6. BIODIVERSITY

6.1 Introduction

This chapter assesses the likely significant effects (both alone and cumulatively with other plans and 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. The residual effects 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 Acts (as amended) and EU Habitats Directive 92/43/EEC. Impacts on avian receptors are considered in Chapter 7 of this EIAR. The full description of the Proposed Project is provided in Chapter 4 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 development: construction phase, operational phase and decommissioning phase. Potential Cumulative effects in combination with other plans and projects are also fully assessed.
- Proposed mitigation and best practice measures to avoid or reduce 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.

The following defined terms are utilised in this chapter:

- Where the 'Proposed Project' is referred to this encompasses the entirety of the project for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hard-standing areas, meteorological mast, access roads, temporary construction compound, underground cabling, peat and spoil management, site drainage, biodiversity enhancement, turbine delivery route (TDR) accommodation works and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4 of this EIAR.
- Where the 'Proposed Grid Connection' is referred to the 110kV onsite substation, battery energy storage system and 110kV underground cabling connecting to the existing Cloon 110kV substation, and all ancillary works and apparatus. The Proposed Grid Connection is described in detail in Chapter 4 of this EIAR.
- Where the 'Site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-1 of the EIAR and encompasses an area of approx. 355 hectares.
- Where the 'Proposed Wind Farm site' is referred to, this refers to the portion of the Site surrounding the Proposed Wind Farm but excluding the portion of the Site surrounding the Proposed Grid Connection underground cabling route.

In addition:

- The 'EIAR Site Boundary' comprises the entire area shown in Figures 6-1 and 6-2 and is also referred to as the 'study area' in this Chapter.
- "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.

6.1.1 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 animals 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. NHAs are legally protected from damage from the date they are formally proposed for designation[1]. A list of pNHAs were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, these sites are considered to be of significance for wildlife and habitats as they may form statutory designated sites in the future.

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 the 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**"). 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

[1] https://www.npws.ie/protected-sites/nha

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.

Such policies have informed the evaluation of ecological features recorded within the EIAR Site Boundary and the ecological assessment process.

In addition, the National Biodiversity Data Centre published guidance on Pollinator-friendly management of Wind Farms[2]. This identifies an evidence-based action plan for wind farm operators that can help pollinators by employing changes to existing management strategies.

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 sites[3]) 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

[2] https://pollinators.ie/wp-content/uploads/2022/12/Wind-Farm-Pollinator-Guidelines-2022-WEB.pdf
[3] *The term Natura 2000 network was replaced by 'European site' under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.*

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, cSACs[4], SPAs or 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).

6.1.2 Review of Relevant Guidance and Sources of Consultation

The assessment methodology is based primarily upon the National Road Authority (NRA)'s *Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2* (NRA, 2009) (referred to hereafter as the NRA Ecological Impact Assessment Guidelines), and the survey methodology is based on the NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). 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:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal (CIEEM, 2018)

[4] *Candidate SAC (cSAC) are afforded the same protection as SACs. The process of making cSAC into SACs by means of Statutory instrument has begun and while the process if ongoing the term SAC will be used to conform with nomenclature used in the National Parks and Wildlife Services (NPWS) databased. The name applies to candidate SPAs.*

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

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

- Galway County Development Plan 2022-2028
- North and Western Regional Spatial and Economic Strategy 2020-2032
- Ireland's 4th National Biodiversity Action Plan 2023-2030

6.1.3 Statement of Authority

This report has been prepared by Emily Fair (B.Sc., M.Sc.). Emily is an Ecologist with MKO and has over 4 years of professional experience. This report has been reviewed by Rachel Walsh (B.Sc., MCIEEM). Rachel has over 5 years' experience in ecological consulting, and has undertaken numerous assessments covering a wide range of projects including wastewater treatment plants, wind farms, road and rail infrastructure and housing developments.

The baseline ecological surveys were undertaken by Emily Fair, Cathal Bergin (B.Sc), Cora Twomey (B.Sc.), Brónagh Boylan (B.Sc.), Rudraksh Gupta (B.Sc., M.Sc.), Tom Peters (B.Sc., M.Sc.), Mairead Kavanagh (B.Sc), Nora Szijarto (B.Sc., M.Sc.), Timothy O'Ceallaigh (B.Sc., MSc.), Caitrin Farren (B.Sc.), Cuan Feely (B.Sc.) and Matthew Kieran (BSc.). Aquatic surveys and the Aquatic Baseline Report (found in Appendix 6-3) were carried out by Triturus.

With regards to bat surveys, Comprehensive bat surveys of the Site were carried out by Ryan Connors (BSc., MSc.), Charlie Meehan (B.A., M.Sc.), Frederick Mosley (B.A., M.Sc.), Kate Greaney (B.Sc., M.Sc.), Cormac Roberts, Clare Mifsud (Ph.D.). Bat survey scope development and project management was overseen by Aoife Joyce (BSc., MSc.) and John Hynes (B.Sc., M.Sc. MCIEEM). Data manual ID were carried out by Ryan Connors and Cormac Roberts.

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 NPWS Article 17 maps 2019, 2013 and 2007.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS)[5], EPA maps[6], Water Framework Directive (WFD) and Inland Fisheries Ireland (IFI)[7].
- Inland Fisheries Ireland (IFI) Reports, where available.
- Data on potential occurrence of protected bryophytes – as per NPWS online map viewer; Flora Protection Order Map Viewer – Bryophytes[8].
- Review of relevant Plans, including the Galway County Development Plan 2022-2028, Ireland's 4th National Biodiversity Action Plan 2023-2030, the All Ireland Pollinator Plan 2021-2025.
- Review of the Bat Conservation Ireland (BCI) Private Database.
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper.
- Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads in which the Proposed Project is located.
- Potential for in-combination effects have been considered in Chapter 2 of this EIAR and Section 6.7 of this Chapter. This was informed by a review of the EIS/EIARs prepared for other plans and projects occurring in the wider area.

6.2.1.1 Designated Sites

6.2.1.1.1 *Identification of the Designated Sites within the Likely Zone of Influence (ZOI) 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.

Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) are designated under the EU Habitats Directive and EU 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 Natura Impact Statement that accompanies this application. As per EPA Guidance 2022, *"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.

[5] https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba
[6] https://gis.epa.ie/EPAMaps/
[7] https://ifigis.maps.arcgis.com/apps/webappviewer/index.html?id=9a31fedb077c4fb29911184842b7ef025 Accessed: 20/07/2025.
[8] NPWS, 2019, Online map viewer; Flora Protection Order Map Viewer – Bryophytes. Online, Available at: http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e

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 chapter of the EIAR. 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 chapter of the EIAR.

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:

- All designated sites that could potentially be affected were identified using a source-pathway - receptor model 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. To provide context for the assessment, European Sites surrounding the development site are shown on Figure 6-1.
- 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 Zone of Influence (ZoI) and further assessment is required.

6.2.1.2 NPWS Article 17 Reporting

A review of the Irish Reports for Article 17 of the Habitats Directive (92/42/EEC), 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 carried out as part of this assessment.

6.2.2 Scoping and Consultation

MKO undertook a scoping exercise during preparation of this EIAR, as described in Chapter 2 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 2-10 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 provides a list of the organisations consulted with regard to biodiversity during the scoping process and an overview of their comments in relation to biodiversity. All comments were fully considered in the preparation of this chapter.

Table 6-1 Organisations consulted with regard to biodiversity

Consultee	Response	Response Details	Report Section where Comments are Addressed
An Taisce	-	Large volume of correspondence and limited resources. No response.	-
Bat Conservation Ireland	19/04/2023	Large volume of correspondence and limited resources. Unable to respond to query.	-
Birdwatch Ireland	-	No response recieved to date	-
Department of Agriculture, Food and the Marine (DAFM)	09/05/2023	The following are the comments from this Division in relation to the Proposed Project: *If the proposed development will involve the felling or removal of any trees, the developer must obtain a Felling License from this Department before trees are felled or removed. A Felling Licence application form can be obtained from Felling Section, Department of Agriculture, Food and the Marine, Johnstown Castle Estate, Co. Wexford. Email: felling.forestservice@agriculture.gov.ie or Web gov.ie - Tree Felling Licences (www.gov.ie)* *A Felling Licence granted by the Minister for Agriculture, Food and the Marine provides authority under the Forestry Act 2014 to fell or otherwise remove a tree or trees and/or to thin a forest for silvicultural reasons.*	-
Department of Housing, Local Government and Heritage (NPWS)	Response received 29/05/2023	**Birds** The Development Applications Unit (DAU) made note that a full suite of bird surveys should be carried out to cover bird usage and facilitate assessment of potential collision risk, habitat loss, barrier effect and displacement for these species and should be based around the daily and seasonal activity patterns of the species being surveyed. Hinterland surveys should include breeding raptor surveys, including roost watches, surveys for nocturnal species and other species-specific surveys as appropriate. Vantage point (VP) surveys should be done in a manner that ensures sufficient data is collected to allow an assessment of the importance of all the flight paths into, out of and between sites and assess migratory movements. It is also noted that the cumulative impacts on bird species must be considered within the assessment, for both bird migration routes (day and night) are assessed as well as the flight lines (day and night) of bird species travelling between roosting and feeding areas.	The assessment of impacts on ornithological receptors is fully assessed in Chapter 7 Ornithology of this EIAR. The assessment of impacts on bats is discussed in Section

