Proposed Wind Farm and in the wider

survey area. This involved a search for all potential badger signs as per TII (2009) (latrines, badger paths and setts). If encountered, setts would be classified as per the convention set out in TII (2009) (i.e. main, annexe, subsidiary, outlier).

The badger survey was conducted adhering to best practice guidance (TII, 2009) and followed the ‘Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes’ (TII, 2006a) and CIEEM best practice competencies for species surveys (CIEEM, 2013²³).

6.2.3.3.2 Otter Survey

Dedicated otter surveys were undertaken along watercourses in the vicinity of the Proposed Project during dedicated aquatic surveys undertaken in 2024 (Aquatic Baseline Report, **Appendix 6-3**), and during multidisciplinary walkover surveys and Proposed Grid Connection surveys as described in **Table 6-2** above.

The otter surveys were conducted as per TII (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved a search for all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts. In addition to the width of the rivers/watercourses, a 10m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS 2009). The dedicated otter survey also followed the guidance as set out in TII (2008) ‘Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes’ and following CIEEM best practice competencies for species surveys (CIEEM, 2013²⁴).

6.2.3.3.3 Bat Surveys

Detailed description of the survey methodologies undertaken at the Site during between 2023 and 2026 in relation to bats is provided in the Bat Report included in **Appendix 6-2** of this ELAR, together with full details of the survey times and the surveyors who carried out the bat survey and assessment work.

Survey design and effort was created in accordance with the best practice guidelines, ‘Bat Surveys: Good Practice Guidelines’ prepared by the Bat Conservation Trust (Collins 2023)²⁵ and were undertaken in strict accordance with those prescribed in NatureScot (2021)²⁶ ‘Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation’. This is in line with standard best practice industry guidelines.

6.2.3.4 Aquatic surveys

Full details of the methodology followed for the aquatic surveys as well as details of the locations of survey sites is provided in the Aquatic Baseline Report, **Appendix 6-3**.

Aquatic surveys were conducted on the 2nd-7th July and 11th-14th September 2024 by Triturus Environmental Ltd., with a Stage 1 freshwater pearl mussel survey completed in May 2024. Survey effort focused on both instream and riparian habitats at each aquatic sampling location and included a

²³ CIEEM, 2013, Technical Guidance Series – Competencies for Species Survey, Online, Available at: <https://cieem.net/resource/competencies-for-species-survey-css/> Accessed December 2025.

²⁵ (Collins 2023)- Bat Surveys for Professional Ecologists- Good Practice Guidelines. Available at <https://cdn.bats.org.uk/uploads/pdf/Resources/For-professionals/Bat-Survey-Guidelines-4th-edition-AMENDED-27.03.24.pdf?v=1711530492>

²⁶ (NatureScot, 2021) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Available at https://www.nature.scot/sites/default/files/2021-08/Bats%20and%20onshore%20wind%20turbines%20-%20survey%2C%20assessment%20and%20mitigation_0.pdf

fisheries assessment (electro-fishing and or fisheries habitat appraisal), white-clawed crayfish survey, macrophyte and aquatic bryophyte survey and biological water quality sampling (Q-sampling) or invertebrate sweep sampling (where applicable). This holistic approach informed the overall aquatic ecological evaluation of each site/watercourse in context of the Proposed Project and ensured that any habitats and species of high conservation value would be detected to best inform mitigation.

6.2.3.5 Invasive species survey

During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken within the Site. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

6.2.3.6 Limitations

Seasonal factors that affect distribution patterns and habitats of species were taken into account when conducting the surveys. The potential of the Site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed.

The specialist studies, analyses and reporting have been undertaken in accordance with the appropriate guidelines. The habitats and species recorded on site were readily identifiable and comprehensive assessments were made during the field visit. No limitations in respect of the surveys undertaken have been identified.

6.2.4 Methodology for Assessment of Impacts and Effects

6.2.4.1 Identification of Target Receptors and Key Ecological Receptors

The methodology for assessment followed a precautionary screening approach with regard to the identification of KERs. Following a comprehensive desk study, initial site visits and stakeholder consultation; “Target Receptors” likely to occur in the ZOI of the Proposed Project were identified. The Target Receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive.
- Qualifying Interests (QI) of SACs within the likely ZOI.
- Designated Sites and Species protected under the Wildlife Act as amended.
- Species protected under the Flora (Protection) Order 2022 S.I. No. 235.

6.2.4.2 Determining Importance of Ecological Receptors

The importance of the ecological features identified within the Site was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the TII Ecological Impact Assessment Guidelines (TII 2009). These guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned in relation to the importance of any particular receptor. These guidelines provide a basis for determination of whether any particular receptor is of importance on the following scales:

- International
- National
- County
- Local Importance (Higher Value)

➤ Local Importance (Lower Value)

The guidelines clearly set out the criteria by which each geographic level of importance can be assigned. Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the TII Ecological Impact Assessment Guidelines and have been followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors.

Any ecological receptors that are determined to be of National or International, County or Local importance (Higher Value) following the criteria set out in the TII Ecological Impact Assessment Guidelines are considered to be KERs for the purposes of ecological impact assessment if there is a pathway for effects thereon. Any receptors that are determined to be of Local Importance (Lower Value) are not considered to be KERs. This is not to say that they are of no biodiversity value, but that impacts on these habitat types in their local context are not likely to result in a significant effect on biodiversity. It should be noted that this relates to the impact on the habitat itself as distinct from considering the role these habitat types play in supporting KER fauna species

6.2.4.3 Characterisation of Impacts and Effects

The ecological effects of impacts arising from the Proposed Project are characterised as per the CIEEM ‘Guidelines for Ecological Impact Assessment in the UK and Ireland’ (2018). The CIEEM (2018) Guidelines are the industry standard for the completion of Ecological Impact Assessment (EcIA) in the UK and Ireland. This chapter has also been prepared in accordance with the corresponding EPA Guidelines (EPA 2022) as detailed in Section 1.2.1 of Chapter 1. The headings under which the impacts are characterised follow those listed in the CIEEM guidance document and are applied where relevant. A summary of the impact characteristics considered in the assessment is provided below:

- **Positive or Negative.** Assessment of whether the Proposed Project results in a positive or negative effect on the ecological receptor.
- **Extent.** Description of the spatial area over which the effect has the potential to occur.
- **Magnitude** Refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- **Duration** is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing.** This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- **Reversibility.** This is a consideration of whether an effect is reversible within a ‘reasonable’ timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

6.2.4.4 Determining the Significance of Effects

The ecological significance of the effects of the Proposed Project are determined following the precautionary principle and in accordance with the methodology set out in Section 5 of the CIEEM 2018 Guidelines.

For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018).

When determining significance, consideration is given to whether:

- Any processes or key characteristics of KERs will be removed or changed.
- There will be an effect on the nature, extent, structure and function of important ecological features.
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

Integrity

In the context of EcIA, 'integrity' refers to the coherence of the ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued (TII, 2009). Impacts resulting in adverse changes to the nature, extent, structure and function of component habitats and effects on the average population size and viability of component species, would affect the integrity of a site, if it changes the condition of the ecosystem to unfavourable.

Conservation status

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status. According to CIEEM (2018) guidelines the definition for conservation status in relation to habitats and species are as follows:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area.
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

- Its natural range, and areas it covers within that range, are stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.

The conservation of a species is favourable when:

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

According to the TII (2009) and CIEEM (2018) Guidelines, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international).

6.2.4.5 Incorporation of Mitigation

Section 6.4 of this EIAR Chapter assesses the potential effects of the Proposed Project to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on KERs are predicted, mitigation is incorporated into the project design or layout to address such effects, as is the case with the Proposed Project. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation.

6.3 Establishing the Ecological Baseline

6.3.1 Desk Study Results

The following sections describe the results of a survey of published material that was consulted as part of the desk study for the purposes of the ecological assessment. It provides a baseline of the ecology known to occur in the existing environment. Material reviewed includes the Site Synopses for designated sites within the Likely ZOI, as compiled by the NPWS, plant distribution atlases and other research publications.

6.3.1.1 Designated Sites

6.3.1.1.1 Identification of the Designated Sites within the Likely Zone of Influence of the Proposed Project

The potential for the Proposed Project to impact on sites that are designated for nature conservation was considered in this chapter of the EIAR.

SACs and SPAs for Birds are designated under the Habitats Directive and the Birds Directive, respectively and are collectively known as 'European Sites'. The potential for significant effects and/or adverse impacts on the integrity of European Sites is fully assessed in the AA Screening Report and NIS that accompanies this application. As per EPA 2022 Guidance, *"a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement"* but should *"incorporate their key findings as available and appropriate"*. Section 6.5.5 of this EIAR provides a summary of the key assessment findings with regard to European Designated Sites.

Natural Heritage Areas (NHAs) are designated under Section 18 the Wildlife (Amendment) Act 2000, and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in this Biodiversity Chapter. Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered in this Biodiversity Chapter. NHAs and pNHAs are collectively known as 'Nationally Designated Sites'.

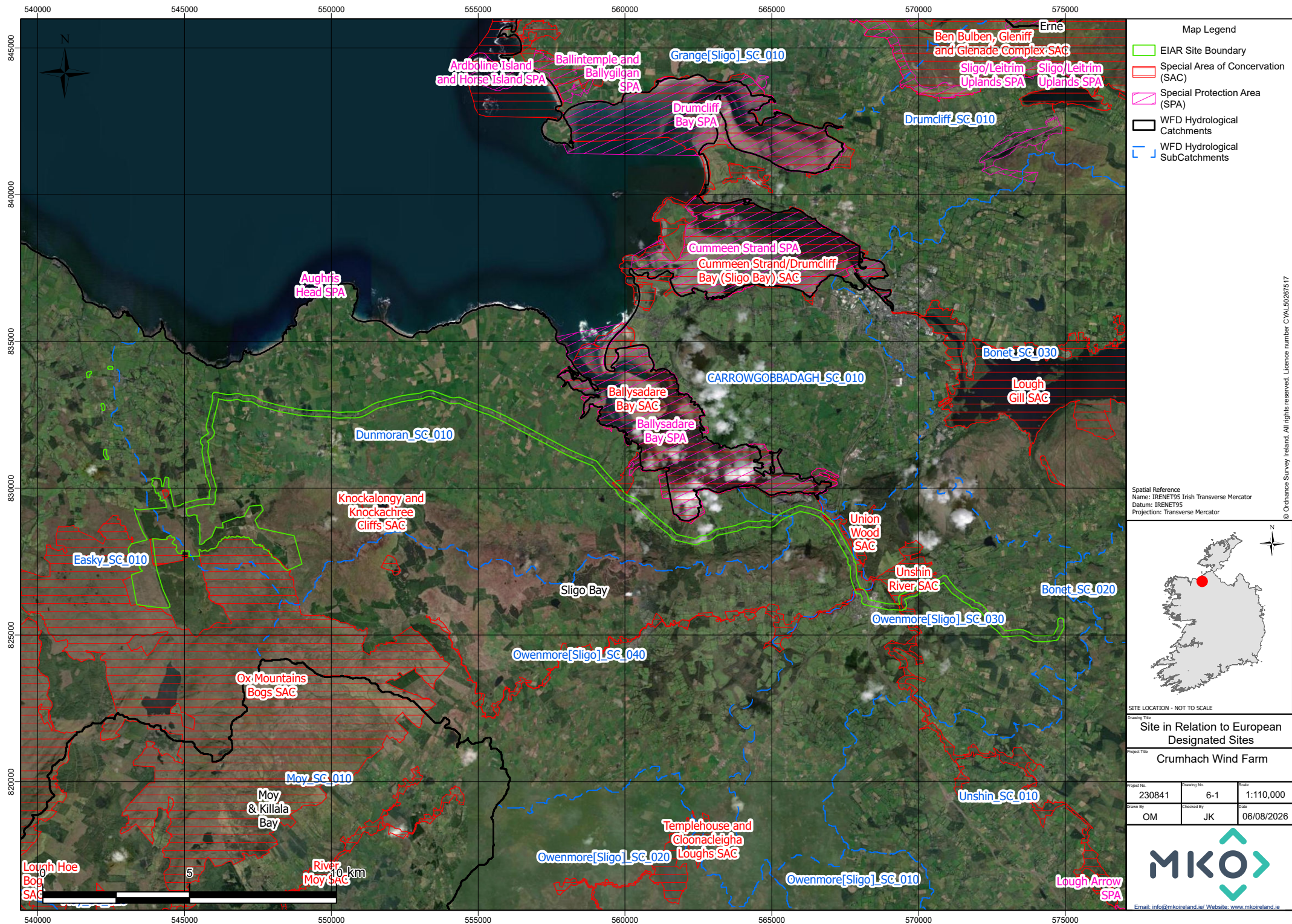
A Ramsar site is an area that is designated to conserve wetlands for waterfowl. Ireland signed up for the Ramsar Convention in 2003. While Ramsar sites have no legal protection under Irish legislation, they are usually also designated as SPAs or Nature Reserve and should be considered for adverse impacts if necessary.

The following methodology was used to establish which sites that are designated for nature conservation have the potential to be impacted by the Proposed Project:

- Initially the most up to date Geographical Information Systems (GIS) spatial datasets for European and Nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie). The datasets were utilised to identify designated

sites which could feasibly be affected by the Proposed Project. The map viewer on Irish Ramsar Wetlands Committee website (<https://www.irishwetlands.ie/>) was consulted to identify Ramsar Sites.

- All European and Nationally designated sites within the vicinity of the Proposed Project were identified. In addition, the potential for connectivity with European or Nationally designated sites at greater distances from the Proposed Project was also considered in this initial assessment.
- A map of all the European Sites within the vicinity of the Proposed Project is provided in **Figure 6-1** with all Nationally Designated Sites shown in **Figure 6-2**. These figures also display Water Framework Directive hydrological catchments and groundwater bodies.
- **Table 6-4** provides details of all relevant Nationally Designated Sites as identified in the preceding steps and assesses which are within the likely ZOI. All European Sites are fully described and assessed in the AA Screening and NIS reports submitted as part of this planning application.
- The designation features of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely ZOI, and further assessment is required.





Map Legend

- EIAR Site Boundary
- Natural Heritage Areas (NHA)
- proposed Natural Heritage Areas (pNHA)

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

SITE LOCATION - NOT TO SCALE

Site in Relation to Nationally Designated Sites

Project Title
Crumhach Wind Farm

Project No. 230841	Drawing No. 6-2	Scale 1:110,000
Drawn By OM	Checked By JK	Date 06/08/2026

Email: info@mkofireland.ie Website: www.mkofireland.ie

Table 6-4 Identification of Nationally designated sites within the Likely Zone of Influence

Designated Site	Distance from Proposed Project (km)	Likely Zone of Influence Determination
Ramsar Site/ Nature Reserve		
Easkey Bog Nature Reserve/ Easky Bog [471]	0.1km from the Proposed Wind Farm 1.3km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Designated Site. The Proposed Wind Farm is located approximately 150m from this Designated Site, however, the Designated Site drains into the Duneill_010 stream separating the Designated Site and the Proposed Wind Farm and located in a steep valley. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Nationally/ Internationally Designated Site. As such, potential for direct or indirect impact on this Nature Reserve/ Ramsar Site can be excluded. Bird species associated with these Designated Sites have been assessed further in Chapter 7: Birds. Therefore, this Nationally/ Internationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required
Natural Heritage Area (NHA)		
Slieveward Bog NHA [001902]	15.4km from the Proposed Wind Farm 250m from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Designated Site. The Proposed Wind Farm is located approximately 15.4km west of this Nationally Designated Site and 250m upstream from the Proposed Grid Connection Route. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Nationally Designated Site. As such, potential for direct or indirect impact on this NHA can be excluded. Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required
Crockauns/ Keelogyboy Bogs NHA [002435]	26.7km from the Proposed Wind Farm 12.9km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Designated Site. The Proposed Grid Connection Route is located approximately 12.9km southwest of this Nationally Designated Site and 26.7km from the Proposed Wind Farm. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Nationally Designated Site. As such, potential for direct or indirect impact on this NHA can be excluded. Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required

Carrane Hill Bog NHA [002415]	33.4km from the Proposed Wind Farm 8km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Designated Site. The Proposed Grid Connection Route is located approximately 8km northwest of this Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Nationally Designated Site. As such, potential for direct or indirect impact on this NHA can be excluded. Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required
Corry Mountain Bog NHA [002321]	36.6km from the Proposed Wind Farm 10.7km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Designated Site. The Proposed Grid Connection is located approximately 10.7km northwest of this Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Nationally Designated Site. As such, potential for direct or indirect impact on this NHA can be excluded. Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required
Proposed Natural Heritage Areas (pNHA)		
Ox Mountains Bogs pNHA [002006]	The public road used to access T1-T5 of the Proposed Wind Farm is located within the boundary of the northern section of this pNHA (0km) 1.1km from the Proposed Grid Connection Route	Given that the Site Boundary directly encompasses areas of the Ox Mountains Bogs pNHA, the potential for direct effect as a result of the Proposed Project exists. The Proposed Wind Farm and this pNHA are located within the same Water Framework directive (WFD) sub catchments (Easky_SC_010 and Dunmorán_SC_010). There is downstream surface water connectivity between the Proposed Project and this pNHA, via multiple watercourses of the Easky_010, Easky_030 and Buncrowey_010 systems which flow through the Proposed Project site for distances of <1km and into the Ox Mountain pNHA. The Proposed Project site is partially underlain by the same groundwater body as the Ox Mountain pNHA (Collooney: IE_WE_G_0048), which is also an area of “Not at Risk” groundwater vulnerability. Therefore, a pathway for indirect effects on this pNHA exists in the form of water quality deterioration and habitat degradation via hydrological pathways, in the absence of mitigation. This pNHA is considered to be within the Likely Zone of Influence and further assessment is required
Dunneill River pNHA [001664]	3.4km from the Proposed Wind Farm 2.7km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. There is downstream surface water connectivity between the Proposed Project and this pNHA via the Dunneill 35 River

		(EPA code: 35D06) (5.8km downstream of the site boundary), the Belville stream (EPA code: 35B35) (6km downstream of the site boundary), and the Doonbeakin 35 stream (EPA code:35D09) (7.8km downstream of the site boundary). The Proposed Project site is located in the same Water Framework directive (WFD) sub catchment (Dunmorán_SC_010) as this pNHA (Dunmorán_SC_010). The Proposed Project is also underlain by the same groundwater body (Collooney: IE_WE_G_0048) as this pNHA. Therefore, a pathway for indirect effects on this pNHA exists in the form of water quality deterioration and habitat degradation via hydrological pathways, in the absence of mitigation. This pNHA is considered to be within the Likely Zone of Influence and further assessment is required
Easky River pNHA [001665]	5.8km from the Proposed Wind Farm 6.4km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed NaturalProposed Natural Heritage Area. There is downstream surface water connectivity between the Proposed Project and this pNHA via the Owenminna river (EPA code:35O05) (9.8km downstream of the site boundary), the Buncrowey 35 (35B09), (9.9km downstream of the site boundary), and the unnamed stream IE_WE_35E010100 which flows into the Easky River (EPA code:35E01) (13.7km downstream of the site boundary). The Proposed Wind Farm is located in the same Water Framework directive (WFD) sub catchment (Easky_SC_010) as this pNHA. The Proposed Wind Farm is also partially underlain in the west of the site by the same groundwater body (Easky East: IE_WE_G_0050) as this pNHA. Therefore, a pathway for indirect effects on this pNHA exists in the form of water quality deterioration and habitat degradation via hydrological pathways, in the absence of mitigation. The pNHA is considered to be within the Likely Zone of Influence and further assessment is required.
Aughris Head pNHA [000620]	5.7km from the Proposed Wind Farm 2.6km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed NaturalProposed Natural Heritage Area. There is surface water connectivity between the Proposed Grid Connection and Aughris Head pNHA via the Doonflin River (35D10) (4.1km downstream of the grid connection). The Site is located in the same Water Framework directive (WFD) sub catchment (Dunmorán_SC_010) as this SAC which drains into Sligo Bay. The Site is underlain by a the Collooney (IE_WE_G_0048) groundwater body which is hydrologically connected to watercourses which drains into Sligo Bay. The area of the Proposed Project boundary is located on an area of “Not at risk” groundwater vulnerability.

		However, given the small scale of works along the Proposed Grid Connection Route and the distance to the pNHA, there is no potential for indirect effects on this pNHA in the form of water quality deterioration and habitat degradation via hydrological pathways. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Knockalongy and Knockachree Cliffs pNHA [001670]	2.5km from the Proposed Wind Farm 2.7km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed NaturalProposed Natural Heritage Area. The Proposed Wind Farm is located approximately 2.5km west of this Proposed NaturalProposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Ballysadare Bay pNHA [000622]	11km from the Proposed Wind Farm The northern parcel of the Proposed Grid Connection Route extends into the western boundary of this pNHA (0km)	The Proposed Grid Connection Route partially contains a section of the Ballysadare pNHA, however, works are restricted to the road corridor, therefore there is no potential for direct impacts. This pNHA is located approximately 0.5km from the Proposed Grid Connection Route. There are multiple watercourse crossings associated with the Proposed Grid Connection, where some of these watercourses drain to Ballysadare Bay, in which this pNHA is located. It is likely that there is hydrological connectivity between the Proposed Grid Connection Route and this pNHA. The Proposed Grid Connection Route and this pNHA are located within the same Water Framework directive (WFD) sub catchments (Easky_SC_010 and Dunmorán_SC_010). There is downstream surface water connectivity between the Proposed Project and this pNHA via multiple watercourses of the Barnabrack_010 and Ballysodare_010 systems flow through the Proposed Grid Connection and into the Ballysadare pNHA. Therefore, a pathway for indirect effects on this pNHA exists in the form of water quality deterioration and habitat degradation via hydrological pathways, in the absence of mitigation. Therefore, this pNHA is within the Likely Zone of Influence, and further assessment is required
Lough Nabrickkeagh Bog pNHA [000634]	9.6km from the Proposed Wind Farm 13.2km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Wind Farm is located approximately 9.6km northeast of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified

		between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Lough Hoe Bog pNHA [000633]	10.3km from the Proposed Wind Farm 13.9km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Wind Farm is located approximately 10.3km northeast of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Fin and Riskeen Loughs pNHA [001907]	12km from the Proposed Wind Farm 6.9km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 6.9km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Templehouse and Cloonacleigha Loughs pNHA [000636]	13.4km from the Proposed Wind Farm 9km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 9km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Knocknarea Mountain and Glen pNHA [001670]	14.4km from the Proposed Wind Farm 4.1km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 4.1km southwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded.

		Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Cummeen Strand/ Drumcliff Bay (Sligo Bay) pNHA [000627]	14.5km from the Proposed Wind Farm 5.5km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 5.5km northeast of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Turloughmore (Sligo) pNHA [000637]	14.5km from the Proposed Wind Farm 18.2km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Wind Farm is located approximately 14.5km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Knockmullin Fen pNHA [001904]	17.8km from the Proposed Wind Farm 1.5km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 1.5km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Unshin River pNHA [001898]	19.4km from the Proposed Wind Farm The eastern parcel of the Proposed Grid Connection Route extends into the northern parcel of this pNHA (0km)	The Proposed Grid Connection Route partially contains a section of the Unshin River pNHA, however, works are restricted to the road corridor, therefore there is no potential for direct impacts. The Proposed Grid Connection Route and this pNHA are located within the same Water Framework directive (WFD) sub catchments (Easky_SC_010 and Dunmorán_SC_010). The Unshin_040 flows through the proposed grid connection and the Unshin River pNHA. Therefore, a pathway for indirect effects on this pNHA exists in the form of water quality deterioration and habitat

		degradation via hydrological pathways, in the absence of mitigation. Therefore, this pNHA is within the Likely Zone of Influence, and further assessment is required
Ballygawley Lough pNHA [001909]	20.1km from the Proposed Wind Farm 1.5km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 1.5km northwest upstream of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Union Wood pNHA [000638]	19km from the Proposed Wind Farm 120m from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 0.1km west of this Proposed Nationally Designated Site. However, where the Proposed Grid Connection and pNHA have the smallest distance, they are located in different sub catchments. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Bricklieve Mountains and Keishcorran pNHA [001656]	25.6km from the Proposed Wind Farm 11km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 11km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Feenagh and Bunnamuck Loughs pNHA [001905]	24.9km from the Proposed Wind Farm 13.2km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 13.2km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded.

		Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Lough Arrow pNHA [001673]	30.3km from the Proposed Wind Farm 9.2km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 9.2km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Meharth Lough pNHA [001900]	26.1km from the Proposed Wind Farm 4.6km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 4.6km northwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Lough Gill pNHA [001976]	21.9km from the Proposed Wind Farm 4.5km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 4.5km southwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
Colgagh Lough pNHA [001658]	26.5km from the Proposed Wind Farm 9.5km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 9.5km southwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required

Ben bulben, Gleniff and Glenade complex pNHA [000623]	26.4km from the Proposed Wind Farm 14.5km from the Proposed Grid Connection Route	There will be no direct effects as the Proposed Project is located entirely outside the boundary of this Proposed Natural Heritage Area. The Proposed Grid Connection Route is located approximately 14.5km southwest of this Proposed Nationally Designated Site. No source-pathway-receptor chain for impact was identified between the Proposed Project and this Proposed Nationally Designated Site. As such, potential for direct or indirect impact on this pNHA can be excluded. Therefore, this pNHA is not within the Likely Zone of Influence, and no further assessment is required
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The following European designated site was identified as being within the Likely ZOI and is assessed further in the accompanying Natura Impact Statement (NIS):

- Ox Mountains Bogs SAC [002006]
- Ballysadare Bay SPA [004129]
- Ballysadare Bay SAC [000622]
- Unshin River SAC [001898]

The following nationally designated sites have been identified as being within the Likely ZOI of the Proposed Project:

- Ox Mountains Bogs pNHA [002006]
- Dunneill River pNHA [001664]
- Easky River pNHA [001665]
- Ballysadare Bay pNHA [000622]
- Unshin River pNHA [001898]

6.3.1.2 NPWS Habitat Data

The desk study involved a search of information pertinent to the Site. Initially the NPWS designated site datasets were consulted. A review of NPWS habitat datasets, including the Heath, Bogs and Mires, Irish Semi-Natural Grassland Survey datasets, National Survey of Native Woodlands and Ancient and Long-Established Woodland datasets was conducted prior to undertaking the multi-disciplinary walkover survey.

A search of the most up to date NPWS Article 17 shapefile datasets was undertaken as part of the desk study. The most recent National Parks and Wildlife Service data on the recorded distribution of EU Habitats Directive Annex I listed habitats was reviewed in relation to the subject lands. This data is available in the form of the NPWS (2025) Article 17 reporting, and associated GIS data, on ‘*The Status of EU Protected Habitats and Species in Ireland*’ (NPWS, 2025).

There are multiple previously mapped Article 17 Annex I habitats within the Proposed Wind Farm, these include:

- [7130] Active Blanket Bog in the western parcel of the site
- [4010] Northern Atlantic Wet Heaths with *Erica tetralix* in the western parcel of the site
- [4030] Dry Heath in the western parcel of the site

Further mosaics of wet heath/ dry/ heath/ blanket bog are mapped to the western parcel of the site.

The following Article 17 Mapped Habitats are located directly adjacent to the Proposed Grid Connection Route:

- > [7230] Alkaline Fens
- > [91E0] Residual Alluvial Forest

Where Article 17 habitats occur along the Proposed Grid Connection Route, these will not be impacted, as the proposed infrastructure will be located within the existing road infrastructure.

The Proposed Wind Farm borders the Ox Mountains Bogs SAC along the southern boundary between T9 and T16, along the boundary south of T6 and along the western and eastern boundary by T2 and T4. A setback area of 100m has been maintained between the Proposed Wind Farm infrastructure and the Ox Mountains Bogs SAC boundary.

There are large areas of mapped [7130] Active Blanket Bog, [4010] Northern Atlantic Wet Heaths with *Erica tetralix*, [4030] Dry Heath, and [4060] Alpine and Subalpine Heath located immediately adjacent to the west, south and east of the Proposed Project boundary. There are also areas of [6230] Species-rich *Nardus* Grasslands located immediately adjacent to the western boundary and southern boundary of the western parcel of the Proposed Wind Farm.

The National Survey of Upland Habitats covers the Ox Mountains Bogs SAC in Site Report No. 10 (Perrin *et al.* 2013). Twelve different Annex 1 upland habitats were recorded in the Ox Mountains Bogs SAC, with around two thirds of the area being recorded as *7130 Active blanket bog, about 10% were recorded as 4010 Wet heath. The status of these habitats was recorded as Unfavourable-Bad. The main threats recorded were peat extraction (both manual and mechanical), path and tracks, and erosion. It was noted that erosion as a diffuse threat was impractical to measure in area but had undoubtedly resulted in the loss and degradation of Annex 1 habitat. A non-intensive grazing regime had been set in place, and the overall impact of grazing pressure was noted as improving.

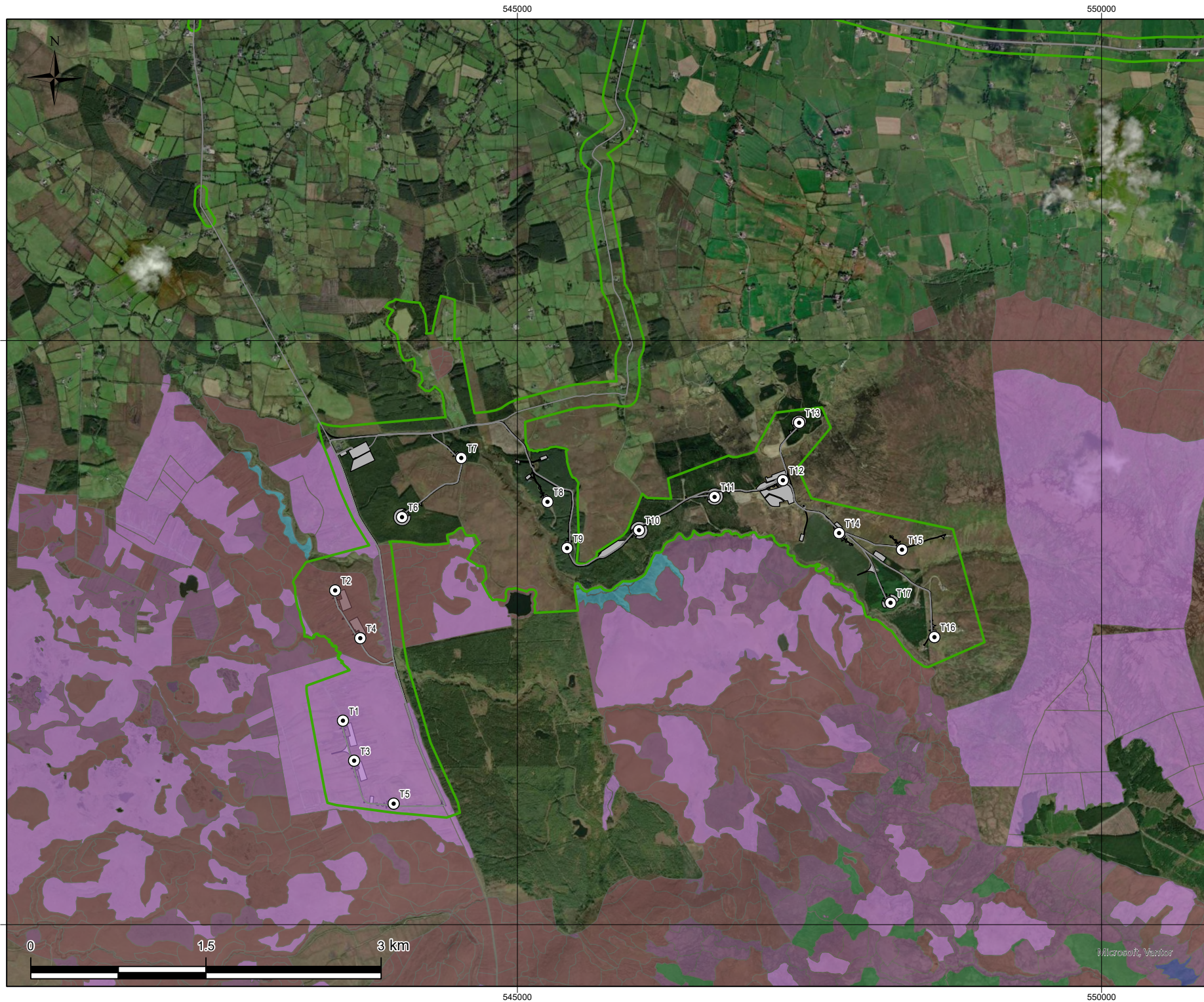
Figure 6-3 below details the mapped Article 17 habitats in relation to the Proposed Project.

6.3.1.3 Irish Wetland Surveys Data

Within and around the Proposed Wind Farm, there are multiple previously mapped Wetlands²⁷:

- > Crowagh South Bog and cutover (F rating- Unknown value)- located to the southwest of the Proposed Wind Farm.
- > Dunneill Bog (C rating- Local conservation value (High value)- partially located in the west of the Proposed Wind Farm.
- > Loughs Anlaba and Croane (F rating- Unknown value)- located in the south of the Proposed Wind Farm.
- > Lough Nacroawagh (F rating- Unknown value)- located in the south of the Proposed Wind Farm.
- > Lough Brickeagh (F rating- Unknown value)- located in the centre of the Proposed Wind Farm.
- > Tawnadremira (F rating- Unknown value)- located in the north of the Proposed Wind Farm.
- > Dunowla North Bog Complex (F rating- Unknown value)- located in the north of the Proposed Wind Farm.
- > Farranyharpy, Carrowcullen, Grangebegg Barr Upland Complex (F rating- Unknown value) - located in the east of the Proposed Wind Farm.
- > Carrowcullen Bog (B rating nationally important) – located approximately 3.2km east of the Proposed Wind Farm.

²⁷ Wetland surveys (2026) Map of Irish Wetlands. Available online at: <https://www.wetlandsurveys.ie/miw-intro>



Map Legend

- EIAR Site Boundary
- Proposed Project Footprint
- Proposed Turbine Location

Article 17 Habitats

- Active Blanket Bog Poly
- Alpine and Subalpine Heath Poly
- Calcareous Rocky Slopes Polys
- Dry Heath Poly
- Hydrophilous Tall Herb Polys
- Nardus Rich Upland Grassland
- Siliceous Scree Polys
- Siliceous Rocky Slopes Polys
- Wet Heath Poly

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

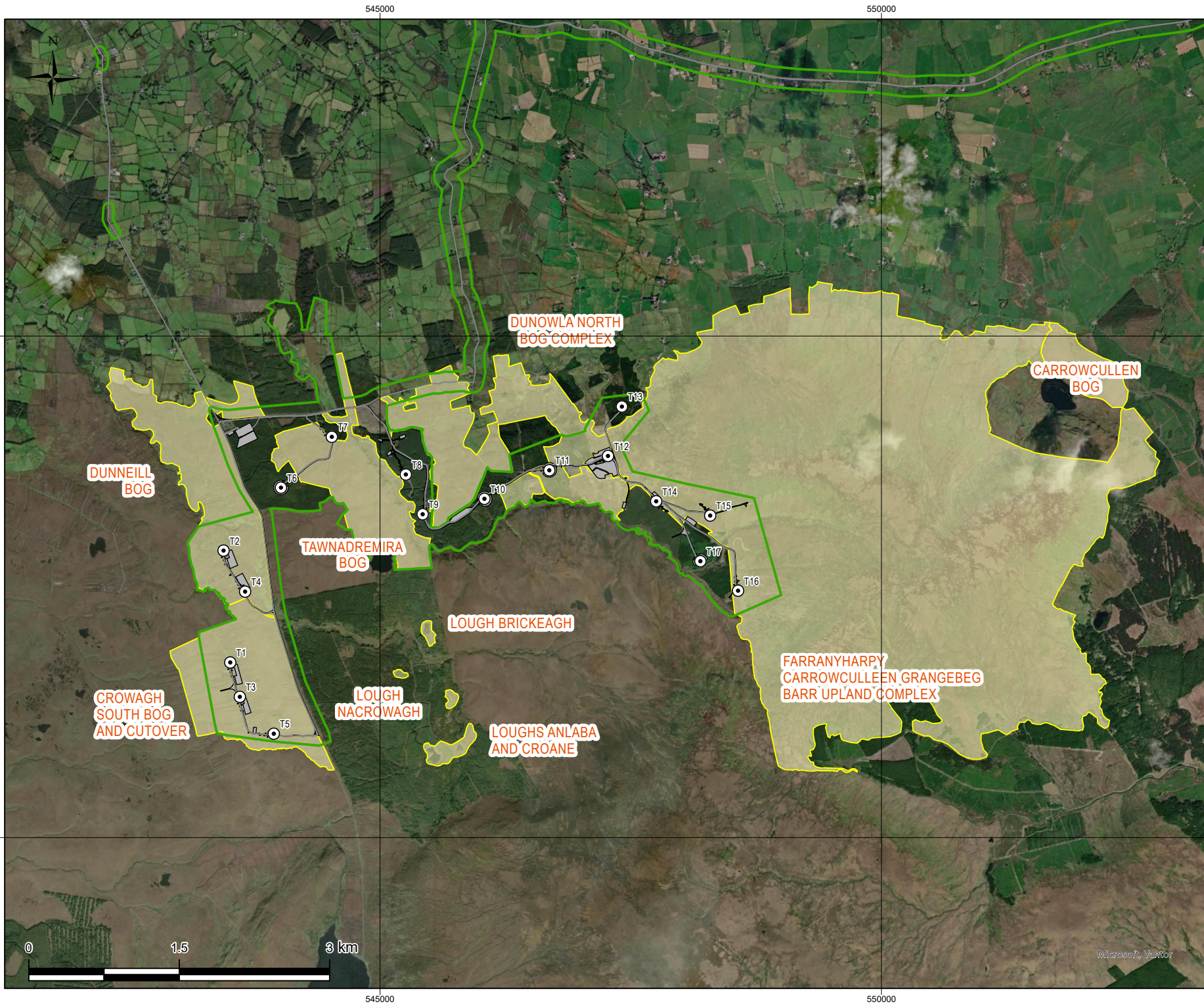
SITE LOCATION - NOT TO SCALE

Article 17 Habitats

Project Title
**Crumhach Wind Farm,
Co. Sligo**

Project No. 230841	Drawing No. 6-3	Scale 1:30,000
Drawn By MNR	Checked By JK	Date 03/06/2026

Email: info@mkofireland.ie Website: www.mkofireland.ie



Map Legend

- EIAR Site Boundary
- Proposed Project Footprint
- Proposed Turbine Location
- Wetlands

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Wetlands

Project Title
**Crumhach Wind Farm
Co. Sligo**

Project No. 230841	Drawing No. 6-4	Scale 1:35,000
Drawn By MNR	Checked By JK	Date 03/06/2026

Email: info@mkofireland.ie Website: www.mkofireland.ie

6.3.1.4 Vascular Plants

A search was made in the New Atlas of the British and Irish Flora (Preston *et al*, 2002) to investigate whether any rare or unusual plant species listed under Annex II of the EU Habitats Directive, The Irish Red Data Book – 1 Vascular Plants (Curtis, 1988) or the Flora (Protection) Order 2022 S.I. No. 235 had been recorded in the relevant 10km square in which the Site is situated [G42, G43, G53, G62, G72]. Species of conservation concern are given in **Table 6-5**. The NPWS Flora (Protection) Order 2022 online map viewer²⁸ was also consulted for records of Flora (Protection) Order species within or adjacent to the Proposed Project.

Three rare or unusual plant species have been recorded in the hectads (G42 and G62) detailed below in **Table 6-5**. No FPO Species were recorded within the other three hectads (G43, G53 and G72) in which the Proposed Project is located.

Table 6-5 Species listed designated under the Flora Protection Order or the Irish Red Data Book

Common Name	Scientific Name	Status	Hectad
Heath Cudweed	<i>Omalotheca sylvatica</i>	FPO, EN	G42/G62
Bog Orchid	<i>Hammarbya paludosa</i>	FPO, NT	G42
Small-white Orchid	<i>Pseudorchis albida</i>	FPO, VU	G62

EU Habitats Directive (Council Directive 92/43/EEC) Annex II. IV plant species. FPO = Floral Protection Order; Red List of Vascular Plants = Near Threatened (NT), Vulnerable (VU), Least Concern (LC)

6.3.1.5 Bryophytes

A search was made on the NPWS FPO Bryophyte (non-vascular land plants comprising of mosses, hornworts, and liverworts) 2022 Map Viewer to investigate whether any rare or unusual Bryophyte species had been recorded in the relevant 10km squares in which the Proposed Project is situated (G42, G43, G53, G62, G72).

No rare or unusual Bryophyte species were recorded in the five hectads. The nearest mapped protected bryophyte species to the Proposed Project includes: *Meesia triquetra* which was recorded in Ox Mountains Bogs SAC approximately 7.4km southwest of the Proposed Project.

6.3.1.6 NPWS Protected Species Records

National Parks and Wildlife Service (NPWS) online records were searched to see if any rare or protected species of flora or fauna have been recorded from hectads [G42, G43, G53, G62, G72]. An information request was also sent to the NPWS on the 05/09/2025 requesting records from the Rare and Protected Species Database. **Table 6-6** lists rare and protected species records obtained from NPWS, as received on the 01/10/2025, as well as those recorded available through the online NPWS map viewer.

Table 6-6 National Parks and Wildlife Service Records for hectad G42, G43, G53, G62 and G72.

Common name	Scientific name	Status & Protection	Hectad
Autumn Lady's-tresses	<i>Spiranthes spiralis</i>	NT	G53

²⁸ Flora (Protection) Order 2022 Map Viewer

<https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e>

Common name	Scientific name	Status & Protection	Hectad
Bog Orchid	<i>Hammarbya paludosa</i>	FPO, NT	G42
Cladonia ciliata	<i>Cladonia ciliata</i>	Annex V	G42
Cladonia ciliata var. tenuis	<i>Cladonia ciliata var. tenuis</i>	Annex V	G42
Cladonia portentosa	<i>Cladonia portentosa</i>	Annex V	G42
Common frog	<i>Rana temporaria</i>	Annex V, WA, LC	G53, G62, G72
Common lizard	<i>Zootoca vivipara (Lacerta vivipara)</i>	WA, LC	G62
Eurasian Badger	<i>Meles meles</i>	WA, LC	G42, G43, G53, G62, G72
Eurasian Otter	<i>Lutra lutra</i>	Annex II, IV, WA, LC	G43, G53, G62, G72
Eurasian Pygmy Shrew	<i>Sorex minutus</i>	WA, LC	G72
Fallow deer	<i>Dama dama</i>	WA, LC	G62, G72
Frog Orchid	<i>Coeloglossum viride</i>	NT	G62
Geyer's Whorl Snail	<i>Vertigo geyeri</i>	Annex II, VU	G42
Heath Cudweed	<i>Omalotheca sylvatica (Gnaphalium sylvaticum)</i>	FPO, EN	G42, G62
Irish hare	<i>Lepus timidus</i>	Annex V, WA, LC	G42, G43, G53, G62, G72
Irish Stoat	<i>Mustela erminea</i>	WA, LC	G62, G72
Kestrel	<i>Falco tinnunculus</i>	BoCCI Red List	G72
Narrow Mouthed Whorl Snail	<i>Vertigo angustior</i>	Annex II, VU	G53
Pine Marten	<i>Martes martes</i>	Annex V, WA, LC	G42, G62, G72
Red deer	<i>Cervus elaphus</i>	WA, LC	G42
Reindeer moss	<i>Cladonia</i>	Annex V	G42
Shepherd's-needle	<i>Scandix pecten-veneris</i>	RE	G43
Sika Deer	<i>Cervus nippon</i>	WA, NA	G62
Small-white Orchid	<i>Pseudorchis albida</i>	FPO, VU	G62
Smooth Newt	<i>Lissotriton vulgaris (Triturus vulgaris)</i>	WA, LC	G72

Common name	Scientific name	Status & Protection	Hectad
West European Hedgehog	<i>Erinaceus europaeus</i>	WA, LC	G53, G62, G72

Annex I – Of EU Birds Directive, Annex II, Annex IV, Annex V = EU Habitats Directive, WA= Irish Wildlife Acts (1976-2017), BoCCI Red List – Birds of Conservation Concern in Ireland, FPO=Floral Protection Order; Red List of Vascular Plants- Near Threatened (NT), Vulnerable (VU), Least Concern (LC), Regionally Extinct (RE), Red List of Threatened Species - Vulnerable (VU), Least Concern (LC), Not Evaluated (NE)

6.3.1.7 National Biodiversity Data Centre (NBDC) Records

A search of the National Biodiversity Data Centre (NBDC) records for the relevant hectad, **G42, G43, G53, G62, G72** provided records on a number of fauna species of conservation concern, excluding marine species and bird species. These are provided in **Table 6-7**. Records on invasive species are also provided and outlined in **Table 6-8**.

Table 6-7 NBDC records for protected species and species of conservation interest (exl. birds) in hectad G42, G43, G53, G62, G72

Common Name	Scientific Name	Status	Hectad
Common Frog	<i>Rana temporaria</i>	Annex V, WA	G42/ G43/ G53/ G62/ G72
Geyer's Whorl Snail	<i>Vertigo geyeri</i>	Annex II	G42
Daubenton's Bat	<i>Myotis daubentonii</i>	Annex IV, WA	G42/ G43/ G53/ G62
Otter	<i>Lutra lutra</i>	Annex II, WA	G42/ G43/ G53/ G62/ G72
Pine Marten	<i>Martes martes</i>	Annex V, WA	G42/ G43/ G53/ G62/ G72
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Annex IV, WA	G42/ G43/ G53/ G62/ G72
Bottle-nosed Dolphin	<i>Tursiops truncatus</i>	Annex II, IV, WA	G43/ G53
Common Dolphin	<i>Delphinus delphis</i>	Annex IV, WA	G43/ G53/ G62
Fin Whale	<i>Balaenoptera physalus</i>	Annex IV, WA	G43
Grey Seal	<i>Halichoerus grypus</i>	Annex II, IV, WA	G43/ G53
Minke Whale	<i>Balaenoptera acutorostrata</i>	Annex IV, WA	G43/ G53
Sowerby's Beaked Whale	<i>Mesoplodon bidens</i>	Annex IV, WA	G43
Striped Dolphin	<i>Stenella coeruleoalba</i>	Annex IV, WA	G43/ G53
Leatherback Turtle	<i>Dermochelys coriacea</i>	Annex IV, WA	G43/ G53
Eurasian Badger	<i>Meles meles</i>	WA	G43/ G53/ G62/ G72
Hedgehog	<i>Erinaceus europaeus</i>	WA	G43/ G53/ G62/ G72
Leisler's Bat	<i>Nyctalus leisleri</i>	Annex IV, WA	G43/ G53/ G62/ G72
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	Annex IV, WA	G43/ G62/ G72

Marsh Fritillary	<i>Euphydryas aurinia</i>	Annex II	G53/ G62/ G72
Common Porpoise	<i>Phocoena phocoena</i>	Annex II, V	G53
Harbour Seal	<i>Phoca vitulina</i>	Annex II, V, WA	G53/ G62
Humpback Whale	<i>Megaptera novaeangliae</i>	Annex IV, WA	G53
Killer Whale	<i>Orcinus orca</i>	Annex IV, WA	G53
Northern Bottlenose Whale	<i>Hyperoodon ampullatus</i>	Annex IV, WA	G53
Risso's Dolphin	<i>Grampus griseus</i>	Annex IV, WA	G53
Sperm Whale	<i>Physeter macrocephalus</i>	Annex IV, WA	G53
Brown Long-eared Bat	<i>Plecotus auritus</i>	Annex IV, WA	G53/ G62/ G72
Natterer's Bat	<i>Myotis nattereri</i>	Annex IV, WA	G53/ G62/ G72
Pygmy Shrew	<i>Sorex minutus</i>	WA	G53/ G62/ G72
Whiskered Bat	<i>Myotis mystacinus</i>	Annex IV, WA	G53/ G62
Smooth Newt	<i>Lissotriton vulgaris</i>	WA	G62/ G72
Common Lizard	<i>Zootoca vivipara</i>	WA	G62
Red Squirrel	<i>Sciurus vulgaris</i>	WA	G62/ G72

Annex II, Annex IV, Annex V = EU Habitats Directive; WA = Irish Wildlife Acts (1976-2017)

Table 6-8 NBDC records for invasive species in hectad G42, G43, G53, G62, G72

Common Name	Scientific Name	Impact Status	Hectad
Rabbit	<i>Oryctolagus cuniculus</i>	Medium	G42/ G43/ G53/ G72
American Mink	<i>Neovison vison</i>	High	G43/ G53/ G62
New Zealand Flatworm	<i>Arthurdendyus triangulatus</i>	High	G43/ G62/ G72
Himalayan Knotweed	<i>Persicaria wallichii</i>	Medium	G43/ G53
Japanese Knotweed	<i>Fallopia japonica</i>	High	G43/G62/ G72
Sycamore	<i>Acer pseudoplatanus</i>	Medium	G43/ G53/ G62/ G72
Common Garden Snail	<i>Cornu aspersum</i>	Medium	G43/ G53/ G62/ G72
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>	Medium	G43/ G53/ G62/ G72
Sowerby's Keeled Slug	<i>Tandonia sowerbyi</i>	Medium	G43
Wireweed	<i>Sargassum muticum</i>	High	G53
Black Currant	<i>Ribes nigrum</i>	Medium	G53/ G62

Cherry Laurel	<i>Prunus laurocerasus</i>	High	G53/ G62/ G72
Himalayan Honeysuckle	<i>Leycesteria formosa</i>	Medium	G53
Rhododendron	<i>Rhododendron ponticum</i>	High	G53/ G62/ G72
Sea-buckthorn	<i>Hippophae rhamnoides</i>	Medium	G53
Two-spined Acaena	<i>Acaena ovalifolia</i>	Medium	G53
Budapest Keeled Slug	<i>Tandonia budapestensis</i>	Medium	G53
Wrinkled Snail	<i>Xeroplexa intersecta</i>	Medium	G53
Butterfly-bush	<i>Buddleja davidii</i>	Medium	G62
Canadian Waterweed	<i>Elodea canadensis</i>	High	G62/ G72
Giant Hogweed	<i>Heracleum mantegazzianum</i>	High	G62
Giant Knotweed	<i>Fallopia sachalinensis</i>	High	G62/ G72
Three-cornered Garlic	<i>Allium triquetrum</i>	Medium	G62
Feral Goat	<i>Capra hircus</i>	Medium	G62
Giant-rhubarb	<i>Gunnera tinctoria</i>	High	G72
Traveller's-joy	<i>Clematis vitalba</i>	Medium	G72
Ferret	<i>Mustela putorius subsp. furo</i>	High	G53/ G72
House Mouse	<i>Mus musculus</i>	High	G53/ G62/ G72
Brown Rat	<i>Rattus norvegicus</i>	High	G62/ G72
Sika Deer	<i>Cervus nippon</i>	High	G62
Fallow Deer	<i>Dama dama</i>	High	G72

6.3.1.8 Marsh Fritillary (*Euphydryas aurinia*)

The NPWS Marsh Fritillary data was consulted during the desk study on the 11/12/2025. Records of Marsh Fritillary were recorded in hectads G53 and G62. G53 had a recorded abundance of <10 and G562 had a recorded abundance of >10. There were no records of this species in or near the Proposed Wind Farm in hectads G42, G43 and G72.