		Bats Bat species may be present in a variety of habitats (trees, buildings and bridges) therefore, damage/disturbance to any such roosts must be avoided in the first instance. Bat species are protected under the Wildlife Act (as amended) and are subject to a regime of strict protection pursuant to the requirements of the Habitats Directive (92/43/EEC) as transposed in Irish law in Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). Derogation licenses may only be granted once a number of strict criteria have been met. Assessments should be carried out in line with the new guidelines "*Bat and Onshore Wind Turbines: Survey, Assessment and Mitigation, 2019"* published jointly by Scottish Natural Heritage and Bat Conservation Trust and other stakeholders[9]. New research in upland wind farms show that it is more appropriate to use 30 day survey periods with static automated detectors, in each season, and in different weather conditions to reduce sampling bias and to accurately determine when the curtailment mitigation is required during the operational phase. Additionally, any proposed bat friendly lighting should be proven to be effective and follow up-to-date guidance **Wetlands** Wetlands are important areas for biodiversity and ground and surface water quality should be protected during construction and operation of the proposed development. The EIAR should include a detailed assessment of the hydrological impacts on wetlands from the proposed development. Any watercourse or wetland which may be impacted on should be surveyed for the presence of protected species and species listed on Annexes II and IV of the Habitats Directive. One of the main threats identified in the threat response plan for otter is habitat destruction. A 10m riparian buffer on both banks of a waterway is considered to comprise part of the otter habitat. Therefore, any proposed development should be located at least 10m away from a waterway and should consider movements between waterways and waterbodies by otters. **Flood Risk and Hydrology** Response from the DAU: *Flood plains, if present, should be identified in the EIAR and left undeveloped to allow for the protection of these valuable habitats and provide areas for flood water retention (green infrastructure). If applicable, the EIAR should take account of the guidelines for Planning Authorities entitled "The Planning System and Flood Risk Management" published by the Department of the Environment, Heritage and Local Government In November 2009.* *A detailed hydrological assessment should be carried out in terms of the potential impacts arising from the proposed development on Natura 2000, notably Lough Corrib Special Area of Conservation (SAC) (Site Code: 000297) which has*	6.5.2.2.4 and assessed in Sections 6.4.3.4 and 6.5.3.2.1. Detailed assessment and impact assessment can be found in Appendix 6-2 (Bat report). The assessment of potential impacts on wetland, surface water, groundwater and associated aquatic fauna can be found in Section 6.5.2.1.1. Habitats within the Proposed Project are discussed in Section 6.4.1. Detailed relevés at infrastructure locations are provided in Appendix 6-1 Botanical Appendix. The assessment of impacts on habitats and habitat loss is provided in Section 6.5.2.1. Invasive species records are discussed in section 6.3.1.9, and

[9] *Please note that this chapter has been carried out in accordance with Version 2021 of the Bat and Onshore Wind Turbines: Survey, Assessment and Mitigation (2021)*

		direct hydrological links as well as other Natura sites, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within the zone of influence; noting that designated sites at some distance can be intrinsically linked and supported by the surrounding habitats (e.g. agricultural fields) and hydrological processes. **Habitats** Response from the DAU: *The Department notes that the proposed development site contains a number of peatland habitats. Potential loss of these habitats should be considered in light of their ecological significance and importance as wetland habitats and the associated environmental services that they provide with regard to waterflow/flood regulation. Peat stability should be assessed where required.* *It is also noted that the site has potential for a number of protected species notably Marsh Fritillary due to the presence of its food plant Devil's-bit Scabious, Succisa pratensis along much of the road network and within the peatland areas. Marsh fritillary surveys should be carried out as per standard Marsh Fritillary Larval Web Survey methodology.* The DAU also highlights the importance of hedgerows as wildlife corridors, bird nesting habitat, habitat for woodland flora as well as supporting habitat for a number of other species such as bats and badgers. The DAU request that an estimated length of hedgerows proposed to be lost as a result of the Proposed Project is provided, and that suitable planting of native species in mitigation incorporated into the EIAR. ***Invasive Species*** *The EIAR should also address the issue of invasive alien plant and animal species such as Rhododendron ponticuum and Japanese Knotweed, and detail the methods required to ensure they are not accidentally introduced or spread during survey and or construction.* **Biodiversity Enhancement** *Such developments, given their scale and duration, can be an opportunity for ecological enhancement. Enhancement measures have been included in similar projects in Ireland. However, any proposed enhancement measures must have sufficient information to be implemented effectively. It is suggested that a Habitat Management Plan (HMP) is carried out, outlining specific enhancement measures to be undertaken, the timescale for implementation, objectives to be achieved and ecological monitoring requirements.*	potential biosecurity impacts discussed in Section 6.5.2.2.6 Biodiversity Enhancement measures are summarised within the relevant tables in Section 6.5.2.1. Additionally, a comprehensive Biodiversity Management and Enhancement Plan (BMEP) is provided in Appendix 6-4. A combined Appropriate Assessment Screening Report/Natura Impact Statement report has been prepared which accompanies this planning application. A summary of the potential impacts on Natura 2000 sites in provided in Section 6.3.1.2, and discussed in Section 6.5.5

		The National Biodiversity Action Plan aims to conserve and restore Ireland's biodiversity. A key objective of the plan is to achieve no net contribution to biodiversity loss arising from development projects occurring within the lifetime of the plan. The EIAR should outline how the project will avoid a net loss of biodiversity. **Appropriate Assessment** The DAU also made note of the requirement to carry out an Appropriate Assessment screening and/or Natura Impact Statement (NIS), as well as the requirement to review all site specific conservation objective (SSCO) documents, or generic conservation objectives documents where SSCOs are not available, to ensure the full ecological implications of a proposal for a site's conservation objective and its integrity are analysed and assessed. *The Department advise that pre – consent ground investigations, data gathering infrastructure or testing that take place in a location that may affect an ecological feature (e.g. NHAs/ pNHA's and European sites SACs and Special Protections Areas (SPAs), may require consent (i.e. are not exempted development) from the planning authority and or the Ministers consent from this Department.*	
Irish Peatland Conservation Council	-	No response recieved	-
Irish Wildlife Trust	18/04/2023	IWT does not have the capacity to review documents relating to planning applications.	-
Inland Fisheries Ireland (IFI)	-	No reponse recieved	-
Irish Raptor Study Group	-	No reponse recieved	-
Irish Red Grouse Association	-	No response recieved	

Waterways Ireland	-	No reponse recieved	

6.2.3 Field Surveys

Comprehensive surveys of the biodiversity of the entire site were undertaken on various dates during 2021, 2022, 2023, 2024 and 2025, as detailed below. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies, dates of survey and guidance followed.

An assessment of the Proposed Grid Connection underground cabling route to the Cloon Substation was also undertaken on the 13th of August 2024 and the 18th of June 2025. Surveys along the route comprised a multi-disciplinary walkover, otter surveys at watercourse crossings as well as an assessment of bat foraging, commuting and roosting habitat. Infrastructure at three of these watercourse crossing points was further assessed for potential to support roosting bats (further detailed provided in Section 6.4.3.4.5 and in the Bat Report, Appendix 6-2).

Ecological surveys were undertaken within the Proposed Project to inform the EIAR on the following dates, as listed in Table 6-2.

Table 6-2 Ecology Surveys Informing the EIAR

Survey Type	Dates	Appendix
Multi-disciplinary walkover (incl. habitats)	21st May 2021 9th November 2021 18th November 2022 13th of July 2023 2nd and 29th August 2023 5th, 8th and 22nd September 2023 5th October 2023 14th November 2023 13th August 2024 18th September 2024 18th June 2025 2nd September 2025	Results found in Section 6.4
Detailed Botanical Surveys – Irish Vegetation Classification (IVC)	13th of July 2023 2nd and 29th August 2023 5th October 2023 5th, 18th and 22nd September 2023 14th November 2023 21st August 2024 18th September 2024 18th June 2025 2nd September 2025	Appendix 6-1 Botanical Study
Marsh fritillary survey	21st August 2024 5th and 18th September 2024	Results found in Section 6.4.3.3
Bat Surveys	Various (Detailed in Bat Report)	Appendix 6-2 Bat Report
Aquatic Surveys	10th, 11th, 12th and 13th September 2022 24th, 25th, 26th, and 27th July 2024	Appendix 6-3 Aquatic Baseline Report

Otter Surveys	› 10th, 11th, 12th and 13th September 2022 › 24th, 25th, 26th, and 27th July 2024 › 13th August 2024 › 18th June 2025	Results found in Section 6.4.3.2
Proposed Grid Connection Underground Cabling Route	› 13th August 2024 › 18th June 2025	Results found in Section 6.4.2
Proposed Biodiversity Enhancement Measures	› 21st August 2024 › 18th June 2025	Appendix 6-4 Biodiversity Enhancement and Management Plan (BMEP)

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

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.).

The multi-disciplinary walkover surveys comprehensively covered the entire study area and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. Other targeted surveys 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 chapter of the EIAR have been classified in accordance with Fossitt (2000). 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 Wind Farm site were also undertaken throughout multidisciplinary walkover surveys carried out from 2023 to 2025. These surveys provided an understanding of the baseline and informed further survey work following finalisation of the Proposed Wind Farm site.

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

- Smith, G.F. & Crowley, W. (2020) The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland. Version 2.0. Irish Wildlife Manuals, No. 79. National Parks and Wildlife Service.
- Commission of the European Communities (2013) *Interpretation manual of European Union habitats*. Eur 27. European Commission DG Environment.
- Foss, P.J. & Crushell, P. 2008, *Guidelines for a National Fen Survey of Ireland, Survey Manual.* Report for the National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: *Habitat Assessments*. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.
- 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.
- 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.

Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010), 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 development footprint, with relevés undertaken in 2023, 2024 and 2025 within representative habitats at each turbine base, repository areas, met mast, construction compounds and substation (including battery storage facility). The extent of each habitat on site was mapped using aerial photography, handheld GPS and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site, including all relevés. The location of all relevés is shown in Figure 1-1 of the Botanical Appendix (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)[10] 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 analyzed and the results can then be downloaded. ERICA works with 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, analyzed and the results data downloaded.

[10] *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

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 utilizing the clustering analysis. This categorizing procedure was utilized to determine if the Relevés 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 92/43/EEC were identified and classified as Key Ecological Receptors (KERs).

With respect to cutover bog habitats, the survey results were also analysed in accordance the Irish Wildlife Manual (IWM) *128 'The habitats of cutover raised bog'* (Smith & Crawley, 2020)[11]. Relevés and habitat condition assessments collected in the field within these habitats were assessed in accordance with the criteria set out in Appendix 1 (Cutover Habitat Key). Marginal cutover and raised bog habitats which were categorized into '*High Sphagnum'* communities were also assessed based on the criteria set out in the IWM 81 (see below).

Habitats classified as raised bog were analysed in accordance with the Irish Wildlife Manual (IWM) 81 *'Raised Bog Monitoring and Assessment Survey 2013'* (Fernandez et al, 2013)[12]. Relevés and habitat conditions collected in the field within these habitats were assessed in accordance with the criteria set out in Appendix 2: Ecotopes and active peat forming community complexes key in order to determine which Ecotope and category of ecotope (marginal, sub-marginal, sub-central, central) the habitat conforms to.

The data collected from the IWM resources was utilised to determine the affinity that peatland habitats may have to Annex I habitats.

6.2.3.3 Terrestrial Fauna 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 marsh fritillary were undertaken on the dates set out in Section 6.2.3 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. Dedicated otter surveys within the Proposed Wind Farm site were carried out by Triturus Environmental (see Section 2.8 of the Aquatic Baseline Report in Appendix 6-3). Surveys for otter along the Proposed Grid Connection underground cabling route and within the Wind Farm Site were undertaken by MKO.

[11] *Smith, G.F. & Crowley, W. (2020) The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*
[12] *Fernandez, F., Connolly K., Crowley W., Denyer J., Duff K. & Smith G. (2014) Raised Bog Monitoring and Assessment Survey 2013. Irish Wildlife Manuals, No. 81. National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht, Dublin, Ireland.*

6.2.3.3.1 Badger Survey

The badger surveys were conducted during all multidisciplinary walkover surveys in order to determine the presence or absence of badger signs within the EIAR site boundary. This involved a search for all potential badger signs as per NRA (2009) (latrines, badger paths and setts). If encountered, setts would be classified as per the convention set out in NRA (2009) (i.e. main, annexe, subsidiary, outlier). The badger survey was conducted adhering to best practice guidance (NRA, 2009) and followed the 'Guidelines for the Treatment of Badger Prior to the Construction of National Roads Schemes' (NRA, 2006a) and CIEEM best practice competencies for species surveys (CIEEM, 2013[13]).

6.2.3.3.2 Otter Survey

Otter surveys were conducted on all river and watercourse crossing points along the Proposed Grid Connection Route on the 13th of August 2024 and the 18th of June 2025. Targeted otter surveys were also carried out within the Proposed Wind Farm site during each of the multidisciplinary walkover surveys, as outlined above in Table 6-2. All watercourses within the Proposed Wind Farm site, and along the Proposed Grid Connection were identified as providing potential habitat for otter and were subject to targeted surveys for this species. This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts) within 150m of each survey site. Where otter signs were observed these were mapped.

In addition, dedicated otter surveys were undertaken along other watercourses in the vicinity of the Site during dedicated aquatic surveys undertaken in August 2024 (Aquatic Baseline Report, Appendix 6-3).

The otter surveys were conducted as per NRA (2009) guidelines[14]. 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 NRA (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, 2013[13]).

6.2.3.3.3 Marsh fritillary surveys

Following the identification of suitable habitat for marsh fritillary within the site during habitat surveys, targeted surveys for the species were undertaken on the 21st August and the 18th September 2024. The survey methodology followed that described in the NRA (2009) best practice guidance document. This involved walked surveys to identify suitable areas of marsh fritillary habitat within or adjacent to the development footprint. Where suitable habitat did occur, detailed surveys to locate larval webs were undertaken and the extant was mapped (see Confidential Appendix 6-5) and a systematic search of the area to locate larval webs was undertaken. Areas of suitable habitat were also mapped as part of the survey effort and informed the layout of the Proposed Wind Farm site.

6.2.3.3.4 Bat Surveys

A detailed bat survey report is provided in Appendix 6-2 of this EIAR. This document provides a detailed description of all survey methodologies as undertaken at the site during between May-September 2025. Full details of the survey times and dates and the methodologies followed are provided in the Bat Report, included as Appendix 6-2, along with details of all the surveyors.

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) and were undertaken

[13] *CIEEM, 2013, Technical Guidance Series – Competencies for Species Survey, Online, Available at: https://cieem.net/resource/competencies-for-species-survey-css/ Accessed: 01.07.2025*
[14] *NRA. (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*

in strict accordance with those prescribed in NatureScot (2021) '*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

Aquatic surveys were undertaken by Triturus Environmental. The watercourses that flow off the Site, and downstream watercourses, were subject to biological evaluation and assessment through kick sampling, fish stock assessment (electro-fishing) and habitat appraisal, white-clawed crayfish surveys, lacustrine macro-invertebrate surveys and macrophyte and aquatic bryophyte surveys between the 24th to 27th July 2024. A total of 31 sites (21 riverine sites, 3 lakes and 7 ponds) were selected for detailed fisheries and aquatic assessments.

Survey effort focused on both instream and riparian habitats at each aquatic sampling location. Surveys at each of these sites included a fisheries assessment (electro-fishing and/or fisheries habitat appraisal), white-clawed crayfish survey (*Austropotamobius pallipes),* otter survey (within 150m of the survey site), macrophyte and aquatic bryophyte survey and (where suitable) biological water quality sampling (Q-sampling). Environmental DNA (eDNA) sampling was undertaken for the species strategically chosen riverine locations within the vicinity of the Proposed Project. These water samples were also analysed for white-clawed crayfish and crayfish plague (*Aphanomyces astaci*). This holistic approach informed the overall aquatic ecological evaluation of each site in context of the Proposed Project and ensured that any habitats and species of high conservation value would be detected.

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.

6.2.3.5 Invasive species survey

During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken. 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

The information provided in this document accurately and comprehensively describes the baseline ecological environment; provides an accurate prediction of the likely ecological effects of the Proposed Project; prescribes mitigation as necessary; and describes the residual ecological impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines. No significant limitations in the scope, scale or context of the assessment 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 criteria used to assess the ecological value and significance of the study area for habitats and species present follows Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) and Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018).

6.2.4.2 Determining Importance of Ecological Receptors

The importance of the ecological features identified within the study area was determined with reference to a defined geographical context. This was undertaken following a methodology that is set

out in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 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. The 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 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 Local Importance (Higher Value), County, National or International importance following the criteria set out in NRA (2009) are considered to be Key Ecological Receptors (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 Key Ecological Receptors.

6.2.4.3 Characterisation of Impacts and Effects

The Proposed Project will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM *Guidelines for Ecological Impact Assessment in the UK and Ireland* (2018). The headings under which the impacts are characterised follow those listed in the 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 result 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** 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 CIEEM (2018).

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 key ecological receptors 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 (NRA, 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 NRA Ecological Impact Assessment Guidelines 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 6.5 of this EIAR assesses the potential effects of the Proposed Project to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant negative effects on KERs are predicted, mitigation is incorporated into the project design or layout to address such effects. 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

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 for the ecology of the existing environment. Material reviewed includes the Site Synopses for Designated Sites for their conservation importance compiled by the National Parks and Wildlife Service (NPWS), plant distribution atlases and other research publications.

6.3.1.1 Regional and Local Hydrology

The following description has been summarised from Chapter 9 'Hydrology and Hydrogeology' of the EIAR and provides a baseline of the local watercourses within and downstream of the Site.

Proposed Wind Farm Site

The Site is located in the regional Lough Corrib (Corrib_030) surface water catchment within Hydrometric Area 30 of the Western River Basin District (WRBD). Lough Corrib is located approximately 36km to the west of the Proposed Wind Farm site. (A regional hydrology map is shown in Figure 9-1 of Chapter 9 of this EIAR.)