6.3.1.9 Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The NPWS Margaritifera Sensitive Area map²⁹ (Version 8, 2017) was consulted. The Proposed Turbine T5 in the southwestern parcel of the Proposed Wind Farm is located within the Easky Margaritifera catchment (classified as a 'Catchments of other extant populations'). There is surface water connectivity between T5 in the Proposed Wind Farm and the wider Easky Margaritifera catchment via the Easky River (EPA code: 35E01). The Proposed Turbines are set back over 100m from the Easky river, there is no proposed infrastructure in closer proximity to the watercourse. The closest record of Freshwater Pearl mussels was located approximately 800m from the Site and 930m from any Proposed Wind Farm infrastructure, these records are however upstream and with no hydrological connection to the Proposed Project. The closest record of freshwater pearl mussel located downstream of the Proposed Wind Farm is 4.8km downstream from the nearest infrastructure.

6.3.1.10 Geyer's Whorl Snail (*Vertigo geyeri*)

Geyer's whorl snail is a Qualifying Interest (QI) of Ox Mountains Bogs SAC. A small section of the SAC boundary is located within the northwest of the EIAR Site Boundary, within the extent of the Existing Wind Farm (Dunneill). The location of the QI whorl snail population is identified in Map 9 of the Site-specific Conservation Objectives document for the SAC³⁰. According to the document, the specified area, delineated by the SAC boundary, is the only known site for the species within the SAC. Suitable habitat is defined as *areas of flushed fen with small sedges and saturated mosses*. According to Moorkens & Killeen (2011, Irish Wildlife Manual No. 55), the population site is known by the designated code for condition assessment monitoring 'VgCAM21' and was surveyed during the whorl snail monitoring surveys 2008-2010. Appendix F of the manual includes high level condition assessment and management details of the site from 2010 surveys, which indicates that the habitat was in optimal condition and sheep grazed. The result of the monitoring surveys indicated, on a national scale, that negative pressures on the species likely include unsuitable grazing regimes, drainage, wind energy operations and commercial forestry.

Regarding the species' habitat needs the Manual states,

'Vertigo geyeri is stringent in its requirement of saturated water conditions in calcareous, groundwater-fed flushes that are often limited in size to a few metres square. Their habitats often occur in mosaics of suitable patches within wider fen macrohabitats, that in Ireland can themselves fall within habitats as diverse as raised bog laggs, transition mires, lake shores, hill or mountain slopes, and wetlands associated with coastal dunes and machair (Moorkens, 2003b). Within these macrohabitats, however, the snail is consistent in where it lives, within the saturated and decaying roots of small calcareous sedges (particularly Carex viridula ssp. brachyrrhyncha), associated fen mosses (particularly Drepanocladus revolvens and Campyllum stellatum). The greatest indicator of optimum V. geyeri habitat is the presence of a tufa-forming spring.'

The Irish Wildlife Manual goes on to describe optimal, sub-optimal and unsuitable habitat conditions for the snail. Sub-optimal habitat is described as habitat where,

'there are patches of vegetation and conditions that support V. geyeri but the majority of the habitat cannot. This can be due to terrain being generally too high, but with small suitably wet runnel flushes occurring within, or where habitat is on the margin of base tolerance for the species, where acid influence promotes mainly calcifuge species, but where occasional groundwater seepage influence provides a suitable patch that the snail can occupy.'

Unsuitable habitat is described as being *'where the combination of vegetation and hydrological influence is entirely outside the snail's range of tolerance.'*

²⁹ <https://www.npws.ie/maps-and-data/habitat-and-species-data>

³⁰ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002006.pdf

The above information informed the field surveys and assessment of habitats within the Site to support the species.

6.3.1.11 Fisheries Data

As summarised in the Aquatic Baseline Report, **Appendix 6-3:**

‘Survey area description

The watercourses and aquatic surveys sites in the vicinity of Proposed Wind Farm were typically small, upland eroding channels (FW1; Fossitt, 2000) within the Easky_SC_010 and Dunmorán_SC_010 river sub-catchments. The watercourses and aquatic surveys sites along the Proposed Grid Connection Route were also typically small, upland eroding channels (FW1; Fossitt, 2000), mostly crossed by the N59 road, within the Dunmorán_SC_010, Owenmore [Sligo]_SC_040 and Owenmore [Sligo]_SC_030 river sub-catchments.

Land use practices in the wider survey area were peat bogs (CORINE 412), coniferous forests (312) and pastures (231) with urban areas also present along the GCR. Predominantly, the watercourses flowed over areas of Neoproterozoic metasedimentary rocks, Viséan limestone and calcareous shale and localised Neoproterozoic schist and gneiss (Geological Survey of Ireland data).

Fisheries

*There was a paucity of fisheries data in the survey area given the upland, high gradient and minor nature of many watercourses. However, the Dunneill River and its tributary the Dunbeakin River are known to support brown trout (*Salmo trutta*), European eel (*Anguilla anguilla*) and three-spined stickleback (*Gasterosteus aculeatus*) (Gordon et al., 2021).*

*Along the Proposed Grid Connection Route, the Owenmore River, also known as the Ballysodare River in its lower reaches, is a significant salmonid bearing watercourse known to support Atlantic salmon (*Salmo salar*) and brown/sea trout (*Salmo trutta*) in addition to European eel (*Anguilla anguilla*), lamprey (*Lampetra* sp.), minnow (*Phoxinus phoxinus*), three-spined stickleback (*Gasterosteus aculeatus*), pike (*Esox lucius*), roach (*Rutilus rutilus*) and perch (*Perca fluviatilis*) (Kelly et al., 2011a).*

The Unshin River, a tributary of the Owenmore/Ballysodare, is known to support Atlantic salmon, brown trout, European eel, pike, perch and minnow (Kelly et al., 2015, 2011b). Gordon et al., 2021

Protected aquatic species

A comprehensive desktop review of available data from the National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Inland Fisheries Ireland (IFI), Botanical Society of Britain and Ireland (BSBI), National Crayfish Plague Surveillance Programme (NCPSP), Environmental Protection Agency (EPA) and Triturus databases for the 10km grid squares containing and adjoining the project (i.e. G32, G42, G43, G53, G62 & G72) identified a low number of records for rare and or protected aquatic species within the vicinity of the Proposed Project.

*Annex II otter (*Lutra lutra*) were widespread in the respective 10km grid squares, although most contemporary records were confined to lowland areas in grid squares G43, G53, G62 and G72. Records were available for several surveyed watercourses including the Buncrowey River, Dunneill River, Dunmorán River, Owenmore River and the Unshin River. No records overlapped with or adjoined the Site. The nearest otter record to the proposed site boundary was for Lough Rumduff, c. 1km south of Lough Easky but this was historical only (1981; NPWS data).*

*A significant population of Annex II freshwater pearl mussel (*Margaritifera margaritifera*) is known from the Easky River in the downstream vicinity of the Site. The bulk of these records were from 2018-2019 period (Moorkens, 2019).*

*A low number of Annex II white-clawed crayfish (*Austropotamobius pallipes*) records were available for the wider survey area, including on the Owenmore River. However, no records were available for the Easky_SC_010 or Dunmorán_SC_010 sub-catchments containing the majority of survey sites.*

*A very limited number of smooth newt (*Lissotriton vulgaris*) records were available in the respective grid squares (square G62 only) and none overlapped or adjoined with the survey area (data not shown).*

No NPWS records for macrophytes or aquatic bryophytes protected under the Flora (Protection) Order, 2022 were available for the respective grid squares.

6.3.1.12 Local Hydrology and Hydrogeology

Regionally, the Site is located in the WFD Sligo Bay surface water catchment within Hydrometric Area No. 35 of the North Western River Basin District. The northern and eastern portions of the site are located within the Dunmorán_SC_010 sub catchment, while the southern and western portions are located within the Easky_SC_010 sub catchment. The Grid Connection Route extends east into the Owenmore [Sligo]_SC_040 sub-catchment. and further east into the Owenmore [Sligo]_SC_030 sub-catchment.

The majority of the eastern and northern portions of the site are drained by the Dunneill River (EPA code: 35D06) and tributaries (Belville stream (EPA code: 35B35), with the Doonbeakin River (EPA code:35D09) also draining the most northerly area and the Lugdoon Stream draining the eastern area. The majority of the southwestern parcel of the site is drained by the Buncrowey River (EPA code: 35B09), the Owenminna River (EPA code:35O05) and the Easky River (EPA code:35E01). These rivers all ultimately flow northwards and into Sligo Bay.

The majority of the Site is located within the Collooney Ground Waterbody, in an area of “Not at risk” groundwater vulnerability as per the WFD Ground waterbodies Risk 3rd cycle assessment. A small area of the site in the west located in the Easky East Ground Waterbody, in an area of “Not at risk” groundwater vulnerability as per the WFD Ground waterbodies Risk 3rd cycle assessment.

There is downstream surface water connectivity between the Proposed Project and Ox Mountains Bogs SAC [002006], via multiple watercourses of the Easky_010, Easky_030 and Buncrowey_010 systems which flow through the Proposed Wind Farm for distances of <1km and into the Ox Mountains Bogs SAC.

6.3.1.13 Conclusion of the Desktop Study

The desktop study has provided information about the existing environment of the hectads (**G42, G43, G53, G62, G72**) within which the Site is located. The Proposed Project is located within the Sligo Bay WFD Catchment, and the Proposed Wind Farm extends over two sub catchments. Six mapped watercourses drain the Proposed Wind Farm and 8 no. mapped watercourses cross the Proposed Grid Connection Route. There is potential for hydrological connectivity with downstream European Sites including the Ox Mountains Bogs SAC, Ballysadare Bay SAC, Ballysadare Bay SPA and Unshin River SAC.

The Ox Mountains Bogs SAC boundary borders the Proposed Wind Farm boundary to the south and west. A small section of the SAC boundary is located within the northwest of the EIAR site boundary, within the Existing Wind Farm (Dunneil). This small area hosts the Qualifying Interest population of Geyer's Whorl Snail (*Vertigo geyeri*).

The desktop study identified that a variety of protected faunal species are known to occur within the wider study area, including bats, otter, pine marten and badger. The mammal species recorded during the desk study informed the survey methodologies undertaken during the site visits. The mammal species recorded within the relevant hectads have widespread range and distributions in Ireland and are likely to be recorded frequently throughout Ireland (Marnell et al, 2009³¹).

Records of Marsh Fritillary were identified in hectads **G53** and **G62**. There were no records of this species in hectads **G42**, **G43** and **G72**, within or near the Proposed Wind Farm.

T5 in the southwestern parcel of the Proposed Wind Farm is located within the Easky *Margaritifera* catchment (Classified as Catchments of other extant populations). There is surface water connectivity between T5 in the Proposed Wind Farm and the wider Easky *Margaritifera* catchment via the Easky River (EPA code: 35E01). The Proposed Turbines are set back over 100m from the Easky river, there is no proposed infrastructure in closer proximity to the watercourse.

The desk study identified Annex I Article 17 habitats present within the Proposed Wind Farm, namely Wet heath [4010], Dry heath [4030] and Blanket bog (active)* [7130]. Areas of Article 17 mapped Active Blanket Bog and wet heath (outside of the SAC boundary) are present within the western section of the Proposed Wind Farm. In addition, the desk study revealed a number of Red Listed and FPO plant species within the hectads (**G42**, **G62**). Four wetlands were mapped within the Site as part of the Irish wetland survey 2009-2011.

The desk study provided useful information to inform the ecological surveys undertaken on site as well as the identification of pathways for potential impact on sensitive ecological receptors.

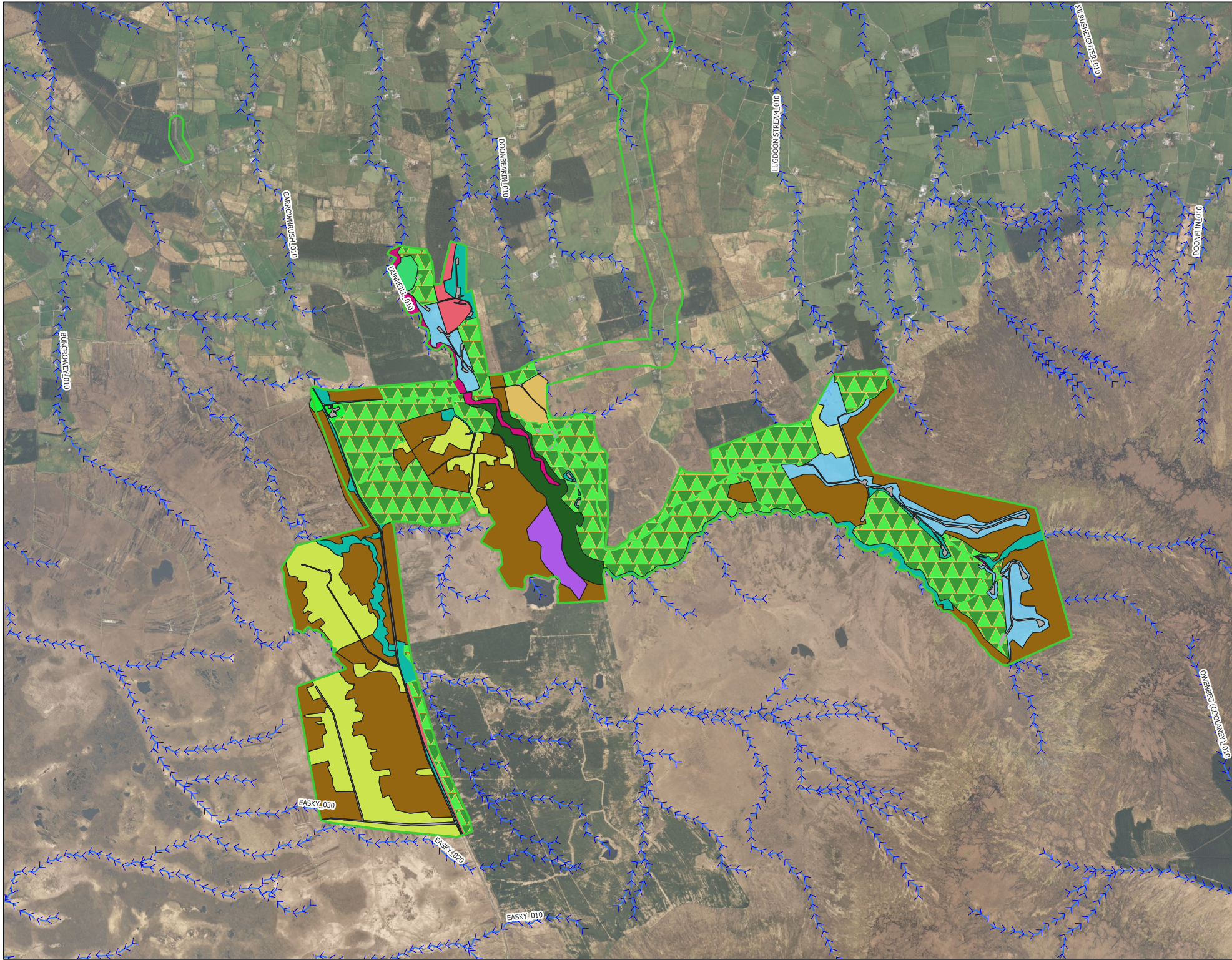
³¹ Marnell, F., Kingston, N. & Looney, D. (2009) Ireland Red List No. 3: Terrestrial Mammals, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

6.3.2 Habitat Survey Results

The habitat classifications and codes correspond to those described in 'A Guide to Habitats in Ireland' (Fossitt 2000). A habitat map of the Proposed Wind Farm is provided on **5**. A map showing the Proposed Wind Farm footprint overlaying the Habitat Map is shown on **Figure 6-6**. Relevé data is detailed in **Appendix 6-1** of this EIAR.

A total of 16 habitats were recorded within the Proposed Project Site, including:

1. *Conifer Plantation (WD4)*
2. *Recently Felled Woodland (WS5)*
3. *Upland Blanket Bog (PB2)*
4. *Cutover Bog (PB4)*
5. *Eroding Blanket Bog (PB5)*
6. *Wet Heath (HH3)*
7. *Improved Agricultural Grassland (GA1)*
8. *Amenity Grassland (GA2)*
9. *Dry Humid Acid Grassland (GS3)*
10. *Wet Grassland (GS4)*
11. *Recolonising Bare Ground (ED3)*
12. *Buildings and Artificial Surfaces (BL3)*
13. *Scrub (WS1)*
14. *Dense Bracken (HD1)*
15. *Drainage Ditch (FW4)*
16. *Eroding Upland River (FW1)*



Map Legend

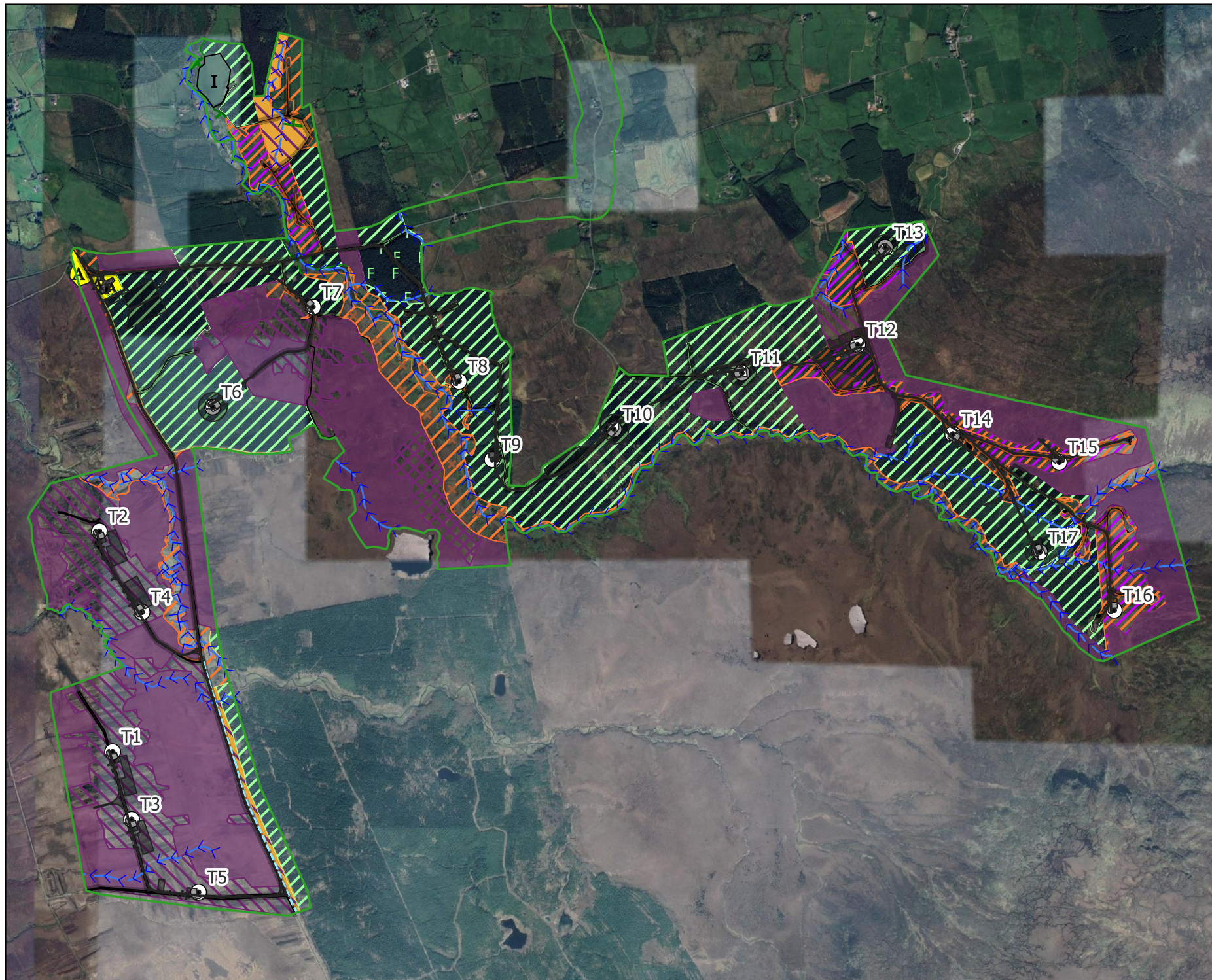
- Site Boundary
- Habitats (Fossit 2000)
 - Conifer Plantation
 - Active Cutover Bog
 - Amenity Grassland (Im
 - Dry Humic Acid Grassla
 - Dry Humic Acid Grassla / Wet Grassland
 - Scrub and Dense Brak
 - Wet Heath
 - Upland Blanket Bog
 - Cutover Bog
 - Eroding Blanket Bog
 - Conifer Plantation
 - Scrub
 - Upland Blanket Bog
- Eroding Upland River

Overview of the Habitats recorded within the Proposed Wind Farm

Crumhach Wind Farm

Drawn By	OM	Checked By	JK
Project No.	230841	Drawing No.	6-5
Scale	1:25,000	Date	06.08.2026

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Map Legend

- EIAR Site Boundary
- Proposed Turbines Locations
- Proposed Wind Farm Layout
- Habitats (Fossitt 2000)**
- Buildings and Artificial Surfaces (BL3)
- Agricultural Grassland (GA1)
- Amenity Grassland (GA2)
- Dry Humid Acid Grassland (GS3)
- GS3/GS4
- Dry Humid Acid Grassland (GS3)/ Dense Bracken (HD1)
- Wet Heath (HH3)
- Blanket Bog (PB2)
- Cutover Bog (PB4)
- Eroding Blanket Bog (PB5)
- Conifer Plantation (WD4)
- Scrub (WS1)
- Recently felled Woodland (WS5)
- Buildings and Artificial Surfaces (BL3)/ Spoil and Bare Ground (ED2)
- Drainage Ditch (FW4)
- Eroding Upland River (FW1)



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Drawing Title

Habitats recorded with overlain infrastructure of the Proposed Wind Farm

Project Title

Crumhach Wind Farm

Drawn By JK	Checked By RW
Project No. 230841	Drawing No. Figure 6-6
Scale 1:25,000	Date 03/06/2026



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6.3.2.1 Habitats Recorded Within the Proposed Wind Farm

6.3.2.1.1 Conifer Plantation (WD4)/ Recently Felled Woodland (WS5)

Conifer Plantations (WD4) were recorded in the centre, north and east of the Proposed Wind Farm (**Plate 6-1**). Turbine 6, Turbine 7, Turbine 8, Turbine 9, Turbine 10, Turbine 11, Turbine 13, Turbine 17 and associated infrastructure (hardstands, access roads) are located within Conifer Plantation (WD4). Further, one borrow pit, substation, and one temporary construction compound are located within Conifer Plantation (WD4).

These conifer plantations are dominated by dense, mature Sitka spruce (*Picea sitchensis*) and Lodgepole pine (*Pinus contorta*). Other species recorded include ling heather (*Calluna vulgaris*), purple moor grass (*Molinia caerulea*), bilberry (*Vaccinium myrtillus*), male fern (*Dryopteris filix-mas*), Common bryophyte species recorded within the Conifer Plantations include *Polytrichum commune*, *Pleurozium schreberi*, *Hypnum jutlandicum*, and *Thuidium tamariscinum*. Ground conditions varied, with drier grounds covered in needles recorded on higher grounds (upper slopes), and wet ground dominated by carpets of bryophytes and *Sphagnum* recorded on lower grounds (base of slopes).

Large areas of **Recently Felled Woodland (WS5)** were recorded in the south of the Proposed Wind Farm. Species recorded include Sitka spruce saplings, tormentil (*Potentilla erecta*), soft rush (*Juncus effusus*), jointed rush (*Juncus articulatus*), purple moor grass, ling heather, fox glove (*Digitalis purpurea*), gorse (*Ulex europaeus*), bramble (*Rubus fruticosus* agg.) and *Polytrichum commune* (**Plate 6-2**). No Wind Farm infrastructure is proposed for these areas of clear fell.



Plate 6-1 Conifer plantation (WD4) located throughout the Proposed Wind Farm



Plate 6-2 Area of **Recently Felled Woodland (WS5)** recorded in the centre of the Proposed Wind Farm.