On a more local scale the Site is located in the River Clare catchment wherein it exists within two surface water sub-catchments according to WFD/EPA mapping. The northern portion of the Proposed Wind Farm site which includes 7 no. turbine locations (T3, T4, T5, T6, T7, T8 and T9) is located in the Clare[Galway]_SC_040. Within this sub-catchment the Proposed Wind Farm site drains to the River Clare via the Grange River which flows less than 1km to the north of the Proposed Wind Farm site.

The southern portion of the Proposed Wind Farm site is located in the Clare[Galway]_SC_050 where 2 no. turbines T1 and T2, the temporary construction compound and the Site entrance are proposed. Within this sub-catchment the Proposed Wind Farm site drains to the River Clare via the Abbert River which flows approximately 3km to the south of the Proposed Wind Farm site.

The downstream distance to Lough Corrib via the Clare[Galway]_SC_040 is approximately 45km while the distance via the Clare[Galway]_SC_050 sub-catchment is approximately 35km.

Proposed Grid Connection and Turbine Delivery Route

The Proposed Grid Connection passes through both the Clare[Galway]_SC_040 (for 7.5km) and Clare[Galway]_SC_050 (for 13.4km) sub-catchments, while the Substation element is located entirely in the Clare[Galway]_SC_050 sub-catchment at the Proposed Wind farm site. Similar to the Proposed Wind Farm site, the Proposed Grid Connection cable route drains locally to the Grange River and Abbert River within the respective sub-catchments.

The TDR Junction works on the N63/R332 junction and on the R332 at the proposed Site entrance are located in the Clare[Galway]_SC_050 (Abbert River catchment).

Surface Water Drainage

Proposed Wind Farm

The northern portion of the Proposed Wind Farm site, within the Clare[Galway]_SC_040 sub-catchment (i.e. the Grange River), is drained by the Dangan Eighter Stream (EPA Code 30D35) which flows into the Grange River approximately 1km downstream of the Site. There are 3 unnamed streams which merge within the Proposed Wind Farm to form the Dangan Eighter Stream. The proposed turbine locations T3 to T9 drain into the Dangan Eighter Stream via a network of bog and land drains.

The southern portion of the Proposed Wind Farm site is drained by the EPA named Lecarrow 30 Stream (EPA Code 30L49) and the Forty Acres Stream (EPA 30F16), both of which are headwater streams of the Abbert River which flows approximately 5km downstream of the Proposed Wind Farm site. The majority of the southern portion of the Proposed Wind Farm site (including proposed turbine locations T1 and T2 as well as the temporary construction compound) drain to the Lecarrow 30 Stream.

The Lecarrow 30 Stream then flows to the south before discharging into Horseleap Lough which is located 1km to the south of the Proposed Wind Farm site. Horseleap Lough is a wetland with significant reed vegetation. Lecarrow 30 Stream exits from the southern side of Horseleap Lough and flows for approximately 4km prior to merging with the Abbert River.

The southwestern portion of the Proposed Wind Farm site, which includes the construction site entrance and access road, drains to the Forty Acres Stream. The Forty Acres Stream flows for approximately 3km prior to merging with the Lecarrow 30 Stream at a location 3km downstream of Horseleap Lough. The Substation element of the Proposed Grid Connection also drains to the Forty Acres Stream.

There is also a high density of man-made drains located within the cutover bog, grassland, and forestry areas.

Proposed Grid Connection

Along the Proposed Grid Connection cable route there are 4 no. crossings over EPA mapped watercourses within the Clare[Galway]_SC_050 sub-catchment. These include 3 no. crossings on the Forty Acres Stream (1 no. proposed new culvert at Site entrance and 2 no. existing bridge/culvert crossings) and 1 no. existing crossing on the Feagh East Stream (EPA Code 30F17) which is a 1st order tributary of the Abbert River. There are 4 additional water crossing points along tributaries and unnamed streams, making a total of 8 watercourse crossings along the Proposed Grid Connection.

Within the Clare[Galway]_SC_040 sub catchment, there is an existing crossing along the Proposed Grid Connection cable route at 1 EPA mapped watercourse which is the Grange River itself.

6.3.1.1.2 *Hydrogeology*

The Site is located in the Clare-Corrib Groundwater Body (GWB) (IE_WE_G_0020) which has a mapped surface area of 1,344km^2. According to WFD mapping this GWB is karstic in nature. Overall, groundwater flow direction within the Clare-Corrib GWB is reported to be to the southwest, with all groundwater flowing towards and discharging to Lough Corrib (GSI, 2004)[15].

As outlined in Chapter 9 Hydrology and Hydrogeology:

[15] *Geological Survey Ireland (GSI). (2004). 1st Draft Clare-Corrib GWB Description June 2004. Clare Corrib GWB: Summary of Initial Characterisation*

The bedrock type of the Clare-Corrib GWB is predominantly Dinantian Pure Bedded Limestone, which is the same lithology as the mapped bedrock formations that underlie the Proposed Project. Dinantian Pure Bedded Limestone is classified by the GSI as a Regionally Important Karstified Aquifer which is dominated by conduit flow (Rkc).

Groundwater flow directions through karst areas can be very variable due to the heterogenous nature of karstification/weathering within a rock that is otherwise devoid of groundwater. Groundwater flows through a network of solutional enlarged bedding planes, fissures and conduits.

Both point recharge and diffuse recharge occurs in this GWB. Diffuse recharge occurs over the GWB via rainfall percolating through the permeable subsoil. In areas of deep peat and low permeability glacial till, recharge to the underlying aquifer is limited to point recharge such as swallow holes, collapse features/dolines, and losing streams (GSI, 2004).

Karst Features

No GSI karst features have been mapped within the Site Boundary, however eight karst features ('enclosed depressions') are mapped by the GSI within a 1km buffer of the Proposed Wind Farm site with each of these recorded as enclosed depressions.

A total of 41 potential karst features (not mapped by GSI) have been identified within 1km of the Proposed Wind Farm site boundary, of which 13 are located within the EIAR boundary, and 11 of these have been visually inspected on site. The vast majority of identified features are classified as enclosed depressions/dolines, with two possible spring features identified at the Derrynacrick loughs.

Also, along the Proposed Grid Connection cable route outside the Proposed Wind Farm site there are numerous GSI mapped karst feature within a 100m corridor of the underground cable route. However, due to the nature the proposed route along public roads, with the cable being placed in a shallow trench within the road carriageway, no karst features are likely to be encountered.

The entirety of the Proposed Wind Farm site is mapped as being underlain by limestone bedrock, which is particularly prone to karstification. The Proposed Wind Farm site is split relatively evenly between areas mapped by the GSI as consisting of peat and areas mapped as till. Turbines e.g. T1, T3, T4, T6 and T8 are mapped as till, with T2, T5, T7 and T9 mapped as peat.

A 250m buffer has been used for analysing karst risk as this is considered to provide a localised yet sufficiently broad spatial context to capture nearby karst features that may pose indirect or cumulative risks to infrastructure. A high density of karst features within 250m indicates that the development of karstic features at the location being assessed is more likely.

Karst features were identified within 250m of T1, T2 hardstand, T4, T5 hardstand, T8 handstand, and various sections of access track alignment. The highest density of karst features was recorded in the area surrounding T4 and access track alignment AL6, with >4 features recorded within 250m of these locations (12 features are recorded within 250m of T4). Karst features overlap with the proposed new road north of T4. However, during geophysical surveying carried out in August 2025, no evidence for large karstic cavities beneath this location was found. As a result, these features were removed from the Karst Interaction scoring.

Due to the fixed nature of the proposed infrastructure, the most direct risk factor is the potential for karstic features to interact directly with the proposed infrastructure during construction of the Proposed Wind Farm. Although surface features in the surrounding area can indicate the level of karstification in the bedrock, these do not pose a direct risk to the Proposed Wind Farm, unlike those recorded within the Proposed Wind Farm footprint itself.

The identified karst risk at the Proposed Wind Farm site is generally classed as low; however, portions of the Proposed Wind Farm site, particularly in the vicinity of T1 and T8, are classified as medium

hazard. Due to the overall setback distance of potential karst features from most of the key infrastructure locations, the Karst Hazard Rating is mainly Low with two areas of up to Medium. A High Hazard Rating was calculated for the hardstand of the proposed turbine T4 where several potential karst features are located.

Groundwater Levels

Groundwater level monitoring was carried out at the Proposed Wind Farm site between October 2022 and February 2025. Groundwater level monitoring results at two borehole locations (BH1 and BH2) can be found below in Table 6-4. According to Chapter 9:

BH1 is located 350m to the west of turbine T1, while BH2 is located 250m to the northeast of turbine T2. Groundwater levels in BH1 over the monitoring period ranged between 72.41m OD (2.59mbgl) and 70.786 m OD (4.21mbgl). Groundwater levels in BH2 over the monitoring period ranged between 77.43m OD (0.57mbgl) and 76.51m OD (1.48mbgl). The low seasonal groundwater level variation is typical of peatland/bog settings where groundwater flows/recharge is generally impeded and groundwater levels are relatively consistent across seasons.