6.3.2.1.2 Peatland Habitats

Cutover Bog (PB4)

Areas of **Cutover Bog (PB4)** were recorded in the west and east of the Proposed Wind Farm. Active turbary with on-going turf cutting recorded (**Plate 6-3**) to the west of the Site. As a result of the intensive turf cutting and drainage, the cutover bog is extremely degraded in places, with exposed bare peat and no vegetation cover recorded (**Plate 6-3**). Other areas of former cutover bog are revegetated with species such as common cottongrass (*Eriophorum angustifolium*) and ling heather (*Calluna vulgaris*) (**Plate 6-4**). Turbine 1, Turbine 2, Turbine 3, Turbine 4, Turbine 5 and Turbine 12 and the Temporary Construction Compound east of T5 are located on Cutover Bog (PB4) to the west of the Proposed Wind Farm. The areas around T1 and T2 corresponded most closely to the IVC heath classifications HE4E (*Molinia caerulea* – *Calluna vulgaris* – *Erica tetralix* heath) and HE2C (*Calluna vulgaris* – *Agrostis capillaris* heath), T3 and T5 corresponded to BG2C (*Erica tetralix* – *Molinia caerulea* – *Cladonia portentosa* peatland) and T4 to BG2B (*Erica tetralix* – *Andromeda polifolia* bog), a section of the hardstand area of T15 corresponded to BG2E (*Calluna vulgaris* – *Eriophorum* spp. Bog), however, this habitat type is only 54% assigned and severely drained due to the existing infrastructure, and does not correspond to an Annex 1 habitat. A detailed assessment of the IVC communities is provided in the Botanical Survey Report (Appendix 1).

Evidence of previous turbary activity, exposed peat, drainage, and grazing was recorded throughout these habitats, which has resulted in the extreme degradation of this habitat. Species recorded include deer grass (*Trichophorum germanicum*), bog asphodel (*Narthecium ossifragum*), purple moor grass (*Molinia caerulea*), cross leaved heath (*Erica tetralix*), tormentil (*Potentilla erecta*), common cotton grass (*Eriophorum angustifolium*), ling Heather (*Calluna vulgaris*) and pixie-cup Lichen (*Cladonia pyxidate*).

The cutover bog is situated in a wider landscape of intact blanket bog and located between separate sections of the Ox Mountains Bogs SAC. A detailed analysis of the surrounding blanket bog following the NSUH methodology is provided in the following section.



Plate 6-3 Degraded **Cutover Bog (PB4)** to the west of the Proposed Wind Farm.



Plate 6-4 Degraded, revegetated **Cutover Bog (PB4)** recorded in the west of the Proposed Wind Farm

Upland Blanket Bog (PB2)

Upland Blanket Bog (PB2) was recorded within the Proposed Wind Farm. The altitudinal division between upland blanket bog (PB2) and lowland blanket bog (PB3) in Fossitt (2000) is the 150m contour, but this is only an approximate guide. Perrin et al (2014) states ‘, *areas of bogs should be classified primarily on the basis of the vegetation rather than altitude*’. As such, due to the presence and cover of heathers (*Calluna vulgaris*, *Erica tetralix*), and the absence of Black bog rush (*Schoenus nigricans*), these areas are classified as **Upland Blanket Bog (PB2)** as per Fossitt 2000. These areas correspond to the Annex I habitat ‘Blanket Bogs (* if active bog) (7130)’. While a level of modification in the form of drainage, historic peat cutting or grazing was recorded in all areas of recorded upland blanket bog, these areas remain active with the presence of peat forming Sphagnum species. Particularly the Proposed Enhancement Area in the centre of the Proposed Wind Farm supports areas of blanket bog vegetation on deep peat with intact hydrology. Species in this area include *Calluna vulgaris*, *Eriophorum angustifolium*, *Molinia caerulea* and *Narthecium ossifragum*, as well as *Sphagnum papillosum*, *Sphagnum capillifolium*, *Sphagnum austinii* and *Sphagnum medium*. Several shallow artificial drains (around 40cm) were recorded throughout the Proposed Enhancement Area, and over grazing was particularly evident in the southern section of the Proposed Enhancement Area with locally up to 60% bare peat.

Pockets of Upland Blanket Bog (PB2) were recorded throughout the Site in openings within conifer plantations, where the wet ground conditions prevented conifers from establishing (**Plate 6-5**). Further areas of Upland Blanket Bog were recorded to the east and west of the Site in areas where no peat cutting has been undertaken (**Plate 6-6**). In the west of the Site, uncut but drained areas of Upland Blanket Bog exist adjacent to cutover areas.

No wind farm infrastructure is proposed on areas of intact Upland Blanket Bog. A

Further discussion on the condition of peatland habitats within the boundary of the Proposed Wind Farm but outside the footprint is provided in Section 6.3.2.4.



Plate 6-5 Area of intact **upland blanket bog (PB2)** to the centre of the site, recorded within an opening in Conifer Plantation.



Plate 6-6 Overview of **Upland Blanket Bog (PB2)** to the west of the Site.

Eroding Blanket Bog (PB5)

Eroding Blanket Bog (PB5) was recorded within the Proposed Enhancement Area in the Proposed Wind Farm. The area shows sign of overgrazing with areas of up to 60% bare peat. Numerous sheep tracks were recorded to show signs of erosion, with some erosion channels being up to 30cm deep. Surface erosion due to surface water flow downstream was evident during the Site visit and is shown on Plate 6-7. Species recorded in this area included small stands of *Eriophorum angustifolium*, *Trichophorum caespitosum* and *Calluna vulgaris*. Sphagnum species were absent in the eroded areas.



Plate 6-7 Eroding blanket bog (PB5)

Wet heath (HH3)

Wet heath (HH3) was recorded within the Existing Dunneill Wind Farm. The area supporting this habitat forms part of the Ox Mountains Bogs SAC and is dominated by *Molinia caerulea*, with stands of *Calluna vulgaris* and moss species including *Hylocomium splendens* and *Sphagnum capillifolium*. The area is grazed by sheep. No infrastructure is located within this habitat. The habitat is shown in Plate 6-8.



Plate 6-8 *Molinia caerulea* dominated wet heath (HH3)

6.3.2.1.3 Grasslands

Improved Agricultural Grassland (GA1) and Amenity Grassland (GA2)

Areas of highly modified/ reclaimed grassland classified as **Improved Agricultural Grassland (GA1)** were recorded to the north of the Proposed Wind Farm, within the Existing Wind Farm. These grasslands were intensively managed via grazing by sheep producing a short uniform sward, with little species diversity and limited biodiversity value. These grasslands were dominated by perennial rye grass (*Lolium perenne*). Other species recorded include sweet vernal grass (*Anthoxanthum odoratum*), common bent (*Agrostis capillaris*), Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), Mouse ear chickweed (*Cerastium fontanum*), cocksfoot (*Dactylis glomerata*), jointed rush (*Juncus articulatus*), and dandelion (*Taraxacum officinale* agg.). (Plate 6-9). The EIA boundary encompasses a part of a dwelling and the Sligo County Council (SCC) Lough Easkey Water Treatment Plant, these areas are comminated by **Amenity Grassland (GA2)**.



Plate 6-9 Intensively managed **Improved Agricultural Grassland (GA1)** to the north of the Site.

Wet Grassland (GS4)

Areas of **Wet Grassland (GS4)** were recorded throughout the Proposed Wind Farm, often as transitional habitats between access roads and conifer plantation/ upland blanket bog and cutover bog. These grasslands were intensively managed via grazing by sheep, producing a uniform sward, with little species diversity and limited biodiversity value. These areas were dominated by soft rush (*Juncus effusus*). Other species recorded include ragwort (*Jacobaea vulgaris*), Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*), meadow buttercup (*Ranunculus acris*), sweet vernal grass (*Anthoxanthum odoratum*), nettle (*Urtica dioica*), false oat grass (*Arrhenatherum elatius*), jointed rush (*Juncus articulatus*), and tormentil (*Potentilla erecta*) **Plate (6-10)**.



Plate 6-10 **Wet Grassland (GS4)** recorded to the east of the Site, dominated by soft rush.

Dry-Humid Acid Grassland (GS3)

Areas of **Dry-Humid Acid Grassland (GS3)** were recorded throughout the Proposed Wind Farm. Species recorded in these areas include common bent grass (*Agrostis capillaris*), Yorkshire fog (*Holcus lanatus*), soft rush (*Juncus effusus*), sweet vernal grass (*Anthoxanthum odoratum*), heath bedstraw (*Galium saxatile*), tormentil (*Potentilla erecta*), Purple Moor-grass (*Molinia caerulea*), *Rhytidiadelphus loreus*, *Pleurozium schreberi*, *Hylocomium splendens*, *Sphagnum palustre*, *Sphagnum fallax* and *Sphagnum papillosum*. These areas were intensively managed by on-going sheep grazing, producing a short uniform sward, with little species diversity (**Plate 6-11**).

The **access road to T12** is located on a mosaic of degraded **Dry-Humid Acid Grassland (GS3)/ Wet Grassland (GS4)** in the east of the Site.

Further areas of transitional Humid GS3/GS4 were recorded along existing access road margins, and surrounding existing turbine hardstands, which transition into Upland Blanket Bog (PB2) on higher grounds. (**Plate 6-12**).

Dry-Humid Acid Grassland (GS3) has the potential to correspond to the Annex I habitat ‘*species-rich Nardus grasslands on siliceous substrates in mountain areas*’. However, as stated in Fossitt (2000) ‘*high species diversity is not characteristic but species-poor stands that appear to be the product of overgrazing are excluded*’. As such, due to the degraded nature of this mosaic habitat as a result of intensive sheep grazing, these areas do not conform to the Annex I habitat.



Plate 6-11 Mosaic of **Dry-Humid Acid Grassland/ Wet Grassland (GS3/GS4)** to the east of the site, where the access road from T12 is located.



Plate 6-12 Mosaic of transitional **Dry-Humid Acid Grassland/ Wet Grassland (GS3/GS4)** to the south of T13, which transitions into Upland Blanket Bog (PB2).

6.3.2.1.4 Artificial Habitats

Recolonising Bare Ground (ED3)

Areas of **Recolonising Bare Ground (ED3)** were recorded throughout the Proposed Wind Farm, often associated with forestry access roads, existing Wind Farm infrastructure, recently felled woodland, and mounds of spoil/ gravel. Areas of spoil/ gravel to the southeast of the Proposed Wind Farm have become recolonised with ling heather (*Calluna vulgaris*), mat-grass (*Nardus stricta*), goat willow (*Salix caprea*), *Polytrichum commune*, cross-leaved heather (*Erica tetralix*), bugle (*Ajuga reptans*) and tormentil (*Potentilla erecta*) (**Plate 6-13**).



Plate 6-13 Recolonising Bare Ground recorded throughout the Proposed Wind Farm

Buildings and Artificial Surfaces (BL3)

Existing forestry/farm access tracks, wind farm infrastructure (roads, hardstands, existing turbines) and the local road network within the Proposed Wind Farm and along the Proposed Grid Connection were categorised as **Buildings and Artificial Surfaces (BL3)**. Any private dwellings and/or agricultural buildings within the site were also categorised as Buildings and Artificial Surfaces (BL3) (**Plate 6-14 & Plate 6-15**).



Plate 6-14 Existing Wind Farm infrastructure classified as **Buildings and artificial surfaces (BL3)** recorded throughout the Proposed Wind Farm



Plate 6-15 Existing Wind Farm infrastructure classified as **Buildings and artificial surfaces (BL3)** recorded throughout the Proposed Wind Farm.

6.3.2.1.5 Scrub (WS1)

Areas of **Scrub (WS1)** were recorded throughout the Proposed Wind Farm. These areas were dominated by gorse (*Ulex europaeus*), bramble (*Rubus fruticosus agg.*), bracken (*Pteridium aquilinum*) (**Plate 6-16**).



Plate 6-16 **Scrub (WS1)** recorded to the west of the Proposed Wind Farm

6.3.2.1.6 Dense Bracken (HD1)

Areas dominated by dense, continuous bracken classified as **Dense Bracken (HD1)** were recorded to the west and east of the Proposed Wind Farm. Areas of dense bracken were often recorded along riverbanks, and in areas of recently felled conifer plantation (**Plate 6-17**).



Plate 6-17 **Dense Bracken (HD1)** located to the centre of the Site.

6.3.2.1.7 Watercourses

Drainage Ditch (FW4)

Drainage Ditches (FW4) were recorded throughout the Proposed Wind Farm, mainly associated with areas of coniferous forestry, and along the margins of forestry/farm access roads/public roads. The drains were linear and generally 1-1.5m wide. Flow types varied, with dry drains with no flow or stagnant water, and drains with faster flowing water recorded throughout the Proposed Wind Farm (**Plates 6-18**). A network of drainage ditches was also recorded in the peatland areas. The size of the peatland drains was variable in size from shallow drains of approximately 40cm to deep drains of over 1.5m.



Plate 6-18 Large Drainage Ditch (FW4) recorded within Conifer Plantation to the east of the Proposed Wind Farm.

Eroding Upland River (FW1)

Various EPA mapped river waterbodies flow through the Site, namely the Buncrowey River (**Plate 6-19**), Easky River, Letterunshin River, Dunneill River (**Plate 6-20**), Lagoon Stream and Doonbeakin River. These EPA mapped watercourses were classified as **Eroding Upland Rivers (FW1)**.



Plate 6-19 Buncrowey River classified as an **Eroding Upland River (FW1)** located to the west of the Proposed Wind Farm



Plate 6-20 Dunneill River classified as an **Eroding Upland River (FW1)** to the southeast of the Site.

6.3.2.2 Habitats Recorded Along the Proposed Grid Connection Route

The Proposed Grid Connection Route will be installed predominantly within the existing road network, classified as **Buildings and Artificial Surfaces (BL3)** (Plate 6-21). Habitats recorded adjacent to the existing road network along the extent of the Proposed Grid Connection Route, outside of the proposed works footprint, include **Hedgerow (WL1)** and **Treeline (WL2)**. **Dry meadows and grassy verges (GS2)** were recorded along the extent of the Proposed Grid Connection Route, often in association with the understorey of **hedgerows (WL1)** and **treelines (WL2)**. **Wet grassland (GS4)** and **Improved agricultural grassland (GA1)** were recorded adjacent to the Proposed Grid Connection Route.

The Proposed Grid Connection Route crosses 31 EPA mapped watercourses classified as **Eroding/Upland Rivers (FW1)/Depositing/lowland rivers (FW2)** (Plate 6-22) and 3 unmapped watercourses classified as **drainage ditches (FW4)**. The Proposed Grid Connection Route will be installed in-road and as such will cross these watercourses via existing crossing structures.



Plate 6-21 Existing Road Network along the Proposed Grid Connection Route classified as **Buildings and artificial surfaces (BL3)**



Plate 6-22 The Unshin River classified as a *Depositing/lowland river (FW2)* recorded along the Proposed Grid Connection Route

6.3.2.3 Habitats Recorded Within Turbine Delivery Route Accommodation Areas

As detailed in Section 4.5.3 of this EIAR, the wind farm components will be delivered to the Site from Killybegs Port. Vehicles delivering large turbine components and other abnormal loads to the site will depart from Killybegs Port and travel east on the N56 towards Donegal, further south along the N15 towards Sligo before continuing south on N4 through Ballysadare and subsequently merging onto the N59 heading west towards Dromore West. Delivery vehicles will then head south on the L2702 before turning east towards the site entrance in the townland of Crowagh or Dunneill Mountain, along the L6309. The turbine delivery vehicles have been modelled in the swept path assessments for the Site, as detailed in Chapter 15: Material Assets of this EIAR. Road and junction widening are sometimes required along proposed turbine transport routes to accommodate the large vehicles used to transport turbine components to Proposed Project sites. The proposed transport route for the Proposed Project has been the subject of a route assessment to determine if any works are required along its length. Accommodation works are required at 20 no. locations along the delivery route. Locations 1 to 9, 12, 15, and 16 comprise minor temporary alterations to the existing streetscape such as along footpaths and road verges, as such there will be no perceptible impacts on biodiversity.

A temporary run-over area and visibility splay will be required at Location 10 (Dromore West), Location 11 (N15 to N59 Junction), Location 13 (N59 Ballysadare Bridge), Location 14 (N59 Abbeystown Bend), Location 17 (Dromore West Turn South), Location 18 (Right Bend in L2702), Location 19 (Left Bend in L2702), and Location 20 (L2702/L6309 Junction) in order to accommodate the wind turbine vehicles. This utilises an overrun area used for the delivery of components to the Existing Wind Farm. The temporary overrun area will only be used for the transportation of abnormally sized loads. Upon the completion of the construction phase, the temporary road will be covered with a layer of topsoil and reseeded.

The temporary overrun area is required in the field east of the L2702/L6309 junction (location no. 20) in order to accommodate wind turbine vehicles in the townland of Crowagh or Dunneill Mountain. The temporary overrun area will only be used for the transportation of abnormally sized loads. Upon the completion of the construction phase, the temporary road will be covered with a layer of topsoil and reseeded. This overrun area is designed to run through a gap in the existing hedgerow and will facilitate the retention of a hedgerow with trees at the junction. Approximately 0.8ha of Dry humid acid grassland (GS3) will be temporarily lost.

Limited areas of vegetation along the road corridor may need to be trimmed to accommodate irregular loads, however this comprises temporary reduction in cover and vegetation will not be removed in these habitats.

An assessment of the trees within the accommodation works areas for potential bat roosting was carried out as described in Section 6.3.4.5.1.

6.3.2.4 Protected Habitats and Flora

As described in Section 6.3.1.2, NPWS Article 17 mapping shows the presence of Annex I ‘7130 Blanket bog (active)*’ within the southwestern section of the Site in the vicinity of proposed Turbines T1, T3 and T5. Article 17 mapped ‘4010 Wet heath’ has been mapped within the western section of the Site in the vicinity of proposed turbines T2 and T4.

Areas of active and non-active 7130 habitat qualify as Annex I habitat. The Article 17 Report (2025) states with regard to Blanket Bog habitat,

Regarding what qualifies as Annex I habitat 7130 blanket bog (active and non-active), the approach to date of the National Survey of Upland Habitats (NSUH) has been to discount areas of eroding bare peat, unvegetated areas of milled or cutover bog, and afforested blanket peat (Perrin et al., 2014c).

The report states that for the purpose of the Article 17 Reporting, the assessment is for the combined NSUH types, i.e both active and non-active types.

Based on field surveys and botanical assessments undertaken (see Habitat Map **Figure 6-5** and Appendix 6-1), sections of the Article 17 mapped ‘7130 Blanket bog’ are actively cut and have been categorised as cutover bog (PB4). This habitat comprises cut bare peat in sections but in abandoned areas has become revegetated. On a precautionary basis these areas are still considered to conform to the Annex I habitat designation albeit severely drained and degraded.

The area of Article 17 mapped ‘Wet Heath’ within the west of the Site has also been classified, as a result of field-based botanical assessments, as cutover bog (PB4), with similar, actively cut peatland habitats present.

Several iterations of the layout of the Proposed Wind Farm have been assessed. For example, turbines and infrastructure were initially proposed within uncut areas of blanket bog, as detailed in Section: 3.2.3.2.2 of this EIAR. Based on the botanical assessments carried out during field surveys, it was identified that the cutover habitats adjacent to existing road infrastructure would be a more suitable location for infrastructure, due to the existing degraded state of the habitats in this area (comprising areas of actively cut, bare peat adjacent to existing roads). In line with the avoidance principle, infrastructure was therefore moved to these lower value areas of peatland, thereby maintaining the higher value and wetter peatland areas as contiguous areas.

Therefore, the avoidance principle has been applied, and areas of uncut blanket bog have been avoided by the Proposed Project. In addition, in relation to cutover bog (PB4) habitat, wetter areas with higher coverage of *Sphagnum* have been avoided, with fragmentation of this habitat also avoided. The Proposed Project layout has been designed and micro-sited such that it is positioned closely to existing

site access road infrastructure, and on cutover bog (PB4) habitat that has been assessed as being of comparatively lower conservation value, comprising bare peat areas subject to active turbary.

Therefore, there will be no fragmentation of either uncut Upland Blanket Bog (PB2) nor of cutover bog (PB4) habitats comprising high value revegetated communities.

Turbines T1-T5 as well as T15 and T16 are located in areas associated with peatland habitat. NSUH assessments of the surrounding areas were undertaken to identify the value of the degraded habitat within the wider landscape.

The areas of Proposed Turbines T1-T5 will avoid the areas of blanket bog in the west of the Proposed Wind Farm Boundary in the vicinity of. NSUH condition assessments were undertaken for these areas to inform the overall condition of peatland habitat within the EIAR boundary. The areas of intact blanket bog outside the footprint in the vicinity of T2 and T4 (Plate 6-23) had an Unfavourable Inadequate status, with signs of burning and erosion due to overgrazing, peat layer was compacted and the species assemblage was less diverse than in other areas, although indicator species were present. The area of intact blanket bog outside the footprint in the vicinity east of Proposed Turbines T1-T5 (Plate 6-24) was recorded to be in favourable condition with no signs of overgrazing or burning and supporting an intact hydrological, however, drains due to peat cutting activities were recorded nearby. The microtopography in this area was varied with a hummock, hollow and pool system.

Both areas correspond to the IVC community BG2E *Calluna vulgaris* – *Eriophorum* spp. Bog which qualifies as Annex 1 habitat 7130 Blanket bog (active)*.

A detailed assessment of the IVC communities is provided in the Botanical Survey Report (Appendix 1).

No botanical species listed under the Flora (protection) Order, 2022, or listed in the Irish Red Data Books were recorded on the Site.



Plate 6-23 Area of intact blanket bog adjacent to Proposed T2 and T4.



Plate 6-24 Area of intact blanket bog adjacent to Proposed T1 – T5.

6.3.3

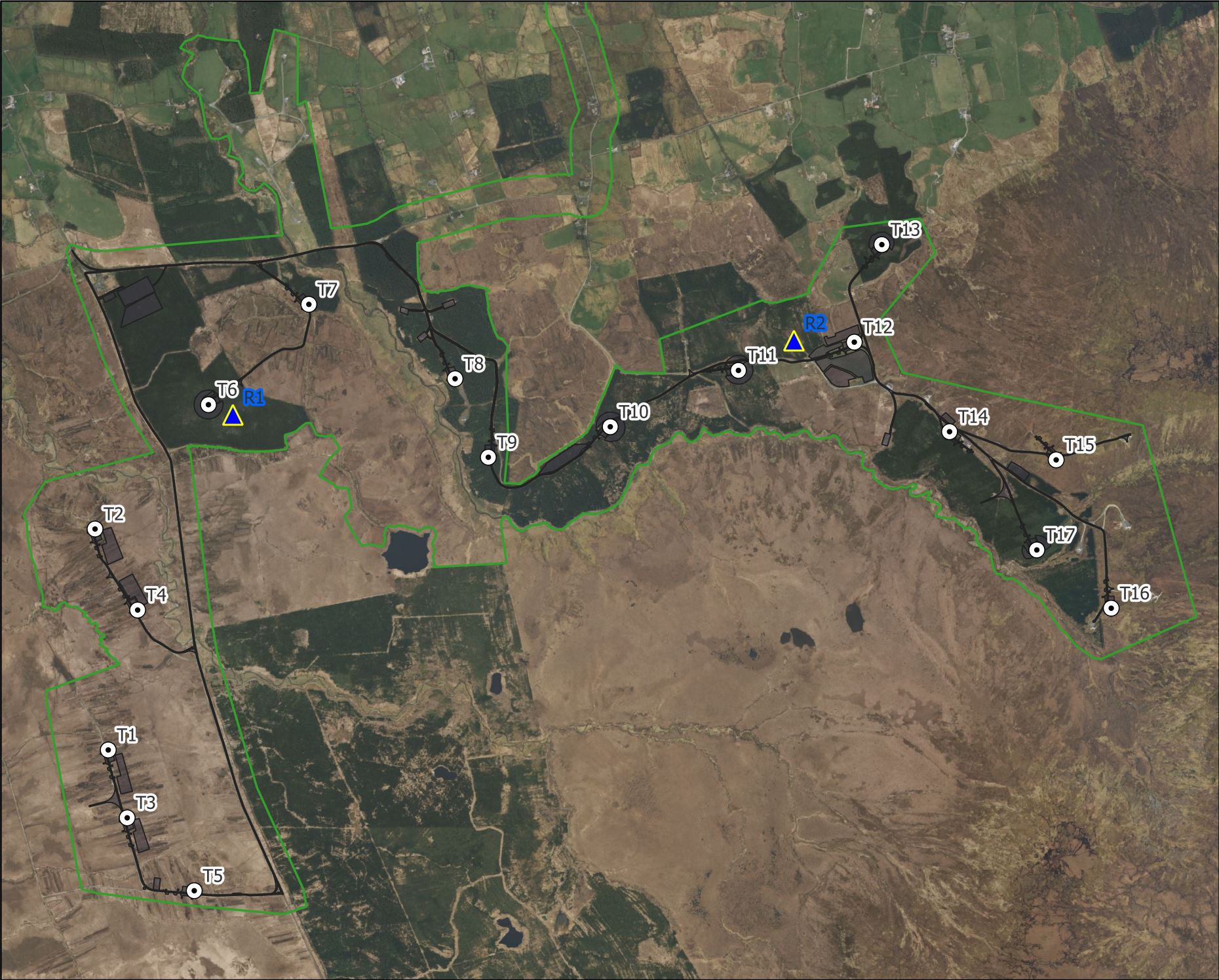
Invasive Species Surveys Results

Individual stands of Rhododendron (*Rhododendron ponticum*) (Plate 6-25) a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 and First Schedule of European (Invasive Species) Regulations 2024 were recorded within the Proposed Wind Farm north of the access track between T11 and T12 and southeast of T6.



Plate 6-25 Individual Rhododendron plant recorded to the north of the Proposed Wind Farm.

No Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 and First Schedule of European (Invasive Species) Regulations 2024 were recorded along the Proposed Grid Connection Route.