The groundwater levels indicate that there is limited recharge/vertical groundwater flow from the glacial deposits down into the underlying bedrock aquifer at the Proposed Wind Farm site. The presence of drainage features implies there is a need to drain surface water, as it cannot recharge/drain readily to the underlying bedrock aquifer underneath.

No karstified bedrock or conduit/fracture networks were encountered in BH1 and BH2 on the south of the Proposed Wind Farm site.

Table 6-4: Groundwater Level Summary Data (October 2022 – February 2025)

Location	Ground Level (m OD)	Min WL (m OD)	Max WL (m OD)	Range (m)
BH1	75	70.786	72.41	1.620
BH2	78	76.513	77.427	0.914

6.3.1.1.3 Baseline Water Quality

Biological Q-rating data for EPA monitoring points on watercourses downstream of the Site are shown below in Table 6-5.

Most recent data available (2012 to present) show that the Q-rating for the Grange (Galway) River and Abbert River is 'Good' in the vicinity and downstream of the Site. Further downstream the Clare (Galway) River's status is also "Good".

The results of the surface water quality sampling undertaken as part of the site assessments for the project can be found in Section 9.3.7 in Chapter 9.

Table 6-5: EPA Biological Q-Rating Data

Waterbody	Station ID	Easting	Northing	EPA Q-Rating Status
Grange (Galway)_010	Bridge near Cloondahamper	155248	251511	(4) Good
Grange (Galway)_020	GRANGE (GALWAY) - Ford N.N.W. of Cornacartan	151020	251647	(4) Good

Grange (Galway)_020	Grange Bridge	148003	249913	(4) Good
Grange (Galway)_030	Cahergal Bridge	147706	247623	(4) Good
Grange (Galway)_040	1.7km u/s Clare River confl.	144054	246094	(4) Good
Clare (Galway)_060	Corrofin Bridge	142639	243390	(4) Good
Abbert_030	Bridge u/s Abbey Bridge	151671	243628	(4) Good
Abbert_040	ABBERT - Pallas Bridge	147305	242292	(4) Good
Abbert_040	Bridge at Bullaun	143625	240781	(4) Good
Clare (Galway)_070	Lackagh Bridge	141813	236430	(4) Good

6.3.1.2 Designated Sites

6.3.1.2.1 *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 Ecological Impact Assessment.

Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) are designated under the EU Habitats Directive and EU 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 Natura Impact Statement 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.

In summary, two European sites were identified to be within the ZoI of the Proposed Project, namely:

- Lough Corrib SAC [000297]
- Lough Corrib SPA [004042]

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 chapter of the EIAR.

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 chapter of the EIAR.

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 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.

- All designated sites in the vicinity of the development site were identified.
- A map of all the European Sites within the vicinity of the Proposed Project is provided in Figure 6-1. A map of all Nationally Designated Sites within the vicinity of the Proposed Project is provided in Figure 6-2.
- Table 6-6 below provides details of all relevant Nationally designated sites as identified in the preceding steps and assesses which are within the likely Zone of Influence.
- All relevant European Designated Sites are fully described and assessed in the Screening for Appropriate Assessment and Natura Impact Statement 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 Zone of Influence and further assessment is required.

Figure 6-1 European designated sites

Figure 6-2 Nationally Designated Sites

Table 6-6 Designated sites in the Zone of Influence

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Special Area of Conservation (SAC)		
Lough Corrib SAC [000297]	**Distance:** The Proposed Grid Connection crosses over the Grange River (at the Ballinderry Bridge), which forms part of this SAC. The Proposed Wind Farm site is located approximately 90m from the SAC boundary at its closest point. **Hydrological distance from the Proposed Wind Farm site:** › 2.6km via the Grange River › 4.6km via the Abbert River **Hydrological distance from the Proposed Grid Connection:** › 1.5km via the Feagh_East stream at the 4th watercourse crossing › 2km via the Abbert River at the 3rd watercourse crossing › 4.3km via the Abbert River at the 2nd watercourse crossing	The Proposed Grid Connection directly crosses a section of this SAC on the Grange River at the 8th watercourse crossing point along the Proposed Grid Connection. No in-stream works will be required. Therefore, there is no potential for direct effects associated with the Proposed Grid Connection. The Proposed Wind Farm is also located completely outside of any European Site, therefore there is no potential for direct effect. The watercourse crossings along the Proposed Grid Connection are hydrologically connected downstream to this SAC. The Proposed Wind Farm is hydrologically linked to the SAC via the Grange River, which adjoins the Proposed Wind Farm site in the north and flows into the Lough Corrib SAC 2.6km downstream. Additionally, at the south of the Proposed Wind Farm site the Abbert River flows through Proposed Wind Farm site into the SAC via 4.6km surface water distance downstream. There is potential for a deterioration of water quality as a result of construction and operation of the Proposed Wind Farm which could result in Likely Significant Effects (LSEs) on aquatic dependent QI species and habitats. The Proposed Project (Proposed Wind Farm and Proposed Grid Connection) is located within the same ground waterbody as this SAC (Clare-Corrib - IE_WE_G_0020). According to the GSI groundwater body data sheet for the Clare-Corrib GWB[15] overall, flow directions are to the southwest, with all groundwater discharging to Lough Corrib. Therefore, by taking a precautionary approach, there is potential that significant effects on the groundwater body Clare-Corrib may result in significant effects on the Groundwater Dependant Terrestrial Ecosystems (GWDTE) of the designated habitats and species of this SAC. There is also potential for disturbance of QI species otter as a result of the construction of the Proposed Wind Farm and Proposed Grid Connection. **A potential pathway for significant effect on the European Site has been identified, and it is considered for further assessment.**
Levally Lough SAC [000295]	**Distance:**	There will be no direct effects as the Proposed Project is located entirely outside the designated site.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
	3.2km northwest of the Proposed Wind Farm 8.3km north of the Proposed Grid Connection	The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project and this SAC are located within the same ground waterbody (Clare-Corrib - IE_WE_G_0020). However, this SAC is located in an upstream location in the Grange River catchment relative to the Proposed Wind Farm site and therefore no hydrological or hydrogeological pathway/connection is present. Therefore, no potential for Likely Significant Effects (LSEs) exist. **No pathway for significant effects on the European Site has been identified**
Derrinlough (Cloonkeenleananode) Bog SAC [002197]	**Distance:** 3.2km northeast of the Proposed Wind Farm 7.3km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project and this SAC are located within the same ground waterbody (Clare-Corrib - IE_WE_G_0020). However, this SAC is located in an upstream location in the Grange River catchment relative to the Proposed Wind Farm site location and therefore no hydrological or hydrogeological pathway/connection is present and therefore no potential for effects. **No pathway for significant effects on the European Site has been identified**
Shankill West Bog SAC [000326]	**Distance:** 5.7km northeast of the Proposed Wind Farm 8.6km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected, therefore there is no potential for significant effects exist in terms of surface water impacts. The Proposed Project is located within the 'Clare-Corrib - IE_WE_G_0020' groundwater body, while this SAC is located within the 'Suck South' - IE_SH_G_225 groundwater body. No complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore no potential for direct or indirect effects were identified. **No pathway for significant effects on the European Site has been identified**