Map Legend

- EIAR Site Boundary
- Proposed Wind Farm Layout
- Proposed Turbine Locations
- Third Schedule Invasive Species**
 - Rhododendron ponticum


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Drawing Title
Third Schedule Invasive Species Recorded within the Proposed Wind Farm

Project Title
Crumhach Wind Farm

Drawn By JK	Checked By RW
Project No. 230841	Drawing No. Figure 6-7
Scale 1:25,000	Date 29/06/2026


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6.3.4 Faunal Survey Results

Faunal surveys were designed to detect the presence, or likely presence, of a range of protected species. Potential suitable habitats were investigated for signs of animal presence. The following subsections provide a breakdown of the species recorded within the Site during the site visits and assessments.

6.3.4.1 Badger (*Meles meles*)

Areas identified as providing potential habitat for badgers, particularly boundaries between peatland and agricultural grassland (Smal 1995) were subject to specialist targeted survey, including **Conifer Plantations (WD4)** within the Proposed Wind Farm on the dates outlined in **Table 6-2** above. No signs of badgers (setts, latrines, prints) were recorded within the Site.

However, the desk study (**Section 6.3.1.5 & 6.3.1.6**) revealed that badgers have been recorded within the hectad. As such, taking a precautionary approach, it is assumed that the species may occur, at least on occasion, within the Site.

6.3.4.2 Otter (*Lutra lutra*)

Watercourses within the Proposed Wind Farm and along the Proposed Grid Connection Route survey locations were surveyed for signs of otter.

Otter signs were recorded on 9 of the aquatic survey locations as summarised in the Aquatic Baseline Report, **Appendix 6-3**:

‘Otter signs (comprising spraint sites & latrines) were recorded at 9 no. sites during the current survey. These were identified at sites on an unnamed Easky River tributary (site A7), the Buncrowey River (A18), Dunneill River (B8), Lugdoon Stream (B15), Barnabrack River (C8), Tanrego Intake (C9), Dunmorran Trib West River (D2), Unshin River (D7) and the Ballygrania River (D10).

No breeding (holts) or resting (couch) areas were identified in the vicinity of the survey sites in July or September 2024.’

No signs of otter were recorded within the EIAR Site Boundary. Six of the above-mentioned spraint records are located on water crossings along the Proposed Grid Connection Route (B15, C8, C9, D2, D7, D10). The other three spraint records are located downstream of the Proposed Wind Farm towards the northwest.

6.3.4.3 Marsh Fritillary (*Euphydryas aurinia*)

While there were habitats recorded with the potential to support stands of devil’s-bit scabious such as peatland and grassland habitats, there were no significant areas of devil’s-bit scabious (*Succisa pratensis*), the food plant for this species, recorded within the Proposed Wind Farm or along the Proposed Grid Connection Route.

Given the lack of devil’s-bit scabious plants recorded within the Site, it was concluded that the Site does not provide suitable supporting habitat for marsh fritillary and as such, targeted marsh fritillary larval web surveys were not deemed necessary.

6.3.4.4 Geyer’s Whorl Snail (*Vertigo geyeri*)

The QI population of the Geyer’s Whorl Snail (*Vertigo geyeri*) is located in a parcel of land within the Existing Wind Farm that is designated as part of the Ox Mountains Bogs SAC. This area

lies completely outside the Existing and Proposed Wind Farm infrastructure footprint but is adjacent to existing turbines at Dunneill Wind Farm that will be decommissioned.

The potential for the species to occupy other areas within the EIAR Site Boundary was considered. As discussed in Section 6.3.1.10, optimal habitat for the species comprises calcareous fen habitats with sedges, moss carpets, and black-bog rush. Sub-optimal habitat can occur in more acidic habitats, such as the peatland and grassland habitats present within the EIAR site boundary, however, to support the species, flushed areas containing wet and groundwater-influenced conditions are required.

The above-described habitat types were not recorded within the footprint of the Proposed Wind Farm, which is dominated by conifer plantation (WD4), and acidic habitats such as cutover bog (PB4), and dry-humid acid grassland (GS4). No fen or flushed areas were recorded in habitats within or adjacent to the footprint of the Proposed Project. These habitats are unsuitable for the species and as such targeted surveys for the species in these areas was not required.

6.3.4.5 Bats

Bat surveys undertaken throughout 2023, 2024, 2025 and 2026 in accordance with NatureScot guidance, form the core dataset for the assessment of effects on bats. Bat surveys included roost surveys, manual transect surveys and ground-level static surveys. Full details of results are provided in the Bat Report in **Appendix 6-2** and are summarised in the sections below.

6.3.4.5.1 Bat Habitat Appraisal

With regard to foraging and commuting bats, exposed areas of grassland and peatland habitats were considered *Low* suitability, i.e. *Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated* (Collins, 2023). Areas of scrub, hedgerows and treelines, eroding upland rivers/streams and drainage ditches provide connectivity via linear features to the surrounding landscape. As such, they were assessed as having *Moderate* suitability i.e. *Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water* (Collins, 2023). Due to their varying levels of maturity and connectivity, treelines and hedgerows were assessed as having *Moderate* to *High* suitability. Depositing lowland rivers were assessed as having *High* suitability, i.e. *Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge*.

Trees within the Proposed Wind Farm area primarily comprise a mixture of mature and immature conifer species. The dominant conifer species recorded were Sitka Spruce and Lodgepole pine and to a lesser extent, Japanese larch. Some broadleaf species were recorded along the edges of conifer plantation near T8 which consisted of Alder and Rowan. The majority of this site consisted of conifer plantation which had sub-optimal roosting features for bats and therefore, no further assessments were carried out within the conifer plantations. The woodland which would require felling for these turbines consists of conifer plantation which has been deemed as having no roosting potential for bats.

Two buildings and three bridges were inspected for bat roosting suitability. All five structures had *Low* or *Negligible* roosting potential. Details of the buildings inspection and dusk emergence surveys are presented in Appendix 6-2 and summarised below.

All other habitats present within the Proposed Wind Farm were assigned a *Negligible* value for roosting bats.

The Proposed Grid Connection Route crosses 34 existing water crossing structures. Twenty-eight of these watercourse crossings have an existing culvert or bridge and these structures were assessed for bat roost potential during field surveys conducted on 18th September 2025. No evidence of bat roosts was recorded at any of the inspected structures. The findings are described in detail in Table 4-5 of Appendix 6-2.

As described in Chapter 4, Section 4.5.3.1 of this EIAR, along the proposed Turbine Delivery Route, accommodation works will be required at twenty locations to facilitate the delivery of turbine components and other abnormal loads to the Proposed Wind Farm during the construction phase. Vegetation removal or trimming is only required at nine of these locations. These accommodation works will be located at the N15 Drumlonagher Roundabout, N4 to N59 Junction, the N15 to N59 Junction, Right Bend in L2702, Left Bend in L2702 the N59 Ballysadare Bridge, the N59 Abbeytown Bend, Dromore West and the L2702/L6309 Junction.

The hedgerows and treelines along the TDR provide *Low to Moderate* suitability for commuting and foraging bats; however, given the limited nature of the works including minor trimming and removal of individual immature/semi-mature trees, no loss of commuting, foraging or roosting habitat is anticipated along the TDR.

The trees assessed along the Turbine Delivery route varied in their suitability to support roosting bats, with the majority being assessed as *None*, and a small number as having *PRFI* suitability. No trees designated for cutting as part of the TDR were assessed as having any bat roost suitability. Roost Emergence Surveys

Following the search for roosts in 2023 and 2024, five structures containing potential suitable bat roost features were identified within the Site. The structures were subject to interior (where accessible) and exterior inspections to search for evidence of bats. Details of the inspection surveys are presented in Table 4-5 of Appendix 6-2. All identified structures will be retained and avoided as part of the Proposed Project. All structures were assessed as having *Low* roosting potential – i.e., A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year (Collins, 2023). A series of dusk emergence surveys were undertaken to confirm the presence or absence of roosting bats at structures identified as having potential to support roosting bats within approx. 350m of proposed turbines. Surveys were conducted across spring and summer 2024 to capture seasonal variation in bat activity. Prior to this, emergence surveys were also carried out in spring and autumn of 2023.

A bat roost was confirmed at the stone ruin (Coppers Lodge – approx. 348m to the east of T4, Irish Grid Ref: G 44001 27337). Two no. brown long-eared bats were recorded emerging in 2023 and 2 no. common pipistrelle were recorded in 2024.

Four small bat roosts were also confirmed at the existing Dunneill Wind Farm details are provided in the Bat Survey Report Appendix 6-2.

6.3.4.5.2 **Manual Transect Survey Results**

Manual transects were undertaken in spring, summer and autumn 2024 with details of additional transects carried out in 2023 included in Appendix 6-2. Bat activity was recorded in all seasons. A total of 220 bat passes were recorded, including emergence survey activity. In general, Soprano pipistrelle (n=177) was recorded most frequently, followed by Common pipistrelle (n=35). *Myotis spp.* (n=4) and Leisler's bat (n=3) were less frequent with only one brown long-eared bat pass (n=1) recorded.

Species composition and activity levels varied across the survey periods. Transect survey results were calculated as bat passes per km surveyed (to account for differences in survey effort). Bat activity was concentrated along the conifer plantation edges with activity near open peatland concentrated along the linear (road/track) habitats. Common and soprano pipistrelle were most frequently recorded in spring and autumn 2024. *Myotis spp.* was only detected during spring and brown long-eared bat was recorded only during the autumn.

6.3.4.5.3 Static Detector Survey Results

In total, 35,102 bat passes were recorded across all deployments. In general, Soprano pipistrelle (n=16,449) occurred most frequently, followed by Common pipistrelle (n=12,637), *Myotis spp.* (n=2,834) and Leisler's bat (n=2,447). Instances of brown long-eared bat (n=730) and Nathusius' pipistrelle (n=5) were recorded less frequently during the 2024 survey period. Details of bat activity per detector and per season are provided in Appendix 6-2.

6.3.4.5.4 Discussion on Bat Activity Levels

A summary of bat activity is provided below with detailed assessments provided in Appendix 6-2.

Low, *Moderate* and *High* activity levels were assigned to median and maximum pass rates (bp/h) identified during spring, summer and autumn at the detectors deployed across the Site, as adapted from Mathews *et al.* (2016). Table 4-11 in Appendix 6-2 shows the results of the site-level assessment as calculated on a site-specific activity level. **Leisler's bat** generally typically exhibited *Low* median activity across all seasons. **Common pipistrelle** demonstrated predominantly *Low* to *Moderate* median activity throughout the year. **Soprano pipistrelle** activity remained mostly within the *Low* to *Moderate* range. **Myotis species** exhibited *Low* median activity across all detectors and seasons. **Brown long-eared bats** were generally within the *Low* median activity category throughout the year. **Nathusius' pipistrelle** activity was largely absent, with no recordings of the species mainly in spring and summer. Common pipistrelle and Soprano pipistrelle were the most consistently active species across the site, with *Moderate* median records recorded, particularly in autumn. Leisler's bat and *Myotis spp.* were active across all seasons but showed generally *Low* activity levels across most detectors with some higher site-specific activity. Nathusius' pipistrelle and brown long-eared bat activity was minimal and restricted to isolated detections. Overall, bat activity patterns suggest a spatial and temporal variation in species presence and intensity, with a few key detectors (notably D08, D09, D10 and D11) recording the highest activity rates.

6.3.4.6 Fisheries and Aquatic Fauna

Full details of results of aquatic surveys undertaken in 2024 are provided in the Aquatic Baseline Report (Appendix 6-3) and are summarised in this section.

Fisheries

A low diversity of fish species typical of NW Ireland (Gordon et al., 2021; Kelly et al., 2015, 2011a, 2011b) was recorded during the electro-fishing survey, with Atlantic salmon, brown trout, sea trout, lamprey (Lampetra sp.), European eel and three-spined stickleback captured.

Atlantic salmon were recorded from 7 no. sites in the Easky_SC_010 sub-catchment on the Easky River (A2, A4, A19) and unnamed tributary (A7), Owenminna River (A10) and the Buncrowey River (A16, A18). However, none were recorded via electro-fishing in the Dunmorán_SC_010 sub-catchment or along the GCR³² despite suitability. Brown trout populations were widespread and recorded from 32 no. electro-fishing sites. Trout were also observed (feeding) at Loughs Croane (L1), Nacrowagh (L3), Brickeagh (L4) and Nafullow (L5) during the survey. Lamprey (Lampetra sp.)² and anadromous sea trout were recorded from single sites on the Barnabrack River (C8) and the Easky River (A19), respectively. European eel were widespread but recorded in low numbers and typically from the larger watercourses (sites A2, A7, A13, A18, A19, B8, B10, C2, C7, C8, C9, C10).

³² However, the Owenmore and Unshin Rivers (fisheries appraisal sites, also crossed by the GCR) are known to support Atlantic salmon and lamprey (Lampetra sp.)

White-clawed crayfish

Despite some local habitat suitability, no white-clawed crayfish were recorded via hand searching or sweep netting of instream refugia nor inspection of mustelid spraint at any of the sites during the current survey. Whilst crayfish are known from the Owenmore River but there are no records for the species in the Easky-SC_010 or Dunmorán_SC_010 sub-catchments. This is largely reflective of unsuitable water chemistry as well as geographical isolation (Demers et al., 2005; Lucy & McGarrigle, 1987).

Freshwater pearl mussel

A highly significant population of freshwater pearl mussel was identified on the Easky River in May 2024 with >15,000 live individuals recorded over the 10km survey area.

Biological water quality & macro-invertebrates

*The Red-listed Arctic diver beetle (*Agabus arcticus*) was recorded via sweep sampling at Lough Nafullow (site L5) within the proposed ELAR site boundary. This species is near threatened in Ireland (Foster et al., 2009).*

No other rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples taken from a total of 59 no. riverine³³ sites or sweep samples taken at 11 no. other lacustrine sites in July or September 2024. A total of n=82 taxa across 58 no. families was recorded from the riverine sites, with n=35 taxa across 21 no. families recorded from lacustrine sites.

6.3.4.7 Other Species

Adult frogs were recorded on areas of peatland throughout the Site (**Plate 6-26**) and frog spawn was recorded in standing water on access track within the Proposed Wind Farm. No evidence of other species of conservation concern was identified within the Site.

While there were no records of pine marten or red squirrel, there is potential suitability for those species to use the forestry habitats.

³³ Sites C6 and C11 were dry at the time of survey



Plate 6-26 Live adult frog recorded on an area of cutover bog (PB4) to the west of the Site.

6.3.5 Identification of Key Ecological Receptors

Table 6-9 lists all identified receptors and assigns them an ecological importance in accordance with the TII Ecological Impact Assessment Guidelines (2009). This table also provides the rationale for this determination and identifies the habitats that are Key Ecological Receptors (KERs). These ecological receptors are considered in **Section 6.4** of this report, and mitigation/ measures will be incorporated into the Proposed Project where required, to avoid potential significant impacts on the features.

Table 6-9 Key Ecological Receptors identified during the assessment

Ecological Feature	Reason for inclusion as a Key Ecological Receptor (KER)	KER
Designated Sites		
European Designated Sites	The following European Sites are identified in the AA Screening as being within the Likely Zone of Influence of the Proposed Project and are assessed fully in the NIS that accompanies this application: ➤ Ox Mountains Bogs SAC ➤ Ballysadare Bay SPA ➤ Ballysadare Bay SAC ➤ Unshin River SAC These sites are of International Importance and are fully assessed in the accompanying NIS. A summary of the assessment findings is provided in Section 6.4.5 of this EIAR.	Yes

Nationally Designated Sites	The following Nationally Designated Sites have been identified as being within the Zone of Likely Influence of the Proposed Project and as such they are included as KERs for further assessment: ➤ Ox Mountains Bogs pNHA [002006] ➤ Dunneill River pNHA [001664] ➤ Easky River pNHA [001665] ➤ Ballysadare Bay pNHA [000622] ➤ Unshin River pNHA [001898]	Yes
Habitats (Terrestrial)		
Upland Blanket Bog (PB2)	Upland blanket bog (PB2) corresponds with the Annex I habitat 'Blanket bogs [7130]'. This habitat was identified and mapped within the Proposed Wind Farm in areas of uncut blanket bog. Where this habitat occurs within the EIAR site boundary, it is assigned County Importance given its degraded state due to adjacent cutting activities and drainage. Given the Annex I status of this habitat, the potential for loss or impacts to this habitat must be avoided, and as such it is included as a KER for further assessment.	Yes
Cutover Bog (PB4)	Areas of actively cut and historically cut, revegetating bog areas are categorised as cutover bog (PB4). This habitat occurs within the footprint of the Proposed Wind Farm. It is highly degraded as a result of cutting and drainage, with large drains and areas of bare peat present. It is assigned local importance (higher value) however given that the habitat still holds biodiversity value in a local context. It is therefore included as a KER for further assessment.	Yes
Eroding Blanket Bog PB5	This habitat has the potential to support Annex I habitat 'Blanket bogs [7130]', however, in its current condition it does not classify as such. It is therefore assigned Local importance (higher value). However, the habitat is completely located outside the development footprint and within the Proposed Enhancement Area. For this reason, these habitats are not considered for further assessment as a KER.	No
Wet Heath (HH3)	This habitat is located within a section of the Ox Mountains Bogs SAC located within the Existing Duneill Wind Farm. This habitat is assigned National importance. It is therefore included as a KER for further assessment.	Yes
Treeline (WL2) Hedgerow (WL1)	Hedgerows and treelines have been assessed as being of Local importance (higher value) as they provide connectivity to the wider landscape and provide supporting habitat for a wide variety of faunal species. No Hedgerows or treelines within the Proposed Wind Farm are within the construction footprint or require removal. Only minor sections along the TDR require temporary alterations to roadside vegetation during the delivery of abnormally sized loads.	No

	For this reason, these habitats are not considered for further assessment as a KER.	
Improved agricultural grassland (GA1) Ammenity grassland (GA2) Wet grassland (GS4) Dry-Humid Acid Grassland (GS3)	These grassland habitats, where they occur within the footprint of the Proposed Project, are highly modified and in general are extensively grazed by sheep. They are species poor and are a common agricultural grassland type in the wider landscape, or are a common grassland type associated with road and track verges and assessed as being of Local importance (lower value). As such, they are not included as KERs.	No
Conifer plantation (WD4)/ Recently felled woodland (WS5)	There will be loss of commercial conifer forestry to facilitate the Proposed Project. This habitat where it occurs within the Site is very species poor in both canopy and ground layer and is limited in value to local wildlife. It is of Local Importance (lower value) and it is not considered as a KER.	No
Buildings and Artificial Surfaces (BL3)/ Spoil and Bare Ground (ED2)	These habitats are common and widespread in the wider area. The habitats have been assessed as of Local Importance (Lower Value) as they are largely associated with artificial site access tracks and are of low biodiversity value. Similarly, the existing road in which the Proposed Grid Connection underground cabling route is located, which is categorised under buildings and artificial surfaces (BL3) is not of ecological significance. For this reason, they have not been identified for further assessment and are not a KER.	No
Scrub (WS1) Dense Bracken (HD1)	Scrub (WS1) and dense bracken (HD1) habitats within the footprint of the Proposed Project is species poor and dominated by bracken and common gorse. The habitat is common and widespread in the wider landscape, with limited biodiversity value and assessed as being of Local importance (lower value) . As such they are not included as KERs.	No
Aquatic Habitats and Species		
Eroding/upland rivers (FW1) Depositing Lowland Rivers (FW2) Drainage ditches (FW4) Lake Habitats Associated Aquatic Fauna including Freshwater Pearl Mussel	The Proposed Project crosses, or is located adjacent to, a number of streams and EPA mapped river waterbodies, and associated tributaries classified at these points as Eroding/upland rivers (FW1)/ Depositing Lowland Rivers (FW2). These watercourses have been assigned Local Importance (Higher Value) as they were of high biodiversity value and connect to downstream waterbodies in the local area. Lake habitats are present within the vicinity of the Proposed Wind Farm, mainly within the Ox Mountains Bogs SAC. The supporting documents for the SAC suggest these lakes have potential to correspond to Annex 1 habitat 3110 / 3160, Potential Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorarae</i>) / Potential Natural dystrophic lakes and ponds. As QIs of the Ox Mountains Bogs SAC, these are assessed as Internationally Important and identified for further assessment as a KER.	Yes

	Aquatic species associated with river habitats include freshwater pearl mussel, salmonids, European eel, lamprey and other aquatic species. Fish and other aquatic species are therefore included as a KER for further assessment. A population of freshwater pearl mussel is present downstream of the Proposed Wind Farm (i.e. Turbine 5), located within the Easky River and within the Easky freshwater pearl mussel catchment, 'Catchments of other extant populations.' The population is assigned County Importance. Given that part of the Proposed Wind Farm is located within this catchment, the potential for impacts on this population must be considered further and the species is included as a KER for further assessment.	
Fauna (Terrestrial)		
Geyer's Whorl Snail	The known site for this species within the Ox Mountains Bogs SAC is located within the northwest of the Proposed Wind Farm. Taking a highly precautionary approach, there is potential for indirect impacts on this species during the construction and operational stage of the Proposed Wind Farm. As this species is a Qualifying Interest of the SAC it has been assigned International Importance. Therefore, the species has been included as a KER.	Yes
Badger	Badger as an ecological receptor has been assigned Local Importance (Higher value) on the basis that the habitats within the Proposed Wind Farm are potentially used by badger populations of Local Importance. Although no sign of badgers using the Proposed Wind Farm were recorded, the habitat is suitable and, taking a precautionary approach, there is potential for direct and indirect impacts on badger. Therefore, this species is considered further in this assessment and has been included as a KER for further assessment.	Yes
Otter	Otter as an ecological receptor has been assigned Local Importance (Higher Value) on the basis that the watercourses within and adjacent to the Site, and along the Proposed Grid Connection may potentially be utilised by local otter populations. No otter holts, couches or slides were identified during dedicated surveys undertaken for the species within the Site or along the Proposed Grid Connection, however, signs (comprising spraint sites & latrines) were recorded on watercourses downstream of the Proposed Project. Therefore, the species has been included as a KER for further assessment.	Yes
Bats	The habitats within and surrounding the Proposed Project are likely to be utilised by a bat population of Local Importance (higher value). All bat species in Ireland are protected under both national legislation – (Wildlife Act, 1976, as amended) and European legislation – (Habitats Directive (92/43/EEC). Within the Proposed Wind Farm, two small bat roosts were identified. The structures in which these roosts reside will be retained and avoided as part of Proposed Project. No roosting site of National Importance (i.e. site greater than 100 individuals) was recorded within the Proposed Wind Farm. The Proposed Project has the potential to result in direct and indirect effects on the receptor. Therefore, bats are included as a KER for further assessment.	Yes

Pine marten and Red squirrel	No signs of pine marten or red squirrel were recorded within the Site. However, the Site provides potential supporting habitat for Pine Marten and Red Squirrel in the form of conifer plantation. Further, these species are known to occur within the hectads G42, G43, G53, G62, G72 in which the Proposed Project is located, as described in Section 6.3.1.5 and 6.3.1.6 above. Although these species are unlikely to be significantly affected by the Proposed Project, given the widespread and common occurrence of conifer plantation in the wider area, they are included as a KER for further assessment.	Yes
Additional fauna (e.g. Irish hare, Fox, etc).	Frog spawn was recorded within drainage ditches and puddles along access roads. No evidence of populations of amphibians/reptiles being significant at more than a local level was recorded, and these species have been assessed as of Local Importance (Higher Value). Given the common and widespread availability of suitable habitat for amphibians/ reptiles in the in the local area, the Proposed Project will not result in a significant loss of suitable habitat for reptiles and amphibians. Therefore, these species are not included as a KER.	No

6.4 Ecological Impact Assessment

6.4.1 'Do- Nothing' Scenario

An alternative land use option to repowering the Existing Wind Farm as part of the Proposed Project would be to leave the Existing Wind Farm as it is, with no changes made to the existing operating 23 no. wind turbines within the Existing Wind Farm. In doing so, environmental effects in terms of emissions are likely to be neutral for the short term, however 13 no. of the existing turbines (existing Dunneill Wind Farm) are due to be decommissioned in accordance with their planning permissions in 2039. The 10 no. turbines which were commissioned in 2003 will be left in situ (existing Kingsmountain Wind Farm). However, these machines are aging and are not as efficient as the newer machines. Although these turbines do not have a decommissioning date, they will eventually break down and have to be decommissioned. The opportunity to continue capturing the available renewable energy resource with the Existing Wind Farms would be lost.

An alternative land use option to developing a renewable energy project in the greenfield sections of the Proposed Wind Farm (i.e areas of the Proposed Wind Farm located outside the footprint of the Existing Wind Farm) would be to leave the area as it is with no changes made to the current land use practices of commercial forestry, turf cutting, and public road corridor.

In implementing the 'Do-Nothing' alternative, however, the opportunity to capture a significant part of Co. Sligo's renewable energy resource would be missed, as would the opportunity to contribute to meeting Government and EU 2030 targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions. In addition, the opportunity to meet the obligations as laid out in the Climate Action and Low Carbon Development Act 2021 will be lost. The opportunity to generate local employment, development contributions, and rates would also be forgone. Furthermore, the opportunity to implement the measures outlined in the Biodiversity Management and Enhancement Plan (BMEP) as outlined in Appendix 6-4 would also be lost.

6.4.2 Likely Significant Effects During Construction Phase

Within this section, the assessment of effects will consider the Proposed Project i.e. both the Proposed Wind Farm and the Proposed Grid Connection as a whole, where possible. This includes the removal of the existing 23 no. turbines and the proposed 17 no. new turbines and associated infrastructure.

Where the Proposed Wind Farm and the Proposed Grid Connection are required to be considered separately, this is identified within the assessment.