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Carrownagappul Bog SAC [001242]	**Distance:** 8.1km east of the Proposed Wind Farm 10.6km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project is located within the 'Clare-Corrib - IE_WE_G_0020' groundwater body, while this SAC is located within the 'Suck South' - IE_SH_G_225 and the 'Ballygar' - IE_SH_G_028 groundwater bodies. No complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore no potential for direct or indirect effects were identified. **No pathway for significant effects on the European Site has been identified**
Curraghlehanagh Bog SAC [002350]	**Distance:** 10.0km northeast of the Proposed Wind Farm 12.8km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project is located within the 'Clare-Corrib - IE_WE_G_0020' groundwater body, while this SAC is located within the 'Suck South' - IE_SH_G_225 and the 'Ballygar' - IE_SH_G_028 groundwater bodies. No complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore no potential for direct or indirect effects were identified. **No pathway for significant effects on the European Site has been identified**
Lough Lurgeen Bog/Glenamaddy Turlough SAC [000302]	**Distance:** 11.1km northeast of the Proposed Wind Farm 15.1km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project is located within the 'Clare-Corrib - IE_WE_G_0020' and the 'GWDTE-Glenamaddy Turlough (SAC000301) - IE_WE_G_0094' and the 'Suck South - IE_SH_G_225' groundwater bodies. No complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore no potential for direct or indirect effects were identified.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		No pathway for significant effects on the European Site has been identified
Lisnageeragh Bog and Ballinastack Turlough SAC [000296]	**Distance:** 14.4km northeast of the Proposed Wind Farm 18.8km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project is located within the 'Clare-Corrib - IE_WE_G_0020' and the 'GWDTE-Glenamaddy Turlough (SAC000301) - IE_WE_G_0094' and the 'Suck South - IE_SH_G_225' groundwater bodies. No complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore no potential for direct or indirect effects were identified. **No pathway for significant effects on the European Site has been identified**
Monivea Bog SAC [002352]	**Distances:** 8.7km south of the Proposed Grid Connection 11.3km southwest of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)15. However, the south-westerly groundwater flow in the Clare-Corrib GWB means this SAC is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects to the SAC. **No pathway for significant effects on the European Site has been identified**
Camderry Bog SAC [002347]	**Distance:** 13.4km northeast of the Proposed Wind Farm 16.7km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. The Proposed Project and this SAC are not hydrologically connected via surface water, therefore there is no source-pathway-receptor chain for significant effects on surface water. The Proposed Project is located within the 'Clare-Corrib - IE_WE_G_0020' groundwater body, while this SAC is located within the 'Suck South' - IE_SH_G_225 groundwater body. No complete source-pathway-receptor chain exists between the Proposed Project and this SAC and therefore no potential for direct or indirect effects were identified.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		No pathway for significant effects on the European Site has been identified
Galway Bay Complex SAC [000268] **Distance:** 20.0km southwest the Proposed Grid Connection 26.4km southwest of the Proposed Wind Farm Site **Hydrological distance:** >30km from both the Proposed Grid Connection and the Proposed Wind Farm site		There is no potential for direct effects as the Proposed Project is located completely outside of the designated site. There is no direct surface water hydrological pathway to this SAC. The Grange and Abbert Rivers within the Proposed Wind Farm site are hydrologically linked to Lough Corrib, which is upstream of this SAC. The only hydrological pathway to this SAC would be via groundwater percolation to Lough Corrib SAC, and subsequently downstream surface water flows to the marine waters of the SAC. Given the number of groundwater bodies and surface waters required to pass through before reaching the SAC, the minimum intervening hydrological distance and the relative insensitivity of the marine based QI habitats to localised sedimentation events, there is no potential for likely significant effects on the SAC. The groundwater dependant QI habitats associated with this SAC are located within a separate groundwater body to the Proposed Project. **No pathway for significant effects on the European Site has been identified**
Special Protection Area (SPA)		
Lough Corrib SPA [004042]	**Distance:** › 14.6km southwest of the Proposed Grid Connection › 23.5km southwest of the Proposed Wind Farm site **Hydrological distance from the Proposed Wind Farm site:** › 42.4km surface water distance via the Abbert River	No in-stream works are required for any part of the Proposed Grid Connection or the Proposed Wind Farm site. Therefore, there is no potential for direct effects associated with the Proposed Grid Connection. The Proposed Wind Farm is also located completely outside of any European Site, therefore there is no potential for direct effect. The watercourse crossings along the Proposed Grid Connection are hydrologically connected downstream to this SPA. The Proposed Wind Farm is hydrologically linked to the SPA via the Grange River, which adjoins the Proposed Wind Farm site in the north and flows into the Lough Corrib SPA 55.3km downstream. Additionally, at the south of the Proposed Wind Farm site the Abbert River flows through Proposed Wind Farm site into the SPA via 42.4km surface water distance downstream. By taking a highly precautionary approach, there is potential for a deterioration of water quality as a result of construction and operation of the

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
	› 55.3km surface water distance via the Grange River **Hydrological distance from the Proposed Grid Connection:** › 32.4km surface water distance downstream of the 8th watercourse crossing point along the Proposed Grid Connection › 37.6km surface water distance downstream of the 4th watercourse crossing point along the Proposed Grid Connection › 40.0km surface water distance downstream of the 3rd watercourse crossing point along the Proposed Grid Connection › 42.3km surface water distance downstream from the 2nd watercourse crossing point along the Proposed Grid Connection	Proposed Wind Farm which could result in Likely Significant Effects (LSEs) on aquatic dependent SCI species and associated designated wetland supporting habitat. The Proposed Project (Proposed Wind Farm and Proposed Grid Connection) is located within the same ground waterbody as this SPA (Clare-Corrib - IE_WE_G_0020). According to the GSI groundwater body data sheet for the Clare-Corrib GWB[15] overall, flow directions are to the southwest, with all groundwater discharging to Lough Corrib. Therefore, by taking a precautionary approach, there is potential that significant effects on the groundwater body Clare-Corrib may result in significant effects on the Groundwater Dependant Terrestrial Ecosystems (GWDTE) of the designated habitats and species of this SAC. Additionally, the potential for ex-situ indirect effects on SCI species requires further assessment. **A potential pathway for significant effect on the European Site has been identified and it is considered for further assessment.**
Inner Galway Bay SPA [004031]	**Distance:** › 21.2km southwest of the Proposed Grid Connection › 27.9km southwest of the Proposed Wind Farm site **Hydrological distance:**	There is no potential for direct effects as the Proposed Project is located completely outside of the designated site. There is no direct surface water hydrological pathway to this SPA. The Grange and Abbert Rivers within the Proposed Wind Farm site are hydrologically linked to Lough Corrib, which is upstream of this SPA. The only hydrological pathway to this SPA would be via groundwater percolation to Lough Corrib SPA, and subsequently downstream surface water flows to the marine waters of the SPA. Given the number of groundwater bodies and surface waters required to pass through before reaching the SPA, the minimum

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
	› >30km from both the Proposed Grid Connection and the Proposed Wind Farm site	intervening hydrological distance and the relative insensitivity of the marine based SCI supporting habitats to localised sedimentation events, there is no potential for likely significant effects on the SPA. Additionally, the Proposed Project is located over 20km at its closest point to the SPA and the Proposed Wind Farm site does not provide any significant wintering habitat for any of the designated SCI species. **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Natural Heritage Areas (NHA)		
Derrynagran Bog And Esker NHA [001255]	1.3km northeast of the Proposed Wind Farm site 5.7km northwest of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the NHA. There is no surface water hydrological connectivity between the Proposed Wind Farm or the Proposed Grid Connection and this NHA. Therefore, there is no source-pathway-receptor for likely significant effect on this NHA via surface water pathways. The Proposed Project and western section of this NHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020). However, as outlined in Chapter 9, given that the dominant groundwater flow direction in the Clare-Corrib GWB is to the southwest[15], the Site is considered downstream with regard to groundwater flow. Therefore, there will be no significant effects with regards to impacts on groundwater. According to the site synopsis for this NHA, red grouse has been recorded at this site. However, this species was not recorded within the EIAR site boundaries during the surveys carried our (See Ornithology Chapter 7). **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Killaclogher Bog NHA [001280]	2.6km south of the Proposed Grid Connection 4.2km south of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the NHA. There is no surface water hydrological connectivity between the Proposed Wind Farm or the Proposed Grid Connection and this NHA. This NHA converges with the Abbert River (forming part of Lough Corrib