6.4.2.1 Effects on Habitats During Construction

Table 6-10 below provides details of the extent of the habitats assessed as Local Importance (*higher value*) or as County importance that will be lost to facilitate the footprint of the Proposed Project. The Proposed Project will result in the loss of additional habitats which have been assessed as being of *Local Importance (lower value)*. The loss of these common and widespread habitats is not considered significant at any geographic scale, as discussed in **Table 6-9** above. The effects on habitats that are identified as KERs are described in the below tables.

A map showing the Proposed Wind Farm footprint overlaying the habitat map is provided in **Figure 6-6**.

Table 6-10 Habitats occurring within the Proposed Project Footprint.

Habitat	Habitat Area within the Proposed Wind Farm [ha/m]	Area to be lost to Proposed Project footprint [ha/ m]	KER?	Lost to facilitate
Upland Blanket Bog (PB2)	236	0.5	Yes	Proposed Wind Farm
Cutover Bog (PB4)	92	3.6		Proposed Wind Farm
Wet Heath (HH3)	9.6	0		Existing Duneill Wind Farm Decommissioning
Improved agricultural grassland (GA1)	3	8	No	Proposed Wind Farm
Dry-humid Acid Grassland (GS3)	37.2	0.8		NA
Dry-humid Acid Grassland (GS3)/ Wet grassland (GS4)	45	2.6		Proposed Wind Farm
Recolonising Bare Ground (ED3)	NA	NA		Proposed Wind Farm
Conifer plantation (WD4)/ Recently felled woodland (WS5)	255	29.3		Proposed Wind Farm
Buildings and Artificial Surfaces (BL3)/ Spoil and Bare Ground (ED2)	21	7.6		Proposed Wind Farm

The Proposed Grid Connection Route will not result in the significant permanent loss of any habitat. The works will be primarily restricted to the existing road network categorised as **Buildings and Artificial Surfaces (BL3)**. This is not significant at any geographic scale.

The Proposed Turbine Delivery Route (TDR) will not result in the significant permanent loss of any habitat. The works will be primarily restricted to features categorised as **Buildings and Artificial Surfaces (BL3)**. This is not significant at any geographic scale.

The effects on habitats that are identified as KERs are described in the below tables. The habitats brought forward for further assessment as described in the table above, include the following:

- Aquatic habitats (river habitats, lake habitats) and associated aquatic fauna
- Upland blanket bog (PB2)
- Cutover bog (PB4)
- Wet Heath (HH3)

6.4.2.1.1 Assessment of Potential Effects on Aquatic Habitats and Aquatic Faunal Species

Table 6-11 Potential for impact on Watercourses and Sensitive Aquatic Species

Description of Effect	This section assesses the potential for likely significant effects on surface watercourses and associated aquatic habitats. The potential for impacts on associated aquatic fauna is also assessed including freshwater pearl mussel, salmon, trout, European eel, otter and other aquatic species identified during the desk study and dedicated aquatic surveys and likely to occur downstream of the Site. A highly significant population of freshwater pearl mussel was identified in the survey area in May 2024 with >15,000 live individuals recorded along 10km of the Easky River, these records are located to the north and northwest of T5 and have no downstream water connectivity to the Proposed Project. Freshwater pearl mussel is extremely vulnerable to environmental changes due to its complex life cycle and its sensitive habitat. Sedimentation settling in the habitat can deprive the young freshwater pearl mussels of oxygen and prevent juveniles for moving into the substratum. As filter-feeders, this species is also particularly sensitive to suspended solids in the waterbody due to pollution events or sedimentation. As salmonids form part of the life cycle of freshwater pearl mussel, changes in salmonid populations directly affect the freshwater pearl mussel population (Moorkens 1999). Increased sedimentation can alter the species composition of floating river vegetation and favour rooted macrophytes. Rooted macrophytes should be absent or trace (<5%) in freshwater pearl mussel habitat (NPWS 2019). The Conservation Objectives for the Ox Mountains Bogs SAC maps potential Natural dystrophic lakes and ponds (3160) and/or Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorarae</i>) to the west of the Proposed Wind Farm and in the small Section East of T1, T3 and T5. The mapped lakes and ponds are separated from the Proposed Infrastructure by drainage ditches so there is no potential for impacts due to run off from construction activities. Restoration and enhancement activities proposed for the Proposed Enhancement Area where designed to be located downhill from the mapped lake to avoid potential impact due to run off from enhancement activities. Construction phase activities will require ground excavations, cement, tree felling, excavation dewatering, use of fuel powered machinery, all of which have potential to result in pollutive materials entering watercourses. These effects on water quality are fully described in Chapter 9: Hydrology and Hydrogeology of this EIAR and are described here in relation specifically to ecology.
Assessment of Significance prior to mitigation	In the absence of mitigation, there is potential for the Proposed Wind Farm to result in significant indirect effects on the identified aquatic habitats and species at a local geographic scale in the form of pollution during the construction phase. There is potential for an indirect, negative, significant, temporary, likely impact to surface waters

	within the Proposed Wind Farm. This would result in impacts on a receptor of local importance (higher value), County Importance and International Importance. In the absence of mitigation, there is potential for the Proposed Grid Connection Route to result in significant indirect effects on the identified aquatic habitats and species in the form of pollution arising during the construction phase. This would result in impacts on receptors of local importance (higher value), and potentially of International Importance due to the downstream connectivity with the Ballysadare Bay SPA and SAC and Unshin River SAC via the Proposed Grid Connection Route.
Mitigation	A minimum distance of 100m between the SAC and proposed infrastructure was maintained in the design of the Proposed Wind Farm. Only the proposed turbine T5 is located within the Easky <i>Margaritifera</i> catchment, however a distance of over 100m was maintained between any proposed infrastructure and the Easky River draining into the <i>Margaritifera</i> catchment. Chapter 4 of this EIAR describes the installation options for the Proposed Grid Connection Route. Instream works are not required at any watercourse crossing along the Proposed Grid Connection Route. Watercourses will not be directly impacted upon since no instream works are proposed. The following mitigations will be in place with regard to construction works within the Proposed Wind Farm: ➤ The new watercourse crossing within the Proposed Wind Farm will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat. A drainage design for the Proposed Project is provided in the Surface Water Management Plan in Appendix 4-5 of this EIAR. This plan provides details of how water quality will be protected during the construction of the Proposed Project. In addition to this, specific mitigation is provided in relation to protection of surface water quality in Chapter 9: Hydrology and Hydrogeology of this EIAR, see Section 9.5. These mitigations relate to earthworks, tree felling, potential release of hydrocarbons during construction and storage, contamination from wastewater disposal, groundwater impacts, flooding impacts, potential impacts during horizontal directional drilling, and release of cement-based products.
Residual Effect following Mitigation	Following the implementation of mitigation, there will be no significant residual effect on aquatic habitats or species as a result of the Proposed Project.

6.4.2.1.2 Assessment of Potential Effects on Upland Blanket Bog (PB2)

Table 6-12 Assessment of Potential Effects on Upland Blanket Bog (PB2)

Description of Effect	Direct habitat loss: As discussed in Section 6.3.2.4, the Proposed Project has been specifically designed to avoid uncut and good quality areas of upland blanket bog (PB2). This approach resulted in multiple layout design iterations Chapter 3: Site Selection and Reasonable Alternatives of this EIAR) whereby proposed infrastructure was deliberately moved out of uncut areas of blanket bog. As such, the potential for direct effect as a result of direct loss of the habitat has been minimised. However, there will be loss of small areas of blanket bog due to the creation of access roads to Proposed Turbines T2 and T4. This will result in the loss of approx. 0.5ha of marginal upland blanket bog (PB2). Road upgrade works are required along the existing public road which runs adjacent to and area of mapped QI habitat Upland blanket Bog (PB2) of the Ox
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	Mountains Bogs SAC. These upgrades have the potential to cause direct habitat loss or indirect habitat loss due to the drainage effect of the road works. Indirect effects due to drainage: The majority of the Proposed Project footprint is located within conifer plantation forestry and actively cut turbary habitats. A drainage design for the Proposed Project is provided in the Surface Water Management Plan in Appendix 4-5 of this EIAR. Small scale temporary dewatering may occur at some excavations associated with Wind Farm infrastructure (i.e., turbine bases, cable trenches), and these have the potential to temporarily affect local groundwater levels. According to the Peatland Code (IUCN 2023)³⁴, peatland is considered 'drained' if it is within 30m of an artificial drain or a natural drain formed by the presence of a hagg and gully. However, the construction footprint is restricted to areas that are already drained and cut, and the adjacent uncut peatland areas are already drained as a result. Therefore, it is not anticipated that there will be any further or new drainage of uncut areas of blanket bog. However, the potential for poor design of proposed floating access roads to impact adjacent bog habitat by disrupting hydrological flows has been considered, and mitigation with regard to design is provided below.
Assessment of Significance prior to mitigation	Direct habitat loss As discussed above, the Proposed Project has been designed in order to avoid the loss of uncut areas of upland blanket bog. There will be a loss of 0.5ha of marginal blanket bog habitat for the eastern-most proposed borrow pit. However, this habitat area is small, and due to its marginal location adjacent to an existing wind farm access road, is already significantly drained. As such, the loss of 0.5ha of this habitat is not considered to be significant at the county scale, however taking a precautionary approach, it is considered to be a permanent, significant effect at the local scale. Indirect effects: Temporary transient dewatering works will be very localised and of small magnitude. Groundwater level effects will not be significant due the local hydrogeological regime and the elevation of the Proposed Wind Farm. Any effects will be temporary and localised. Given the distance between most site infrastructure and uncut blanket bog habitat, as well as the presence of existing commercial forestry and drains along the perimeter of peatland habitats within the site, there is no potential for significant effect to peatland habitats as a result of drainage due to permanent proposed infrastructure. No potential for significant effect on peatland habitats as a result of drainage impacts is anticipated at any geographic scale. However, best practice mitigation measures for long-term management of the hydrological regime are provided.
Mitigation	Mitigation by Design The Proposed Project has been specifically designed to avoid uncut and good condition areas of blanket bog habitat where possible and to minimise impacts thereon. This was achieved through an early-stage ecological constraints study informed by field surveys and habitat mapping. The proposed layout was thereby altered through the iterative design process to avoid uncut blanket bog habitats. Construction Phase Mitigations

³⁴ https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2023-03/Peatland%20Code%20V2%20-%20FINAL%20-%20WEB_2.pdf

	Proposed new wind farm access roads and road upgrades will be constructed sensitively to ensure that hydrological connectivity is maintained between areas of peatland habitat. The construction methodology of floating roads is detailed in Section 4.8.2.4 of this EIAR. The design and installation of collector drains and culverts will be supervised by an Ecological Clerk of Works (ECoW) to ensure that there are no upstream or downstream hydrological impacts to peatland habitats. Upgrades to the existing road along the adjacent QI blanket bog habitat of the Ox Mountains Bogs SAC will only be carried out westwards, away from the SAC habitat. No stockpiling within, or access to, the SAC area is permitted. Upgrade works along this stretch of road are to be supervised by the ECoW. Proposed Offsetting and Enhancement The loss of 0.5ha of marginal upland blanket bog for the Proposed Project, considered significant, will be fully offset through the implementation of the Biodiversity Management and Enhancement Plan (BMEP) which includes for the enhancement and management of an area of degraded blanket bog measuring 36ha (Tawnadremira Bog) which is located between two sections of the Ox Mountains Bogs SAC. The objectives of the BMEP will be to establish connectivity between the fragmented Ox Mountain Bogs SAC by reconnecting areas via a connectivity corridor and restore habitat condition to favourable conservation status for upland blanket bog. This will include implementation of a sustainable grazing regime and peatland restoration measures. The connectivity corridor will provide linkages between previously fragmented areas of peatlands in the vicinity of the EIAR Site Boundary, which will support the objective of Article 10 of the Habitats Directive to maintain landscape connectivity for flora and fauna. The BMEP is provided as Appendix 6-5 to this EIAR. The offsetting and enhancement measures will be monitored over the lifetime of the Proposed Project as part of the BMEP to determine their effectiveness and to allow for alteration in approaches where necessary. A Peat and Spoil Management Plan has been prepared and is provided in Appendix 4-2 of this EIAR. This Plan outlines construction methodologies with regard to infrastructure located on peat spoils which will minimise impacts on peat hydrology and prevent issues with peat stability during construction.
Residual Effect	No potential for residual significant effects on upland blanket bog (PB2) is anticipated as a result of the Proposed Project.

6.4.2.1.3 Assessment of Potential Effects on Cutover Bog (PB4) Habitats

Table 6-13 Assessment of Potential Effects on Cutover Bog (PB4)

Description of Effect	Direct habitat loss: All high-quality, uncut bog habitats within the Site have been deliberately avoided in the design of the Proposed Project. As discussed in Section 6.3.2.4, the Proposed Project has been specifically designed to avoid uncut and good quality areas of upland blanket bog (PB2). As such, the Proposed Project footprint is restricted to areas of cutover bog (PB4) which are subject to active turbary and located adjacent to existing access roads. A total of 3.6ha of cutover bog (PB4) will be lost to facilitate the Proposed Project. Indirect effects due to drainage: Given that the cutover bog habitat within the EIAR Site Boundary is already drained and degraded as a result, no additional impacts due to drainage associated with the construction of the Proposed Project is anticipated.
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Assessment of Significance prior to mitigation	Direct habitat loss The loss of 3.6ha of cutover bog (PB4) is considered to be a permanent, significant effect on a degraded habitat of local importance. Indirect effects: No potential for significant effect on cutover bog habitat as a result of additional drainage due to construction of the Proposed Project is anticipated.
Mitigation	Mitigation by Design The Proposed Project has been specifically designed to avoid higher value areas of cutover bog (PB4) habitat, and as such the infrastructure footprint is restricted to areas of cut bog adjacent to existing road, and drier, more sparsely vegetated areas. Specific Mitigations Proposed new wind farm access roads and road upgrades will be constructed sensitively to ensure that hydrological connectivity is maintained between areas of peatland habitat. The design and installation of collector drains and culverts will be supervised by an Ecological Clerk of Works (ECoW) to ensure that there are no upstream or downstream hydrological impacts to peatland habitats. Proposed Offsetting and Enhancement The loss of 3.6ha of cutover bog (PB4) for the Proposed Project, is considered significant, and will be fully offset through the implementation of the Biodiversity Management and Enhancement Plan (BMEP) which includes for the enhancement and management of an area of degraded blanket bog measuring 36ha (Tawnadremira Bog) which is located between two sections of the Ox Mountains Bogs SAC. The objectives of the BMEP will be to establish connectivity between the fragmented Ox Mountain Bogs SAC by reconnecting areas via a connectivity corridor and restore habitat condition to favourable conservation status for upland blanket bog. This will include implementation of a sustainable grazing regime and peatland restoration measures. The connectivity corridor will provide linkages between previously fragmented areas of peatlands in the vicinity of the EIAR Site Boundary, which will support the objective of Article 10 of the Habitats Directive to maintain landscape connectivity for flora and fauna. The BMEP is provided as Appendix 6-4 to this EIAR. The offsetting and enhancement measures will be monitored over the lifetime of the Proposed Project as part of the BMEP to determine their effectiveness and to allow for alteration in approaches where necessary. The BMEP also includes measures to restore the Proposed Peat and Spoil management within the cutover bog in the west of the Site. These will result in 5.45ha of restored cut over bog habitat. A Peat & Spoil Management Plan has been prepared and is provided in Appendix 4-2 of this EIAR. This Plan outlines construction methodologies with regard to infrastructure located on peat spoils which will minimise impacts on peat hydrology and prevent issues with peat stability during construction.
Residual Effect	No potential for residual significant effects on cutover bog (PB4) is anticipated as a result of the Proposed Project.

6.4.2.1.4 Assessment of Potential Effects on Wet Heath HH3

Table 6-14 Assessment of Potential Effects on Geyer's Whorl Snail During the Construction Phase

Description of Effect	Direct Habitat Loss There is no infrastructure proposed within the Wet heath habitat areas. The recorded area is directly adjacent to the access track of the Existing Dunneill Wind Farm which can lead to accidental access of machinery or depositing of materials during the decommissioning phase. Indirect Habitat Loss Changes in the hydrological regime or water quality due to dewatering or pollution events could result in the degradation of this habitat. However, the habitat is located within an area of the existing Dunneill Wind Farm that will not be repowered and only decommissioning works are to be undertaken in this area. There are no groundworks required within 0.6km of the identified habitat. On the dismantling of existing turbines and meteorological mast, it is not intended to remove the concrete foundation from the ground. It is considered that its removal will be the least preferred options in terms of having potential effects on the environment. Therefore, the turbine foundations not incorporated into the Proposed Project will be backfilled and covered with soil material. If there is usable soil or overburden material on the site, this material will be used. Alternatively, where material is not readily available on site, soil will be sourced locally and imported to site on heavy good vehicles (HGVs). The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation and accelerate the resumption of the natural drainage management that will have existed prior to any construction. Hardstands shall be covered with soil material and regraded to match existing ground contours and profile. The area shall then be seeded out or allowed to vegetate naturally. As such, there is no potential for hydrological impacts on the adjacent wet heath habitat.
Assessment of Significance prior to mitigation	Direct Habitat Loss As discussed above, there is no infrastructure proposed within the habitat. However, taking a precautionary approach, should there be access to the area or storage of materials within the area, there is potential for a permanent, significant habitat degradation. This has the potential to result in a significant effect on a receptor of International Importance. Indirect Habitat Loss As discussed above, no excavation or groundworks are required within 0.6km of the habitat, as such, there is no potential for indirect significant effect on the habitat due to hydrological changes.
Mitigation	The design of the Proposed Wind Farm infrastructure fully avoids the area of wet heath habitat. In addition, the following measures will be in place: ➤ In advance of construction of the Proposed Wind Farm, the area will be fenced off from the surrounding infrastructure; this fencing is to be maintained throughout the lifetime of the Proposed Wind Farm. ➤ In advance of construction of the Proposed Wind Farm, the Project Ecologist/ ECoW will inspect the fencing surrounding the habitat to ensure it is in good repair and that there is no possibility of access to the area, or any storage of materials. ➤ Site workers will be fully briefed on the sensitivity of the habitat. ➤ Signage will be installed on the fences outlining that no access or placement of materials is permitted.

	➤ The area will be checked by the site ECoW periodically during the decommissioning of the existing Duneill Wind Farm.
Residual Effect following Mitigation	With the above mitigation in place, no potential for residual significant effects wet heath (HH3) is anticipated as a result of the Proposed Project.

6.4.2.1.5 Biosecurity

As described above in **Section 6.3.3** above, *Rhododendron ponticum*, a third schedule invasive species was identified within the Site. Individual stands of *Rhododendron ponticum* were recorded in the east and west of the Proposed Wind Farm, within Conifer plantation and open peatland habitat (**Figure 6-7**). A detailed Invasive Species Management Plan is provided in **Appendix 6-5**.

In the absence of mitigation there is potential for spread of invasive species to other habitats within the Proposed Wind Farm and outside of the Site. This could occur via dispersal of seeds locally, or inappropriate disposal of the plant material whereby seeds or propagatable material are spread to another area. Vector material may also be spread to other sites as a result of entrainment within machinery or staff clothing. The following measures will be in place to avoid impacts to biosecurity as a result of construction of the Proposed Project:

Rhododendron regrows vigorously when cut. As a result, some method of stump killing or removal is always necessary. Any untreated cut stump will regrow and in most cases flower within 3-4 years. The following measures will be in place:

- A pre-commencement survey for invasive species within the footprint of the Proposed Wind Farm will be carried out by a suitably qualified ecologist to ensure there is no new growth of Third Schedule invasive species in these areas.
- If additional invasive species are recorded within the construction areas, an Invasive Species Management Plan will be prepared in advance of construction which will incorporate the measures necessary to prevent spread additional to the measures laid out below.
- A Toolbox Talk will be given by the Ecological Clerk of Works (ECoW) in relation to the management of invasive species within construction areas.
- The infested area will be demarcated and works in the vicinity of the infestation will only be carried out under supervision by a suitably qualified ECoW.
- In advance of construction works in the vicinity of the infested area, it will be necessary to completely remove the infestation outside of the flowering period (May to July) and dig the roots completely out. The effectiveness of this technique is increased by removing all viable roots. To avoid regrowth, stumps will be turned upside down and soil will be brushed off roots. The roots are relatively shallow, seldom being deeper than 45cm.
- Any machinery working in close proximity to the infested areas will undergo washing in a designated biosecurity area before exiting the Site.
- Once the supervising ecologist confirms that the material is dried out and non-viable, it will be chipped and composted on-site.
- It is envisaged that no contaminated soil is to be removed from the Proposed Project. Should potentially Third Schedule contaminated soil be required to be removed from the Site, it will be transported to a suitably licenced waste facility and will require a licence from the NPWS prior to its transportation.

In order to avoid the potential for spread of invasive species into the Site:

- Any construction material imported into the Site will come from a source confirmed to be free of invasive species.
- All plant and machinery will be thoroughly cleaned before entering and exiting the Site.

6.4.2.2 Effects on Fauna During Construction

The Proposed Project has the potential to result in habitat loss and disturbance impacts on faunal species that were recorded on the Site but were not included as KERs, see **Table 6-9** above. Given the extensive area of habitat that will remain undisturbed throughout the Site and in the wider area and the avoidance of the most significant areas of faunal habitat, no significant effects on non-KER faunal biodiversity are anticipated as a result of the Proposed Project. Therefore, these species were excluded from further assessment.

The potential for significant effects on aquatic species is restricted to indirect effects on their habitat resulting from water pollution. This includes the assessment of impact on freshwater pearl mussel and has been assessed in **Section 6.4.2.1.1** above and is not repeated below.

The following species have been brought forward for further assessment, as identified in **Table 6-9** above:

- Bats
- Geyer's Whorl Snail
- Badger
- Otter
- Pine Marten and Red Squirrel

6.4.2.2.1 Assessment of Potential Effects on Bats

As per NatureScot Guidance (2021), Wind Farms present following potential risks to bats during construction:

- Loss or damage to commuting and foraging habitat;
- Loss of, or damage to, roosts;
- and Displacement of individuals or populations.

For each of these risks, the detailed knowledge of bat distribution and activity within the Site has been utilised to predict the potential effects of the Proposed Project on bats.

Bat surveys undertaken in 2024, in accordance with NatureScot Guidance, form the core dataset for the assessment of effects on bats.

Table 6-15 Assessment of Potential Effects on Bats During the Construction Phase

Description of Effect	Loss of, or Damage to, Roosts
	A total of four confirmed bat roosts have been identified within the Proposed Wind Farm. These comprise a derelict stone ruin used by common pipistrelle and brown long-eared bat (maximum three individuals), a derelict farmhouse used by six soprano pipistrelles, an outbuilding shed used by two soprano pipistrelles, and the onsite electrical control building used by up to seven common and soprano pipistrelles. All roosts support low numbers of bats and are considered small, low-value roosts. No maternity roosts or roosts of National Importance were identified. No PRFs were identified within any trees inspected and no evidence of bat use was recorded within any trees within TDR accommodation areas.

	No evidence of bat roosts was identified within any structures along the Proposed Grid Connection Route during detailed inspections carried out (detailed in Appendix 6-2). Crossing of watercourses will be undertaken via Horizontal Directional Drilling, Standard Formation Crossing over Culverts or Standard Formation Crossing under Culverts (as detailed in Table 4-8 in Chapter 4: Description of the Proposed Project). The crossings are subject to existing traffic conditions. While some bat roosting potential was identified (no bat roosts or evidence of roosts recorded), noise and vibration from HDD drilling and standard formation crossing are not likely to be significantly out of character with that associated with existing traffic conditions to which any potential roosting bats would be accustomed. Excavations associated with launch and receiver pits will be set back from the bridges. In addition, the works are short-term. Therefore, works associated with construction of the Proposed Grid Connection are unlikely to result in significant disturbance to bats.
	Loss or Damage to Commuting and Foraging Habitat The construction of the Proposed Project will result in the felling of conifer trees around the Proposed Project infrastructure, which has the potential to increase available edge habitat throughout the site, which will provide additional foraging areas for bats. Bat buffers will be created around existing turbines as detailed in Section 6.4.3.2.1. The creation of buffers is not anticipated to sever existing corridors and has the potential to create additional linear habitat for foraging and commuting bats along proposed keyhole boundaries, where trees are not harvested by ongoing external forestry operations. Turbine Delivery Route accommodation works are minor and confined to areas of <i>Negligible</i> bat habitat suitability, with no high-value commuting or foraging habitats affected. Similarly, the grid connection works will not result in the loss or degradation of bat commuting or foraging habitat.
	Disturbance/displacement of Individuals or Populations Temporary lighting may be required during construction which could result in barrier effects to commuting bats, which avoid lit up areas. The potential for construction noise, including from rock breaking and blasting activities, to result in displacement of bats is also assessed below.
Assessment of Significance prior to mitigation	Loss of, or Damage to, Roosts No potential for significant effect with regard to the loss of, or damage to, roosting habitat as a result of the Proposed Project is anticipated. Loss of or Damage to Commuting and Foraging Habitat The felling of plantation forestry (WD4) within the site, to facilitate site access roads and turbine infrastructure, will result in the creation of more woodland edge habitat and as such can benefit feeding and commuting bat species. There is no potential for significant effect on commuting and foraging habitat as a result of the Proposed Project. Disturbance/ displacement of Individuals or Populations Temporary impacts from construction phase noise and lighting have the potential to result in negative effects in the form of disturbance on local foraging and commuting bat populations recorded at the site. However, these are not expected to be significant. There will be not disturbance of roosts, as all identified roosts are outside the proposed construction footprint and will be retained and avoided.
Mitigation	Loss of, or Damage to, Roosts No mitigation is required.

	Loss of, or Damage to, Commuting and Foraging Habitat No mitigation is required. Displacement of Individuals or Populations The following construction best practice will be employed to minimise general noise and disturbance potential. During the construction phase, plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001). Where lighting is required, directional lighting will be used to prevent overspill on to forestry edges. Exterior lighting during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. The proposed lighting around the site shall be designed in accordance with the Institute of Lighting Professionals Guidance Note 08/23 Bats and artificial lighting at Night. In addition, the applicant commits to the use of lights during construction (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations: ➤ Every light needs to be justifiable, ➤ Limit the use of light to when it is needed, ➤ Direct the light to where it is needed, ➤ Reduce the light intensity to the minimum needed, ➤ Use light spectra adapted to the environment, ➤ When using white light, use sources with a “warm” colour temperature (less than 3000K).
Residual Effect following Mitigation	Following the implementation of mitigation, there is no potential for residual significant effect on bats during the construction of the Proposed Project.

6.4.2.2.2 **Assessment of Potential Effects on Geyer’s Whorl Snail**

Table 6-16 Assessment of Potential Effects on Geyer’s Whorl Snail During the Construction Phase

Description of Effect	Direct Habitat Loss There is no infrastructure proposed within the known habitat areas for Geyer’s Whorl Snail. The area that supports the Whorl snail population is directly adjacent to the access track of the Existing Dunneill Wind Farm which can lead to accidental access of machinery or depositing of materials during the decommissioning phase. As discussed in Section 6.3.4.4, the lack of sub-optimal to optimal habitat within the wider area of the EIAR Site Boundary means there is no potential for fragmentation or loss of suitable habitat for the species. Similarly, there is no potential for mortality of the species as a result of the Proposed Project. Indirect Habitat Loss Geyer’s whorl snail is very susceptible to changes in hydrology. Changes in the groundwater table or water quality due to dewatering or pollution events could result in the loss of suitable habitat. However, the Geyer’s whorl Snail habitat is located within an area of the existing Dunneill Wind Farm that will not be repowered and only decommissioning works are to be undertaking in this area. There are no groundworks required within 0.6km
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	of the identified suitable habitat. On the dismantling of existing turbines and meteorological mast, it is not intended to remove the concrete foundation from the ground. It is considered that its removal will be the least preferred options in terms of having potential effects on the environment. Therefore, the turbine foundations not incorporated into the Proposed Project will be backfilled and covered with soil material. If there is usable soil or overburden material on the site, this material will be used. Alternatively, where material is not readily available on site, soil will be sourced locally and imported to site on heavy good vehicles (HGVs). The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by hay transfer or spreading of an appropriate seed mix to assist in revegetation and accelerate the resumption of the natural drainage management that will have existed prior to any construction. Hardstands shall be covered with soil material and regraded to match existing ground contours and profile. The area shall then be seeded out or allowed to vegetate naturally. As such, there is no potential for hydrological impacts on the adjacent habitat of Geyer's whorl snail.
Assessment of Significance prior to mitigation	Direct Habitat Loss As discussed above, there is no infrastructure proposed within the known habitat for the species. However, taking a precautionary approach, should there be access to the area or storage of materials within the area, there is potential for a permanent, significant effect on the population as a result of mortality, or habitat degradation. This has the potential to result in a significant effect on a receptor of International Importance. Indirect Habitat Loss As discussed above, no excavation or groundworks are required within 0.6km of the habitat of the species, as such, there is no potential for indirect significant effect on the species as a result of habitat degradation due to hydrological changes.
Mitigation	The design of the Proposed Wind Farm infrastructure fully avoids the area of Geyer's whorl snail habitat. In addition, the following measures will be in place: ➤ In advance of construction of the Proposed Wind Farm, the area will be fenced off from the surrounding infrastructure; this fencing is to be maintained throughout the lifetime of the Proposed Wind Farm. ➤ In advance of construction of the Proposed Wind Farm, the Project Ecologist/ ECoW will inspect the fencing surrounding the habitat to ensure it is in good repair and that there is no possibility of access to the area, or any storage of materials. ➤ Site workers will be fully briefed on the sensitivity of the habitat. ➤ Signage will be installed on the fences outlining that no access or placement of materials is permitted. ➤ The area will be checked by the site ECoW periodically during the decommissioning of the existing Duneill Wind Farm.
Residual Effect following Mitigation	With the above mitigation in place, there is no potential for significant residual effect to Geyer's Whorl Snail.

6.4.2.2.3 Assessment of Potential Effects on Badger

Table 6-17 Assessment of Potential Effects on Badger During the Construction Phase

Description of Effect	Habitat Loss/Fragmentation No badger setts or signs of badgers were recorded within the Site, as described in Section 6.3.4.1 above. Therefore, there will be no loss of badger sett habitat. Given the nature of the Proposed Wind Farm, there will be some loss of suitable badger foraging habitat i.e.,
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	agricultural grassland (GA1)/ conifer plantation (WD4), associated with the footprint of the Proposed Wind Farm infrastructure as described in Table 6-10 above. However, this habitat loss will not be significant in the context of the widespread alternative foraging habitat available with the Proposed Wind Farm and the wider area.
	Disturbance Although no signs of badgers were recorded during the designated field surveys, on a very precautionary basis there is a potential for badger setts to be created during the interim between baseline ecological surveying and commencement of construction. Noise and earth movement during construction works have the potential to disturb badgers occupying setts in close proximity to Proposed Wind Farm infrastructure during construction. Badger tunnel systems can extend some distance from sett entrances (over 20m in some cases³⁵) and therefore any excavation by heavy machinery in close proximity to sett entrances risks causing damage to setts and/or direct harm to badgers in the absence of mitigation. In the event that a badger sett is established within or near the footprint of the Proposed Wind Farm during the interim between baseline ecological surveys and commencement of construction, there is potential for disturbance to badger using the setts as a result of noise during construction works.
Assessment of Significance prior to mitigation	Habitat Loss/Fragmentation No significant overall loss or fragmentation of badger foraging habitat is anticipated at any geographic scale.
	Disturbance No badger setts were found within the Site and no significant effects to these species are predicted. Given the low likelihood, the potential for disturbance to these species during construction works is considered not significant and on a precautionary basis mitigation is provided below.
Mitigation	Habitat Loss/Fragmentation No specific mitigation is required for the avoidance of habitat loss.
	Disturbance/Displacement Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction badger survey will be carried out in order to assess activity levels at setts and to identify any sett entrances that may have been established in the intervening period. All setts within 50m of the Proposed Wind Farm infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by badgers and levels of activity. All badger survey work will be undertaken in line with current best practice guidance. ➤ A confirmatory survey for badger will be carried out by an appropriately qualified ecologist no more than 10 months in advance of commencement of construction. The requirement for a confirmatory survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the baseline surveys. ➤ If a sett is found within 50m of the Proposed Project, further monitoring and mitigation in line with TII guidelines, and in consultation with the NPWS will be prescribed as appropriate. ➤

³⁵ National Roads Authority (2006) Guidelines for the treatment of badgers prior to the construction of National Road Schemes.

Residual Effect following Mitigation	With the above mitigation in place, there is no potential for significant residual effect to badger.
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6.4.2.2.4 Assessment of Potential Effects on Otter

Table 6-18 Assessment of Potential Impacts on otter During the Construction Phase

Description of Effect	Potential for effects on otter has been considered with regard to NPWS 'Threat Response Plan'³⁶ (TRP) which identifies four significant threats facing otter in an Irish context: habitat destruction, water pollution, disturbance (recreational sources) and accidental death/persecution. No otter holts were found within 150m of the Proposed Project during the dedicated surveys undertaken, as described in Section 6.3.5 above. However, Otter signs in the form of spraints were found at a total of 9 survey locations. No signs of otter were recorded within the Proposed Wind Farm. Six of the spraint records were located along the Proposed Grid Connection Route, and three were located northwest downstream of the Proposed Wind Farm indicating that otter actively use watercourses downstream of the Proposed Wind Farm and Proposed Grid Connection Route for commuting and foraging. To facilitate the construction of the Proposed Wind Farm roads, there are 2 no. new watercourse crossings that will be required: The watercourse crossings within the Proposed Wind Farm will comprise clear span watercourse crossings. Therefore, there will be no loss of riparian habitat, and no potential to create an instream barrier to otter. The installation of the Proposed Grid Connection Route within the existing public road network crosses over 34 no. existing water crossings. In relation to disturbance, otters are predominantly crepuscular in nature, and it is anticipated that construction activity associated with the Proposed Grid Connection Route will be confined to daytime hours, thus minimizing potential disturbance related impacts to the species. The recorded otter signs show that the species uses the area of the Proposed Project on occasion, particularly along Proposed Grid Connection route. There is potential for the construction activity to result in the run-off of silt and other pollutants such as hydrocarbons and cementitious material into watercourses downstream of the Proposed Grid Connection. This represents a potential indirect effect on otter in the form of habitat degradation through water pollution.
Assessment of Significance prior to mitigation	Taking a precautionary approach, the construction of 2 no. new watercourse crossings and upgrade of 9 no. culvert crossings has the potential to be a temporary significant effect to otter in the area as a result of disturbance. In the absence of mitigation, the indirect effect of water pollution on otter during construction has the potential to be a temporary significant effect on a receptor of International Importance due to hydrological connectivity with the Unshin River SAC.
Mitigation	Chapter 4: Description of the Proposed Project of this EIAR describes the installation options for the Proposed Grid Connection Route. Instream works are not required at any watercourse crossing along the Proposed Grid Connection Route. Watercourses will not be directly impacted upon since no instream works are proposed. The following mitigations will be in place with regard to construction works within the Proposed Wind Farm:

³⁶ NPWS (2009) Threat Response Plan: Otter (2009-2011). National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin.

	➤ A pre-commencement survey for otter will be undertaken within 150m upstream and downstream of the proposed 1 no. new watercourse crossing, and 9 no. existing watercourse culvert crossings that require upgrading within the Proposed Wind Farm in advance of commencement of works in order to confirm whether the baseline survey conditions remain the same. ➤ If a holt is found within 150m of construction areas, the works will be undertaken in line with TII guidelines and if a potential for disturbance is identified, these works will not be undertaken until a derogation licence is obtained. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of the survey will be to assess any changes in baseline conditions since the time of undertaking the baseline surveys. ➤ The new watercourse crossing within the Proposed Wind Farm will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat. ➤ Specific mitigation is provided in relation to water quality in Chapter 9: Hydrology and Hydrogeology of this EIAR and is summarised in Sections 6.4.2.1.1 above.
Residual Effect following Mitigation	Following the implementation of mitigation, there is no potential for residual significant effect on otter.

6.4.2.2.5 Assessment of Potential Effects on Pine Marten and Red Squirrel

Table 6-19 Assessment of Potential Effects on Pine marten and Red Squirrel During the Construction Phase

Description of Effect	During the ecological surveys undertaken of the Proposed Project, no pine marten dens nor red squirrel dreys were found. However, the Site provides potential supporting habitat for Pine Marten and Red Squirrel in the form of conifer plantation. Further, these species are known to occur within the hectads G42, G43, G53, G62 and G72 in which the Proposed Project is located, as described in Section 6.3.1.5 above. No direct impacts to these species via habitat loss or mortality are anticipated. However, taking a precautionary approach, there is potential for red squirrel within the Site to build new dreys in the Site during the interim between the grant of planning and construction phase. There is potential for pine marten to create dens within the Site. Therefore, it is considered there is a potential for disturbance to these species as a result of construction works. There is no potential for significant loss of pine marten or red squirrel foraging habitat or barriers to movement as a result of the Proposed Project, due to the nature of the habitats being lost for the Proposed Project and lack of structures which could cause a barrier to movement.
Assessment of Significance prior to mitigation	No red squirrel dreys or pine marten dens were found within the Site and no significant effects to these species are predicted. Given the low likelihood, the potential for disturbance to these species during construction works is considered not significant and on a precautionary basis mitigation is provided below.
Mitigation	Prior to the commencement of construction works, the following measures will be undertaken for the avoidance of disturbance and to ensure no dreys or dens have been established since the original surveys undertaken. The following measures are in line with Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (TII 2009). ➤ From a precautionary basis, a pre-commencement survey will be undertaken by a qualified ecologist in accordance with standard best practice guidance prior to the commencement of site works to ensure that no red squirrel dreys or pine marten dens are present within or in close proximity to Proposed Project infrastructure footprint. ➤ In the event that a red squirrel drey or pine marten den is identified within the Proposed Project footprint during pre-commencement surveys, further surveys will be

	undertaken to ascertain whether the drey/den is in use. A Species Protection Plan as agreed by the project ecologist will be put in place in advance of felling works.
Residual Effect following Mitigation	Following the implementation of the mitigation proposed above, there will be no significant residual effect on pine marten or red squirrel as a result of the Proposed Project at any geographic scale.

6.4.3 Likely Significant Effects During Operational Phase

Within this section, the assessment of effects will consider the Proposed Project i.e. both the Proposed Wind Farm and the Proposed Grid Connection as a whole, where possible. Where the Proposed Wind Farm and the Proposed Grid Connection are required to be considered separately, this is identified within the assessment.

6.4.3.1 Effects on Habitats during Operation

6.4.3.1.1 *Effects on aquatic habitats and associated aquatic fauna during operation*

Table 6-20 Assessment of potential effects on Aquatic habitats and associated aquatic fauna during operation

Description of Effect	This section assesses the potential for likely significant effects on aquatic receptors including aquatic habitats (i.e., watercourses), aquatic fauna is also assessed including freshwater pearl mussel, salmon, trout, European eel, otter and other aquatic species identified during the desk study and dedicated aquatic surveys and likely to occur downstream of the Site. The following impact assessment is based on Section 9.5.3, Chapter 9: Hydrology and Hydrogeology and is summarised here in the context of ecology. There will be no potential increase in runoff along the Proposed Grid Connection Route. The works are located in the carriageway of the existing road corridor and no change in surface water runoff rates will result as the trench and road surface will be reinstated. The potential for increased surface water runoff is the primary potential impact during the operational phase of the Proposed Wind Farm. Progressive replacement of the vegetated surface with impermeable surfaces will decrease the permeability of the ground within the Proposed Wind Farm footprint (i.e., turbine bases, hardstandings, 110kV substation and to a lesser extent the new access tracks). It should be noted that approximately 8.9km of the Proposed Wind Farm roads already exist and are proposed for upgrade. The permeability along the internal underground cabling route through the Proposed Wind Farm will not be significantly altered, as the fill material will not be compacted. The increase in runoff from most of the development catchment will be imperceptible and this is before mitigation measures will be put in place. This water balance assessment demonstrates that even in the absence of mitigation, the potential to alter the water balance of the Site or downstream hydrology/morphology is imperceptible.
Assessment of Significance prior to mitigation	Significant effects on water quality are not anticipated at any geographic scale during the operation of the Proposed Project.

Mitigation	Mitigation by design: The proposed design measures will prevent road surface and other hardstand areas acting as preferential flowpaths. All development site runoff will be collected, attenuated, treated and then released in a diffuse and regular manner that does not significantly change the natural drainage regime/hydrology of the site. The operational phase drainage system of the Proposed Project will be installed and constructed in conjunction with the road and hardstanding construction work as described below and as shown on the drainage drawings (Appendix 4-7) submitted with this planning application: ➤ Interceptor drains will be maintained up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it will be re-distributed over the ground by means of a level spreader; ➤ Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling; ➤ On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains; ➤ Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; These measures will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstands and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, check dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment.
Residual Effect following Mitigation	Proposed Wind Farm No potential for residual significant effect on aquatic habitats or species as a result of operation of the Proposed Wind Farm is predicted. Proposed Grid Connection Route No potential for residual significant effect on aquatic habitats or species as a result of operation of the Proposed Grid Connection Route is predicted.

6.4.3.2 Effects on Fauna During Operation

Potential for significant effects on bat species resulting from the operation of the Proposed Project were identified and therefore, these are identified as KERs during the operational phase.

6.4.3.2.1 Assessment of Potential Effects on Bats during Operation

Potential effects on bats during operation relate primarily to collision mortality, barotrauma and other turbine-related injuries. Potential disturbance or displacement effects associated with operational lighting and noise were also considered; however, as outlined in Section 5.4 of the Bat Report, included as Appendix 6-2 of this chapter, these are not identified as significant effect pathways for the Proposed Project. These effects were assessed with reference to baseline bat activity, species-specific collision vulnerability, site-risk characteristics and the proposed operational mitigation strategy.

Table 6-21 Assessment of Potential Effects on Bats

Description of Effect	As per NatureScot Guidance (2021), the potential for operational effects on local bat populations as a result of Collision mortality, barotrauma and other injuries and operational phase lighting is assessed. The following high-risk species were recorded during the dedicated surveys: > Leisler's bat, > Common pipistrelle > Soprano pipistrelle > Nathusius' pipistrelle As per NatureScot guidance there is no requirement to complete an Overall Risk Assessment for low-risk species. During the extensive suite of surveys undertaken the following low risk species were recorded: > Myotis spp. > Brown long-eared bat Overall activity levels for brown long-eared bat and <i>Myotis spp.</i> were generally low. While there was Moderate median activity recorded for brown long-eared bat at D08 associated with the Proposed Turbine T6 in autumn, the overall activity levels for the species were low; therefore, no significant collision related effects are anticipated. Activity levels for these species will continue to be assessed during operational monitoring following the implementation of best practice mitigations provided. Further mitigation will be implemented after Year 1 if deemed necessary. The Proposed Project is located on a site of overall <i>Low</i> site risk in accordance with NatureScot (2021), reflecting the generally low suitability of the Site for commuting and foraging bats, the predominantly open grassland, peatland and commercial forestry character of the Site, and the limited extent of linear features. The Proposed Project is classified as a medium-scale development, resulting in an overall <i>Low</i> site risk score. For the high collision risk species, overall collision risk was assessed using the NatureScot (2021) framework, based on a cross-tabulation of site risk and bat activity levels. Site-level collision risk for Leisler's bat, common pipistrelle and soprano pipistrelle was assessed as <i>Low</i> at typical activity levels and <i>Medium</i> at peak activity levels. Nathusius' pipistrelle was assessed as <i>Low</i> at both typical and peak activity levels. Elevated activity was recorded once at detector locations D011 (T9) where high median activity of soprano pipistrelles was recorded during autumn 2024. These localised increases in activity were associated with nearby treelines and hedgerows and do not indicate consistently elevated activity across the wider Site. Post-construction monitoring data from the Existing Wind Farm provide additional context for collision risk. At Dunneill Wind Farm, estimated mortality was 0.55 bats per turbine per year, indicating relatively low collision levels. In contrast, higher mortality rates were recorded at Kingsmountain Wind Farm, estimated at approximately 2.02 bats per turbine per year. Recorded fatalities across both sites were dominated by pipistrelle species, with two records of Leisler's bat. Fatalities were primarily recorded during the active bat season (May–September), with a concentration in late spring and summer months. These findings indicate that, while baseline activity levels suggest Low to Medium collision risk, actual collision mortality can vary across turbines and locations within the Proposed Wind Farm. This supports the need for a precautionary approach, including post-construction monitoring and adaptive mitigation measures if required.
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	These results are broadly consistent with the species identified as being at highest collision risk within the Proposed Project, namely pipistrelle species and Leisler's bat, and provide site-specific evidence that these species are susceptible to turbine-related mortality within the existing wind farm. Operational noise and lighting were also considered. The Proposed Project does not include Battery Energy Storage System (BESS) infrastructure or other significant sources of ultrasonic emissions. Operational noise will be limited primarily to low-frequency audible noise generated by turbines and substation infrastructure and is not considered likely to interfere with bat echolocation or behaviour. Lighting will be limited in extent and duration and will be controlled through a sensitive lighting design to avoid illumination of important bat habitats and commuting routes
Assessment of Significance prior to mitigation	No significant collision-related effects are anticipated for <i>Myotis</i> spp., brown long-eared bat or lesser horseshoe bat, as these species are considered to be at low collision risk and were recorded at low activity levels. For Leisler's bat, common pipistrelle and soprano pipistrelle, collision risk was assessed as <i>Low</i> at typical activity levels and <i>Medium</i> at peak activity levels at site level. Nathusius' pipistrelle was assessed as <i>Low</i> at both typical and peak activity levels. While the overall site risk is classified as <i>Low</i> and elevated activity is limited to locations associated with localised habitat features, these species are considered to be at higher collision risk due to their ecological traits and use of the Site. In accordance with Bat Conservation Ireland (2026) guidance, <i>Medium</i> risk at peak activity levels triggers the requirement for site-specific mitigation, particularly in relation to Leisler's bat. In the absence of mitigation, there is potential for collision mortality to result in negative effects on Leisler's bat, common and soprano pipistrelle at a local geographic scale. On this basis, the potential operational effect is considered to be <i>potentially significant at a local geographic scale</i> in the absence of mitigation.
Mitigation	Detailed mitigation measures in relation to bats is provided in Section 6 of the Bat Report in Appendix 6-2 and summarised below. Mitigation measures are proposed together with post-construction monitoring: ➤ Introduce felling buffers around turbines ➤ Implement blade feathering as a standard ➤ Lighting and noise restrictions ➤ A minimum of three years operational monitoring to assess changes in bat activity patterns post construction and to monitor the implementation of the mitigation strategy. ➤ Adaptive mitigation strategy based on the results of the post-construction monitoring In addition, as per Section 6.2 of the Bat Report, an adaptive bat monitoring plan will be implemented for three years post construction, to assess the ongoing health on local population of bats within the Site.
Residual Effect following Mitigation	Following the implementation of the monitoring and mitigation described above, there is no potential for significant residual effects on bat species during operation of the Proposed Project.

6.4.4 Likely Significant Effects During Decommissioning Phase

Decommissioning is fully described in **Section 4.10** of **Chapter 4** and in **Appendix 4-6** Decommissioning Plan.

Upon decommissioning of the Proposed Wind Farm, the wind turbines would be disassembled. All above ground turbine components would be separated and removed off-site for recycling. Turbine and mast foundations would remain underground and would be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant temporary environment nuisances such as noise, dust and/or vibration. Site roadways will be used during the operational phase by farm machinery and therefore will be retained where requested post-decommissioning to facilitate these activities.

It is anticipated that there will be no additional habitat loss associated with the decommissioning of the Proposed Project and therefore there will be no significant effects in this regard. In addition, the removal of the infrastructure will involve similar operations to those involved in construction but without the large-scale earth moving or excavations as the turbine bases and roads etc. will be left in place. These works would therefore be of a smaller scale but would have similar impacts on ecology to those experienced during construction. There would be no additional or ancillary impacts associated with the decommissioning phase.

The same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase.

6.4.5 Likely Significant Effects on Designated Sites

6.4.5.1 European Designated Sites

The Proposed Wind Farm is located completely outside of the boundary of any European Site.

In relation to European sites, an AA Screening Report and NIS have been prepared to provide the competent authorities with the information necessary to complete an AA Screening for the Proposed Project in compliance with Article 6(3) of the Habitats Directive.

As per the EPA Guidance (2022), “A biodiversity section of an EIAR, for example, should not repeat the detailed assessment of potential effects on European sites contained in documentation prepared as part of the Appropriate Assessment process, but it should refer to the findings of that separate assessment in the context of likely significant effects on the environment, as required by the EIA Directive”. This section provides a summary of the key assessment findings with regard to SACs and SPAs.

The Stage 1 Screening Assessment concluded as follows:

‘It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Project would be likely to have a significant effect on the following European Sites:

Ox Mountains Bogs SAC

Ballysadare Bay SPA

Ballysadare Bay SAC

Unshin River SAC

As a result, an Appropriate Assessment is required, and a Natura Impact Statement has been prepared in respect of the Proposed Project.

The findings presented in the NIS are that:

‘Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction and operation of the Proposed Project does not adversely affect the integrity of European sites.

Therefore, it can be objectively concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site’.

6.4.5.2 Nationally Designated Sites

The following Nationally Designated Sites were identified as being within the Likely Zone of Influence of the Proposed Project:

- Ox Mountains Bogs pNHA [002006]
- Dunneill River pNHA [001664]
- Easky River pNHA [001665]
- Ballysadare Bay pNHA [000622]
- Unshin River pNHA [001898]

With the implementation of the mitigations and best practice procedures for both the construction and operational phases of the Proposed Project, as described in **Section 6.4.2** and **Section 6.4.3** respectively, which aim to negate potential impacts from deterioration of surface water quality, as well as those in Chapter 9: Hydrology & Hydrogeology and in the CEMP (**Appendix 4-5**), no potential for significant effects on these Nationally Designated Sites is anticipated.

6.5 Cumulative Impact Assessment

The Proposed Project was considered in combination with other plans and projects in the area that could result in cumulative impacts on the Key Ecological Receptors (KERs) identified in **Table 6-9** of this report, including European and Nationally Designated Sites. This included a review of online Planning Registers and served to identify past, present and future plans and projects, their activities and their predicted environmental effects. The projects considered are listed in Appendix 2-3 of Chapter 2 (Background) of this EIAR. The full list of projects has been considered and relevant ones from this list are discussed in this section.