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Also part of the Lough Corrib SAC [000297]		pNHA and SAC) downstream of the Proposed Project. Therefore, there is no source-pathway-receptor for likely significant effect on this NHA via surface water pathways. The Proposed Project and this NHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020). However, as outlined in chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB[15] means that this NHA is at an up-gradient position with regard groundwater flow paths. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Derrinlough Bog NHA [001254] *Also forms part of the Derrinlough (Cloonkeenleananode) Bog SAC [002197]*	3.0km northeast of the Proposed Wind Farm site 6.8km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the NHA. This NHA is located over 25km upstream of the Proposed Grid Connection Route (at the 8th water crossing point). Therefore, there is no source-pathway-receptor for likely significant effect on this NHA via surface water pathways. The Proposed Project and western section of this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020). However, as outlined in Chapter 9, given that the dominant groundwater flow direction in the Clare-Corrib GWB[15] is to the southwest, the Proposed Project is considered downstream with regard to groundwater flow. Therefore, there will be no significant effects with regards to impacts on groundwater. According to the site synopsis for this NHA, red grouse has been recorded at this site. However, this species was not recorded within the EIAR site boundaries during the surveys carried our (See Ornithology Chapter 7). **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Lough Tee Bog NHA [000307]	9.7km south of the Proposed Grid Connection 10.2km south of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the NHA.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Also forms part of the Lough Corrib SAC [000297]		There is no surface water hydrological connectivity between the Proposed Wind Farm or the Proposed Grid Connection and this NHA. Therefore, there is no source-pathway-receptor for likely significant effect on this NHA via surface water pathways. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020). However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means that this NHA is at an up-gradient position with regard groundwater flow paths[15]. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Slieve Bog NHA [000247] *Also forms part of the Lough Corrib SAC [000297]*	10.6km north of the Proposed Wind Farm site 14.7km north of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the NHA. There is no surface water hydrological connectivity between the Proposed Wind Farm or the Proposed Grid Connection and this NHA. Therefore, there is no source-pathway-receptor for likely significant effect on this NHA via surface water pathways. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020). However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this NHA is at an up-gradient position with regard groundwater flow paths[15]. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Clooncullaun Bog NHA [000245]	14.6km northeast of the Proposed Wind Farm site 18.0km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the NHA. There is no surface water hydrological connectivity between the Proposed Wind Farm or the Proposed Grid Connection and this NHA. Therefore, there is no source-pathway-receptor for likely significant effect on this NHA via surface water pathways.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		The Proposed Project is located within the 'Clare-Corrib' - IE_WE_G_0020 groundwater body, while the NHA is located within the 'Suck South' (IE_SH_G_225) groundwater body. Therefore, there is no pathway for likely significant effect on groundwater as a result of the Proposed Project. **No pathway for likely significant effect on this NHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Proposed Natural Heritage Areas (pNHA)		
Summerville Lough pNHA [001319]	2.5km east of the Proposed Wind Farm site 5.6km northeast of the Proposed Grid Connection	There is no potential for direct effects as the Proposed Project is located entirely outside of this pNHA. According to the site synopsis, this site consists of a relatively small permanent lake, with associated bog and wet species-rich grassland. It is also known to support an important wintering site for wildfowl. According to the site synopsis for this pNHA, Whooper Swan *(Cygnus cygnus)* have been recorded within this pNHA. The Proposed Project is within the core foraging range for this species (5km). However, as assessed in Section 7.5.2.5 of Chapter 7 of this EIAR, records of this species were largely within waterbodies surrounding the Proposed Project in the wider area, and were not considered dependant on the Site. Therefore, there will be no significant effects as a result of any habitat loss or risk of disturbance and/or collision risk. There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020). However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is at an up-gradient position with regard groundwater flow paths[15]. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Levally Lough pNHA [000295]	3.2km northwest of the Proposed Wind Farm site	There is no potential for direct effects as the Proposed Project is located entirely outside of this pNHA.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Overlaps with the Levally Lough SAC [000295]	6.1km northwest of the Proposed Grid Connection	There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, given that the dominant groundwater flow direction in the Clare-Corrib GWB is to the southwest, and this pNHA is located northwest of the Site, there will be no significant effects via groundwater pathways. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Richmond Esker Nature Reserve pNHA [000323]	3.7km northeast of the Proposed Wind Farm site 8.0km northeast of the Proposed Grid Connection	There is no potential for direct effects as the Proposed Project is located entirely outside of this pNHA. According to the site synopsis, this site consists of a small, semi-natural wooded, esker ridge. Given the terrestrial nature of the pNHA and the intervening distance between the pNHA and the Proposed Project, there is no source-pathway-receptor chain for likely significant effect. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Belclare Turlough pNHA [000234]	5.4km west of the Proposed Grid Connection 15.2km west of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. According to the site synopsis, this site consists of a turlough on the hill of Knockacarrigeen on which Belclare village is situated. The site itself has very little vegetation diversity as it is dry without any standing water in the summer. The site is known to support local populations of wigeon, teal, mallard, lapwing, golden plover and Dunlin, all of which have a core foraging range of over 5km. It is also known to support Greenland white fronted goose, which was not recorded within the Proposed Wind Farm Site. Therefore, there will be no ex-situ disturbance or habitat loss associated with the Proposed Project. There is no direct hydrological connectivity from the Proposed Project to this pNHA.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		There is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Shankill West Bog pNHA [000326] *Overlaps with the Shankill West Bog SAC [000326]*	5.8km northeast of the Proposed Wind Farm 8.8km northeast of the Proposed Grid Connection	There is no potential for direct effects as the Proposed Project is located entirely outside of this pNHA. There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. The Proposed Project is located within the 'Clare-Corrib' - IE_WE_G_0020 groundwater body, while this pNHA is located within the 'Suck South' (IE_SH_G_225) groundwater body. Therefore, there is no pathway for likely significant effect on groundwater as a result of the Proposed Project. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Killower Turlough [000282]	5.9km northwest of the Proposed Grid Connection 16.9km northwest of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. This site is part of the River Clare group of Turloughs which also includes Belclare Turlough to the south of the site. Its main interest is ornithological and is known to support whooper swan and Greenland white-fronted geese. However, this pNHA is located entirely outside of the ore foraging range for whooper swan (5km) and there were no records of Greenland white fronted goose during the extensive ornithological surveys carried out at the Proposed Wind Farm site. Therefore, there will be no ex-situ disturbance or habitat loss associated with the Proposed Project. There is no direct hydrological connectivity from the Proposed Project to this pNHA. Additionally, there is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Knockavanny Turlough pNHA [000289]	6.4km north of the Proposed Grid Connection 8.3km northwest of the Proposed Wind Farm site	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. According to the site synopsis, Knockavanny Turlough is a small turlough in the Nanny sub-catchment of the larger Corrib catchment. The site has a range of grazed communities typical of turloughs in the region. Of note are the records of a small patch of Great Fen sedge *(Cladium mariscus)* with the carnivorous plant bladderwort (*Uricularia spp.).* The site is also known to host a large number of Wigeon; however, the Proposed Project is outside of the core foraging range for this species and therefore there will be no ex-situ disturbance or habitat loss associated with the Proposed Project. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is at an up-gradient position with regard groundwater flow paths. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Drumbulcaun Bog pNHA [000263]	7.1km northwest of the Proposed Wind Farm site 10.5km northeast of the Proposed Grid Connection	There is no potential for direct effects as the Proposed Project is located entirely outside of this pNHA. This pNHA is known to support a small complex of raised bog, fen, open water and flooded grassland. It is the only intact raised bog in the catchment of the Nanny River and supports a variety of habitat types and diversity of vegetation communities and species. This site is known to support local populations of Teal and Moorhen; however the Proposed Project is located entirely outside of the core foraging range for both of these species. Therefore there will be no ex-situ disturbance or habitat loss associated with the Proposed Project. There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		flow in the Clare-Corrib GWB means this pNHA is at an up-gradient position with regard groundwater flow paths. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Knockma Hill pNHA [001288]	7.2km west of the Proposed Grid Connection 18.9km west of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. This pNHA is known to consist of a prominent limestone knoll consisting of deciduous woodland and limestone pavement habitat. The site and its features are entirely terrestrial in nature. Given the terrestrial nature of this site and the intervening distance with no identified pathway for likely significant effect, **no pathway for significant effects on the Nationally Designated Site has been identified**
Tiaquin Bog pNHA [001709]	7.9km south of the Proposed Grid Connection 10.2km south of the Proposed Wind Farm site	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects to the pNHA. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Carrownagappul Bog pNHA [0001242]	8.1km east of the Proposed Wind Farm site 10.8km northeast of the Proposed Grid Connection	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. There is no direct hydrological connectivity from the Proposed Project to this pNHA.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Overlaps with the Carrownagappul Bog SAC [001242]		There is no potential for indirect effects as the Proposed Project is located in a completely separate hydrological and groundwater catchment to the pNHA. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Kilkerrin Turlough pNHA [001279]	8.3km northeast of the Proposed Wind Farm site 12.0km northeast of the Proposed Grid Connection	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. According to the site synopsis, this site consists of a dry turlough with limited aquatic vegetation found only within the small stream. Most of the vegetation is fen, consisting of sedges *(Carex sp.),* and knotgrasses *(Polygonum spp.).* There is no potential for indirect effects as the Proposed Project is located in a completely separate hydrological catchment to the pNHA. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Turlough O'Gall pNHA [000331]	8.5km northwest of the Proposed Grid Connection 19.6km west of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. There is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Monivea Bog pNHA [000311] *Overlaps with Monivea Bog SAC [002352]*	8.7km south of the Proposed Grid Connection 11.3km south of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		Monivea Bog pNHA is located on the Abbert River which is located upstream of Lough Corrib. This river converges with Lough Corrib at a point downstream of the Proposed Project. Therefore, there is no direct hydrological connectivity from the Proposed Project to this pNHA. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects to the pNHA. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Kiltullagh Lough pNHA [001282]	9.4km northeast of the Proposed Wind Farm site 13.9km northeast of the Proposed Grid Connection	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. According to the site synopsis, this pNHA consists of three lakes which together provide good habitat for the following waterfowl: Mute swan, whooper swan, wigeon, teal, mallard, tufted duck, ringed plover, golden plover lapwing and curlew. Given that the Proposed Project is over 9km from this pNHA, the Proposed Project is entirely outside of the core foraging range for these species. Therefore there will be no potential for significant effects to the pNHA associated with the Proposed Project. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is at an up-gradient position with regard groundwater flow paths. Therefore, there will be no significant effects with regards to impacts on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Castle Hackett Souterrain pNHA [002038]	9.6km west of the Proposed Grid Connection 19.8km west of the Proposed Wind Farm site	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. This pNHA is entirely terrestrial in nature and is known as a winter hibernation site for Lesser Horseshoe Bat *(Rhinolophus hipposideros)*. The Core Sustenance Zone (CSZ) for lesser horseshoe bat is typically 2km from a known communal roost with suitable supporting habitat (Collins, 2023). The Proposed Project is outside of the CSZ for this pNHA. Given the significant intervening distance from the Proposed Project to this pNHA, there will be no potential for indirect effects. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Curraghlehanagh pNHA [000256] *Overlaps with Curraghlehanagh Bog SAC [002350]*	9.9km northeast of the Proposed Wind Farm site 12.8km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. There is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Turlough Monaghan pNHA [001322]	10.5km west of the Proposed Grid Connection 21.5km west of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. This site consists of two ponds approx. 6km from Headford, Co. Galway. It is largely flat at floor level and the north-east edge is marked by level beds of outcropping limestone. The turlough regularly floods but is relatively shallow. Flocks of lapwing have been recorded at this turlough; however, the Proposed Project is entirely outside of the core foraging range for this species, therefore there will be no significant effects associated with the Proposed Project. There is no direct surface water hydrological connectivity from the Proposed Project to this pNHA.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. As outlined in Chapter 9, due to the karst nature of the bedrock (potential flow paths of several kilometres possible in the Clare-Corrib GWB) coupled with the south-westerly groundwater flow path within the Clare-Corrib GWB means this pNHA is likely located within the flow path from the Proposed Project. Therefore, by taking a highly precautionary approach, the Proposed Project may result in significant effects on the groundwater quality of this pNHA. **By taking a precautionary approach, a pathway for likely significant effect on this pNHA was identified. The site is considered to be within the Likely Zone of Influence and is considered further in this assessment.**
Lough Lurgeen Bog/Glenamaddy Turlough pNHA [000301] *Overlaps with the Lough Lurgeen Bog/Glenamaddy Turlough SAC [000301]*	12.2km northeast of the Proposed Wind Farm site 15.2km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. There is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Boyounagh Turlough pNHA [001237]	12.4km north of the Proposed Wind Farm site 16.8km northeast of the Proposed Grid Connection	There is no potential for direct effect as the Proposed Project is located completely outside of the Nationally Designated Site. There is no surface water hydrological connectivity between the Proposed Project and this pNHA. Therefore, there is no surface water source-pathway-receptor chain for likely significant effect. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects on groundwater.