6.5.1 Assessments of Projects

As described in **Section 2.9** of the EIAR, relevant projects have been assessed in-combination with the Proposed Project and include planning applications in the vicinity of the Site, within the ZOI of all habitats and species considered in this report and include other wind energy applications within the wider area. These have not been repeated here to reduce the duplication of information within this EIAR. However, they have been fully considered in the assessment with further detail provided below. In addition, **Section 6.5.4** concludes on their potential for impact on biodiversity.

Table 6-22 below provides the cumulative study areas for individual EIAR topics that are also relevant in relation to ecological receptors i.e., hydrological connectivity is important for assessing potential for effects on designated sites.

Potential for cumulative effects in relation to birds is assessed separately within **Chapter 7** of this EIAR.

Table 6-22 Cumulative Study Areas in relation to ecological receptors (birds are assessed separately within Chapter 7 of this EIAR)

Individual Topic	Maximum Extent	Justification
Biodiversity (excluding birds)	Proposed Wind Farm 10km from the Proposed Wind Farm Proposed Grid Connection Route 250m from the Proposed Grid Connection underground electrical cabling route	A 10km buffer of the Site is used as is recommended for the desktop study and cumulative assessment by NatureScot Guidelines 2021 in relation to bats (Section 4). This extent is considered more than adequate to assess potential for cumulative effects on other terrestrial ecological receptors. The geographical boundary for terrestrial ecological aspects, i.e. habitats and fauna (excluding bats and birds), is 250m from the Proposed Grid Connection Route. In addition, in relation to aquatic habitats and species, the cumulative assessment boundary for hydrological impacts has also been considered, as described below.
Water	Proposed Wind Farm WFD Catchment for large infrastructural developments such as wind farms, energy and public transport developments. River Sub Basins for all smaller proposed, permitted or existing plans or projects (i.e. private and commercial type developments). Proposed Grid Connection Route: Within a 250m buffer zone of the Proposed Grid Connection Route.	Regional surface water catchments are used for cumulative impact assessment with regard large infrastructural developments such as wind farms, energy and public transport developments. The potential for cumulative effects for these developments likely exists on a regional catchment scale (i.e. significant works likely existing in several sub-basins). Regionally the Proposed Wind Farm is located in the Sligo Bay WFD catchment within Hydrometric Area 35. Therefore, other wind-farm developments are considered within the Sligo Bay Catchment for cumulative effects. River Sub Basins are used for smaller developments (i.e. private & commercial type developments). These developments are not likely to present a significant cumulative impact risk on a regional catchment scale as any effects would likely be imperceptible as a result of the setback distances and localised nature of the associated works. Given the nature and scale of the proposed works and the lack of hydrological cumulative impact potential beyond the river sub basin scale, the Water cumulative study area is defined by river sub basins in which the Proposed Wind Farm is located. The majority of the Proposed Wind Farm is mapped within the Dunmorán sub-catchment (Dunmorán_SC_010). Six Turbines in the west of the Proposed Wind Farm are located in the Easky sub-catchment (Easky_SC_010). Within the Easky sub-catchment, the Proposed Wind Farm is mapped in 3 no. WFD river sub-basins: the Buncrowey_010 WFD river sub-basin, the Easky_020 and the Easky_030 WFD river sub-basin. Within the Dunmorán sub-catchment, the Proposed Wind Farm is located in the Dunneill_010, Lugdoon stream_010 and the Doonbeakin_010 WFD river sub-basin

		Due to the narrow nature of the Proposed Grid Connection Route trench a 250m buffer zone is an appropriate scale when considering potential cumulative effects on the water environment.
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6.5.1.1 Other Wind Farm Projects

The existing Dunneill Wind Farm and Kingsmountain Wind Farm form part of the Proposed Project and their impact on ecological receptors is assessed fully within Section 6.4, they are therefore not assessed again within this chapter.

For the purposes of this cumulative assessment, Wind Farms within a 10-kilometre radius of the Proposed Project area are listed below in **Table 6-23 below**. In total, 5 no. applications relating to wind energy were identified within 10km of the Proposed Wind Farm. Four of the Wind Farms listed below are already operational while one (Firlough) is permitted but not yet constructed.

Given the small scale and limited impact of single / domestic turbines, no potential for significant cumulative effect is predicted in relation to such developments.

In terms of the hydrological study area, there are 5 no. existing wind farm developments in the Easky River catchments. Because these wind farms are existing and operational there is no potential for construction phase overlaps with the Proposed Project. There is only one permitted wind farm (Firlough WF), but only 1 no. of its proposed turbines is located in the Easky River catchments and cumulative effects are not likely even if construction phase overlaps with the Proposed Project. Therefore, it can be concluded with confidence (based on the information available to date) that the Proposed Project is not likely to contribute to cumulative effects in terms of water quality with regard other wind farm developments in the hydrological study area.

Table 6-23 Wind Farm Projects Within 10km of the Proposed Project

County	Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)	WFD Catchment
Sligo	Black Lough Wind Farm	Existing	4	4.6km	Sligo Bay
Mayo	Carrowleagh 1 Wind Farm	Existing	13	6.3km	Sligo Bay and Moy & Killala Bay
Sligo	Cloonkeelaun Wind Farm (Carrowleagh WF Extension)	Existing	3	6.6km	Sligo Bay
Sligo	Cloonkeelaun 2 Wind Turbine	Existing	2	6.6km	Sligo Bay and Moy & Killala Bay
Mayo	Firlough Wind Farm	Permitted	13	9.1km	Sligo Bay and Moy & Killala Bay

6.5.1.1.1 Black Lough Wind Farm

Black Lough is an existing wind farm comprising 4 no. turbines located approx. 4.6km from the Proposed Wind Farm. It is located on agricultural grasslands and adjacent to cutover peatlands. Given that this wind farm is already operational there is no potential for cumulative construction phase effects. Given the mitigations that are in place for the Proposed Wind Farm as set out in this report, the anticipated residual effect, as well as the proposed Biodiversity Management and Enhancement Plan,

no potential for cumulative significant effect in-combination with the Black Lough Wind Farm was identified.

6.5.1.1.2 **Carrowleagh 1 Wind Farm**

Carrowleagh is an operational 13-turbine wind farm located approx. 6.3km southwest of the Proposed Wind Farm. Given that this wind farm is already operational there is no potential for cumulative construction phase effects. The wind farm is located in the vicinity of peatland habitats. Given the mitigations that are in place for the Proposed Wind Farm as set out in this report, the anticipated residual effect, as well as the proposed Biodiversity Management and Enhancement Plan, no potential for cumulative significant effect in-combination with the Carrowleagh Wind Farm was identified.

6.5.1.1.3 **Cloonkeelaun Wind Farm (Carrowleagh WF Extension)**

Cloonkeelaun Wind Farm (Carrowleagh WF Extension) is an operational 3-turbine wind farm located approx. 6.6km southwest of the Proposed Wind Farm. Given that this wind farm is already operational there is no potential for cumulative construction phase effects. The wind farm is located in the vicinity of peatland habitats. Given the mitigations that are in place for the Proposed Wind Farm as set out in this report, the anticipated residual effect, as well as the proposed Biodiversity Management and Enhancement Plan, no potential for cumulative significant effect in-combination with the Carrowleagh Wind Farm was identified.

6.5.1.1.4 **Cloonkeelaun 2 Wind Farm**

Cloonkeelaun 2 Wind Farm is an operational 2-turbine wind farm located approx. 6.6km southwest of the Proposed Wind Farm. Given that this wind farm is already operational there is no potential for cumulative construction phase effects. The wind farm is located in the vicinity of peatland habitats. Given the mitigations that are in place for the Proposed Wind Farm as set out in this report, the anticipated residual effect, as well as the proposed Biodiversity Management and Enhancement Plan, no potential for cumulative significant effect in-combination with the Carrowleagh Wind Farm was identified.

6.5.1.1.5 **Firlough Wind Farm**

Firlough Wind Farm is a permitted but not yet constructed wind farm comprising 13 turbines, adjacent to the existing Carrowleagh wind farm. It is located approx. 9.1km southwest of the Proposed Wind Farm and is located on cutover peatland habitats. The planning documents and EIAR for this project were reviewed online³⁷. Given the mitigations that are in place for the Proposed Wind Farm as set out in this report, the anticipated residual effect, as well as the proposed Biodiversity Management and Enhancement Plan, no potential for cumulative significant effect in-combination with the Firlough Wind Farm was identified.

6.5.1.2 **Other EIA Projects**

A 20KV grid connection from the permitted Black Lough wind farm at Tawnamore, County Sligo (Ref. No. PL17/93) to the permitted control building at Cloonkeelaun (Ref. No. PL16/422) is proposed within 5km of the Proposed Project. the online planning documents for this project were reviewed³⁸. Given the mitigations that are in place for both the Proposed Wind Farm and the Proposed Grid Connection Route as set out in this report, no potential for cumulative significant effect in-combination with this grid connection project was identified.

³⁷ <https://firloughwindfarmplanning.com/environmental/>

³⁸ <https://www.eplanning.ie/SligoCC/AppFileRefDetails/19160/0>

6.5.1.3 Projects Within 250m of Proposed Grid Connection Route

A total of 15 no. planning applications were identified within 250m of the Proposed Grid Connection Route. Many of these are small scale and comprise of change of use of commercial premises, and construction of single dwellings and extensions. In addition, the following projects were identified:

Planning ref: 2360294 - Demolition of the existing agricultural buildings on site, Construction of 9 no. residential units comprising of 3 no. - type A – 2 bed semi-detached units, 3 no. - type B - 3 bed semi-detached units, 2 no. - type C – 5 bed semi-detached units and 1 no. – type D – 5 bed detached unit, Pedestrian, cycle and vehicular access/egress with the existing public road to the west of the site, All car parking, landscaping, boundary treatments, pedestrian links, public lighting, service connections and all associated site works.

Planning ref: 22351 - The 10 year permission for the construction and operation of a synchronous condenser facility. The facility will be a fenced compound ca. 1.196ha in size. The development will have a 30 year operational lifetime and will consist of a synchronous condenser.

Planning ref: 2360157 - a) Proposed extensions totalling circa. 595m² to the existing Sligo Junction Filling Station consisting of additional seating, stores, food prep and sales areas, additional toilet facilities, staff welfare facilities and relocated drive thru hatch b) Change of Use of circa 30m² of existing shop floor area to off - licence c) Revised internal layout of existing premises d) Proposed external self-service launderette machines. e) Relocation of car wash facility f) Small scale manufacturing facility circa 740m² g) Construction of all ancillary site features including service yard, service connections, landscaping, EV charging substation, site layout alterations and parking. And associated site works.

Given the small scale of the works associated with the construction of the Proposed Grid Connection Route, which will be constructed entirely in-road, and given the detailed water quality mitigation measures outlined within this report, no potential for significant cumulative effect has been identified.

6.5.2 Existing Habitats and Land Uses

The potential for significant cumulative effects to arise as a result of the Proposed Project in-combination with adjacent land uses was assessed. Land uses in the vicinity of the Proposed Wind Farm comprise forestry and turbary activity, as well as agriculture in the wider area.

Forestry practices including rotational forestry felling is likely to continue within the Proposed Project site. However, with the water quality mitigations set out in this report which includes for mitigation of impacts associated with forestry felling, there is no potential for significant cumulative effect in-combination with ongoing forestry operations. Furthermore, given the relatively small scale of the footprint of the Proposed Project relative to the scale of ongoing rotational plantation felling operations, no significant cumulative effects with regard to habitat loss were identified.

Private peat cutting on turbary plots will likely continue in the vicinity of the Site and in the wider area. The construction phase of the Proposed Project is likely to interact with these turbary activities and result in a deterioration of downstream surface water quality through the emissions of elevated concentrations of suspended solids and ammonia. However, the areas of private peat cutting will be small, significantly limiting the potential for cumulative effects to arise with the Proposed Project. Nevertheless, the mitigation measures detailed for the construction, operational, and decommissioning phases of the Proposed Project will ensure the protection of downstream surface water quality. Furthermore, with the proposed Biodiversity Management and Enhancement Plan in place as part of the Proposed Project, which includes for enhancement of peatland areas and cessation of turbary, no potential for significant cumulative effect with regard to loss of peatland habitat has been identified.

Agricultural practices such as the movement of soil and the addition of fertilizers and pesticides can lead to nutrient losses and the entrainment of suspended solids in local surface watercourses. This can have a negative effect on local and downstream surface water quality. In an unmitigated scenario the Proposed Project would have the potential to interact with these agricultural activities and contribute to a deterioration of downstream surface water quality through the emissions of elevated concentrations of suspended solids and ammonia. However, with the mitigation measures detailed in this EIAR for the protection of water quality during construction, operation and decommissioning phases of the Proposed Project, there is no potential for significant cumulative effect.

6.5.3 Cumulative Impacts and Compliance with Development Plans

The following development plans have been reviewed and taken into consideration as part of this assessment:

- Sligo County Development Plan 2024-2030
- 2025-2030 County Sligo Biodiversity Action Plan
- 4th National Biodiversity Action Plan 2023-2030
- Regional Spatial and Economic Strategy for the Northern and Western Region (2020-2032)

The review focused on policies and objectives that relate to designated sites for nature conservation, biodiversity and protected species. Policies and objectives relating to the conservation of peatlands and sustainable land use were also reviewed, particularly where the policies relate to the preservation of surface water quality. An overview of the search results with regard to plans is provided in **Table 6-24**.

Table 6-24 Development Plan Review

Plan	Key Policies/Issues/Objectives Directly Related to Biodiversity and Sustainable Development in The Zone of Influence	Assessment of development compliance with policy
Sligo County Development Plan 2024-2030	➤ P-BD-1 Protect, conserve, enhance and sustainably manage the natural heritage, biodiversity, geological heritage, landscape and environment of County Sligo. ➤ P-BD-2 Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under EU Habitats Directive (92/43/EEC), the EU Birds Directive (2009/147/EC), European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011) as amended, Flora (Protection) Order 2015, the Wildlife Act 1976 (as amended), and the Wildlife (Amendment) Act 2000 as amended, including all statutory instruments made under each act. ➤ P-BD-3 Ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professionals, in accordance with best practice guidelines, taking full account of the precautionary principle where uncertainty exists. ➤ P-BD-4 Minimise adverse impacts of proposed developments on existing habitats (whether designated or not) by including mitigation and/or compensation measures as appropriate. This shall comprise the retention and enhancement of all possible existing habitats, vegetation and breeding sites in the early design stages of the development. ➤ P-BD-7 Require development proposals on sites of 0.5 ha and over to retain existing high quality ecological features and demonstrate a site-specific biodiversity net gain (BNG), indicating how the approach to development will leave the natural environment in a measurably better state that it was beforehand. [...] The biodiversity net gain (BNG) shall consist of the enhancement and restoration of existing habitats or the creation of new areas for wildlife, where the biodiversity value of the site is low or non-existent (e.g. certain brownfield sites). ➤ P-DSNC-1 Protect and maintain the conservation status of all natural heritage sites designated or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), Ramsar Sites, Statutory Nature Reserves, as identified by the Minister for Culture, Heritage and the Gaeltacht, and any other sites that may be proposed for designation during the lifetime of this Plan. In addition, the Council will identify, maintain and develop non-designated areas of high nature conservation value which serve as linkages or 'stepping stones' between protected sites in accordance with Article 10 of the Habitats Directive. ➤ P-DSNC-4 Ensure that all development proposals are subject to the process of Screening for Appropriate Assessment and subsequent stages of Appropriate Assessment, as relevant, carried out to the satisfaction of the Planning Authority, in consultation with National Parks and Wildlife Service, as appropriate. ➤ P-PS-1 Ensure that development does not have a significant adverse impact incapable of satisfactory mitigation on plant, animal or bird species protected by law.	The Sligo County Development Plan (SCDP) was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites. A comprehensive AA Screening and NIS has been submitted along with this application in which impacts with regard to European Sites is assessed. In line with the SCDP the BMEP associated with the Proposed Project sets out measures to enhance biodiversity within the Proposed Wind Farm. As a result, a significant biodiversity net gain in terms high quality peatland habitat within the Proposed Enhancement Area is proposed. On review of the SCDP, no potential for cumulative effect when considered in combination with the Proposed Project was identified.

	➤ P-PS-5 Require all new developments to incorporate habitat facilities for wildlife species, including Swifts, in or on buildings or their facades, where appropriate. ➤ P-NCODS-1 Minimise the impact of new development on habitats of natural value that are key features of the County's ecological network. Developments likely to have an adverse effect on recognised sites of local nature conservation importance will be required to demonstrate the impacts on the ecological value of the site and will not be approved unless it can be clearly demonstrated that there are reasons for the development that outweigh the need to safeguard the nature conservation value of the site. ➤ P-NCODS-2 Ensure that development proposals, where relevant, improve the ecological coherence of the Natura 2000 network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the Habitats Directive. ➤ P-NCODS-3 Ensure that proposals for development protect and enhance biodiversity, wherever possible, by minimising adverse impacts on existing habitats and by including mitigation and/or compensation measures, as appropriate, which ensure that biodiversity is enhanced. ➤ P-NCODS-4 Applications for development that is likely to have significant impact on natural habitats or species shall be accompanied by an ecological impact assessment (EcIA), to ensure that such proposed development will not affect the integrity and conservation value of important biodiversity sites. ➤ -WET-2 Ensure that an ecological assessment at an appropriate level (including EIA, where appropriate) is undertaken in conjunction with proposals involving drainage, reclamation or infilling of wetland habitats. ➤ P-WHT-1 Protect woodlands, hedgerows and trees from development that would impact adversely upon them. Promote new tree and woodland planting and the enhancement of existing hedgerows by seeking increased coverage, in conjunction with new development using native species of local provenance, where possible. ➤ P-WHT-3 Require the planting of native broadleaved species, and species of local provenance, in new developments and as part of the Sligo County Council's own landscaping works. ➤ P-WTH-4 Encourage the retention of hedgerows and other distinctive boundary treatments in rural areas and prevent loss and fragmentation where practically possible. If removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, reinstatement of the same type of boundary shall be required. ➤ P-WHT-6 Protect native and semi-natural woodlands, groups of trees and individual mature trees in line with best practice and encourage their effective management and retention. Tree surgery rather than felling will be required, where possible, when undertaking, approving or authorising development. ➤ P-INV-1 Prevent and control the spread of invasive plant and animal species within the county. ➤ P-INV-2 Require all development proposals to address the presence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan, in compliance with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015. ➤ P-INW-1 Protect rivers, streams and other water courses and their associated Core Riparian Zones (CRZs) from inappropriate development and maintain them in an open state, capable of providing suitable habitats for fauna and	
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	flora. Structures (e.g., bridges) crossing fisheries waters shall be clear-span and shall be designed and built in consultation with Inland Fisheries Ireland. ➤ P-INW-5 Ensure that proposed developments do not adversely affect groundwater resources and groundwater-dependent habitats and species. ➤ O-INW-2 Require that runoff from a developed area does not result in deterioration of downstream watercourses or habitats, and that pollution generated by a development is treated within the development area prior to discharge to local watercourses. ➤ P-WQ-2 Promote compliance with environmental standards and objectives established for surface and groundwater bodies under the Water Framework Directive (WFD). Applications for development must demonstrate that such proposed development would not adversely affect the ability of any water body to meet its objectives under the Water Framework Directive, individually (as a result of the proposed development) or cumulatively (in combination with other developments). Evidence to this effect may include correspondence from Uisce Eireann. ➤ P-WQ-4 Prohibit any development which is likely to lead to the deterioration of the status of any water body (water quality). ➤ P-EN-1 Support the sustainable development, upgrading and maintenance of energy generation, transmission, storage and distribution infrastructure, to ensure the security of energy supply and provide for future needs, as well as protection of the landscape, natural, archaeological and built heritage, and residential amenity. ➤ P-EN-2 Facilitate the production of energy from renewable sources and secure the maximum potential from wind energy resources within County Sligo, including the augmentation, upgrading and improvements to existing wind farms, subject to strict location, siting and design criteria. All such development proposals will be assessed for their potential impact on urban and rural communities, Natura 2000 sites, designated Sensitive Rural Landscapes, Visually Vulnerable Areas, Scenic Routes and scenic views, and all other normal planning considerations.	
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2025-2030 County Sligo Biodiversity Action Plan	➤ A.17 Promote the use of native trees, hedgerows and plants within SCC, communities and organisations. ➤ K.8 Seek opportunities to enhance connectivity for wildlife across the ecological network through partnerships, land use planning and community engagement. ➤ Pr.34 Promote the use of nature-based solutions for new developments and other projects. ➤ Par.46 Develop partnerships with State Agencies, landowners and organisations to support community actions for peatland management and restoration.	The County Sligo Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to developments. In line with the County Sligo Biodiversity Action Plan the BMEP associated with the Proposed Project sets out measures to enhance biodiversity within the Proposed Wind Farm. As a result, a significant biodiversity net gain in terms high quality peatland habitat within the Proposed Enhancement Area is proposed. On review of the County Sligo Biodiversity Action Plan, no potential for cumulative effect when considered in-combination with the Proposed Project was identified.
Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020- 2032	➤ Regional Policy Objective 5.5 –_Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European Sites and their integrity. ➤ Regional Policy Objective 5.7 -_Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate	The Strategy was reviewed, with particular reference to Policies and Objectives that relate to biodiversity. The Proposed Project is in compliance with the objectives of the Strategy and there will be no net loss to biodiversity as a result of the Proposed Project. There will be a net gain. On review of the Strategy, no potential for cumulative effect when considered in-combination with the Proposed Project was identified.

Ireland's 4th National Biodiversity Action Plan 2023-2030	➤ Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan. ➤ Objective 2: Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government. ➤ Objective 3: Secure Nature's Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy. ➤ Objective 4: Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts. ➤ Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.	The National Biodiversity Action plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites as a result of the development. Best practice preventative measures will be implemented to avoid effects on European Sites. There will be no adverse effects on receptors listed as QIs/SCIs of European Sites, as a result of the Proposed Project.
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6.5.4 Conclusion of Cumulative Effects Assessment

The residual construction, operational and decommissioning impacts of the Proposed Project are considered cumulatively with other plans and projects as described in **Section 6.5**. Particular focus has been placed on those plans and projects that are in closest proximity to the Proposed Project and those that could potentially result in cumulative impacts on designated sites, surface water, habitats and species.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Development.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to Biodiversity.

6.6 Conclusion

The avoidance principle has been applied as part of the Proposed Project and as such good quality, intact Annex I habitats have been avoided. No significant individual or cumulative residual effects as a result of the Proposed Project in relation to disturbance, displacement, mortality of faunal species, loss of faunal habitat or deterioration in water quality has been identified at any geographic scale. The proposed Biodiversity Management and Enhancement Plan in place as part of the Proposed Project will result in the net gain of restored peatland habitat and enhancement of blanket bog areas.

The potential for effects on the European Sites is fully described in the NIS that accompanies this application. The NIS concludes that in view of best scientific knowledge and on the basis of objective information, the Proposed Project either individually or in combination with other plans or projects, is not likely to have adverse effects on the European Sites that were assessed as part of the Appropriate Assessment process. Similarly, with the prescribed mitigations in place, there is no potential for impact on any nationally designated site.

Provided that the Proposed Project is constructed and operated in accordance with the design, best practice and mitigation that is described within this application, significant individual or cumulative effects on ecology are not anticipated at any geographical scale.

6.7 EIA Classification Summary

A summary of all identified impacts for the Proposed Project relating to biodiversity is provided in the table below.

Table 6-25 Impact Assessment Classification Summary

Topic	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
European Sites	Effects on European Sites are addressed in the NIS. The NIS finds that it can be objectively concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.			

Nationally Designated Sites	Indirect, negative, temporary, significant effect	Section 6.4.5.2 Section 6.4.2.1.1	No significant residual effect at any geographic scale	Not Significant
Aquatic Habitats and Related Species	Indirect, negative, temporary, significant effect	Section 6.4.2.1.1	No significant residual effect at any geographic scale	Not Significant
Upland Blanket Bog (PB2)	Direct and indirect, negative, permanent, significant effect	Section 6.4.2.1.2	No significant residual effect at any geographic scale	Not Significant
Cutover bog (PB4)	Direct, negative, permanent, significant effect	Section 6.4.2.1.3	No significant residual effect at any geographic scale	Not Significant
Wet heath (HH3)	Direct and indirect, negative, permanent, significant effect	Section 6.4.2.14	No significant residual effect at any geographic scale	Not Significant
Geyer's Whorl Snail	Habitat Degradation: Permanent, significant effect	Section 6.4.2.2.2	No significant residual effect at any geographic scale	Not Significant
Badger	No significant effect	Section 6.4.2.2.3	No significant residual effect at any geographic scale	Not Significant
Otter	Habitat Degradation: Temporary, significant effect Disturbance: Temporary, significant effect	Section 6.4.2.2.4	No significant residual effect at any geographic scale	Not Significant
Bats	No significant effect	Section 6.4.2.2.1	No significant residual effect at any geographic scale	Not Significant

Pine Marten and Red Squirrel	No significant effect	Section 6.4.2.2.5	No significant residual effect at any geographic scale	Not Significant
Operational Phase				
European Sites	Effects on European Sites are addressed in the NIS. The NIS finds that it can be objectively concluded that the Proposed Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.			
Nationally Designated Sites	No significant effect	Section 6.4.5.2 Section 6.4.2.1.1	No significant residual effect at any geographic scale	Not Significant
Aquatic Habitats and Related Species	No significant effect	6.4.3.1.1	No significant residual effect at any geographic scale	Not Significant
Bats	No significant effect	6.4.3.2.1	No significant residual effect at any geographic scale	Not Significant
Decommissioning Phase				
Biodiversity	The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.	Section 6.4.4	No significant residual effect at any geographic scale	Not Significant