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
		No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.
Lough Hackett pNHA [001294]	12.6km west of the Proposed Grid Connection 22.6km west of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. This pNHA largely consists of a lake habitat surrounded by reed swamp with an area of fresh water marsh and a lowland wet grassland habitat. A small island also occurs within the lake. The site has been given considerable ornithological importance since 1971 for wintering waterfowl, including wigeon, pochard, tufted duck, golden plover, lapwing and curlew. Grey heron and Cormorant are also known to utilise the island within the lake. Given that the Proposed Project is over 12km from this pNHA, the Proposed Project is entirely outside of the core foraging range for these species. Therefore there will be no significant effects associated with the Proposed Project. There is no direct hydrological connectivity from the Proposed Project to this pNHA. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Camderry Bog pNHA [000240] *Overlaps with the Camderry Bog SAC [002347]*	13.4km northeast of the Proposed Wind Farm 16.6km northeast of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. There is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Turloughcor pNHA [001788]	14.0km southwest of the Proposed Grid Connection 23.5km west of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. This site is known to consist of a small lake (Doolough) surrounded by a large area which has been liable to flooding in the past. Wigeon, teal mallard, mute swan and lapwing are known to graze within the grassland areas around the turlough, and in the past Greenland white fronted geese used the site. However, given that the Proposed Project is 14km from this pNHA, it is completely outside of the core foraging ranges for these species. Additionally, following extensive ornithological surveys carried out at the site, Greenland white fronted geese were not recorded. Therefore, there will be no significant effects associated with the Proposed Project. There is no direct hydrological connectivity from the Proposed Project to this pNHA. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. As outlined in Chapter 9, due to the karst nature of the bedrock (potential flow paths of several kilometres possible in the Clare-Corrib GWB) coupled with the south-westerly groundwater flow path within the Clare-Corrib GWB means this pNHA is likely located within the flow path from the Proposed Project. Therefore, by taking a highly precautionary approach, the Proposed Project may result in significant effects on the groundwater quality of this pNHA. **By taking a precautionary approach, a pathway for likely significant effect on this pNHA was identified. The site is considered to be within the Likely Zone of Influence and is considered further in this assessment.**
Lisnageeragh Bog And Ballinastack Turlough pNHA [000296] *Overlaps with the Lisnageeragh Bog and Ballinastack Turlough SAC*	14.4km northeast of the Proposed Wind Farm site 18.8km southwest of the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. There is no potential for indirect effects as the Proposed Project is located within a completely separate groundwater body to the pNHA **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Altor Lake pNHA [000224]	14.5km northwest of the Proposed Grid Connection 21.4km northwest of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. This site is known to consist of a former lake that was drained around 1969. Therefore, the remaining habitats are largely lowland wet grassland, freshwater marsh and reed beds. The site is known to support populations of teal, mallard, lapwing, curlew and snipe. It is also known to support Greenland white fronted goose. Following extensive ornithological surveys carried out at the site, Greenland white fronted geese were not recorded within the EIAR site boundaries. Therefore, there will be no significant effects associated with the Proposed Project. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**
Rathbaun pNHA [000215]	14.9km northwest of the Proposed Grid Connection 22.8km northwest of the Proposed Wind Farm site	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is no direct hydrological connectivity from the Proposed Project to this pNHA. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. However, as outlined in Chapter 9, the south-westerly groundwater flow in the Clare-Corrib GWB means this pNHA is not within the general flow path from the Proposed Project. Additionally, given the significant intervening distance and the size of the overall groundwater body, there are no predicted likely significant effects on groundwater. **No pathway for likely significant effect on this pNHA was identified. The site is not considered to be within the Likely Zone of Influence and is not considered further in this assessment.**

Designated Site	Distance from EIAR Site Boundary (km)	Likely Zone of Influence Determination
Lough Corrib pNHA [000297] *Partially overlaps with Lough Corrib SAC and Lough Corrib SPA*	**Overland Distance:** 16.5km southwest of the Proposed Grid Connection 23.2km southwest of the Proposed Wind Farm site **Hydrological Distance:** Approx. 34km downstream of the 4th water crossing point along the Proposed Grid Connection	There will be no direct effects as the Proposed Project is located entirely outside the designated site. There is hydrological connectivity from the water crossing point along the proposed Grid Connection Route through the Lough Corrib SAC, for which this pNHA overlaps downstream. The Proposed Project and this pNHA are both located within the same groundwater body groundwater body ('Clare-Corrib' - IE_WE_G_0020)[15]. As outlined in Chapter 9, due to the karst nature of the bedrock (potential flow paths of several kilometres possible in the Clare-Corrib GWB) coupled with the south-westerly groundwater flow path within the Clare-Corrib GWB means this pNHA is likely located within the flow path from the Proposed Project. Therefore, by taking a highly precautionary approach, there is potential that any impacts to groundwater associated with the Proposed Project may result in significant effects on the groundwater within this pNHA. **A pathway for likely significant effect on this pNHA was identified. The site is considered to be within the Likely Zone of Influence and is considered further in this assessment.**

Potential for effects on European sites is summarised in this report and is fully addressed in the Natura Impact Statement submitted as part of the statutory consent process.

The following Nationally Designated Sites have been identified as being within the Zone of Likely Influence and are assessed further in Section 6.5.5.2:

- Turlough Monaghan pNHA [001322]
- Turloughcor pNHA [001788]
- Lough Corrib pNHA [000297]

6.3.1.3 NPWS Article 17 Reporting

A review of the Irish Reports for Article 17 of the Habitats Directive (92/42/EEC), 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 carried out as part of this assessment. A search of the NPWS Article 17 datasets[16] (2019) was undertaken to identify Article 17 habitats within or adjacent to the site boundary, as shown in Figure 6-3 below.

The only previously mapped Article 17 habitat within with the Proposed Project boundary is an Active Raised Bog [7110] within the northwest side of the Project. Approximately 580m of the proposed new floating road providing connectivity between T7 and T9 travels through this mapped Article 17 habitat area. However, following detailed botanical assessments (as outlined in Appendix 6-1 of this EIAR) and described in detail in Section 6.4.1.3, approximately 285m of this proposed floating road is located within a habitat that corresponds with the Annex I habitat *'Degraded raised bogs still capable of natural regeneration (7120)'*. The remaining 295m of the proposed new road correspond to cutover bog (PB4) habitat, and peat extraction has been ongoing within these areas since the early 1990's.

The existing habitat within the locations of the proposed new road in the 7120 Annex I habitat is in poor condition as it has been extensively drained, with dry plant communities. The entire bog is surrounded by cutover bog (PB4) which has been historically extracted from. The habitat likely supports small, fragmented pockets of active raised bog, however as a whole this habitat area has been classified as 7120. There is no other infrastructure proposed within this mapped Article 17 habitat or any other Annex I habitats. This is described in detail in Section 6.4.1.3, as well as Appendix 6-1.

Additional mapped Article 17 Active Raised Bog [7110] habitats are found over 2.9km north of the Proposed Wind Farm site. Another small area of Active Raised Bog [7110] is located approximately 850m east of the Proposed Grid Connection.

A Dry Heath [4030] Article 17 Habitat can be found approximately 1.5km north and approximately 4.1km northwest of the beginning of the Proposed Grid Connection . Another mapped dry heath area is located approximately 4.5km southwest of the Proposed Grid Connection.

Approximately 1.4km and 3.8km southeast of the Proposed Grid Connection are Wet Heath [4010] Article 17 habitat area.

The closest Ancient Long-established Woodland (Abbert Demesne) is located 3km to the south of the Proposed Grid Connection.

A review of the Irish Semi-Natural Grassland Survey (ISGS) was also undertaken. No ISGS surveyed areas were found within the Site. The closest surveyed area is a mosaic habitat of Wet grassland (GS4) and Rich fen and flush (PFI) located 1.5km northwest of the Proposed Wind Farm site.

6.3.1.4 Irish Wetland Surveys

The Irish Wetland Surveys web map viewer was accessed on 22nd July 2025. A number of wetland areas that overlap with the EIAR Site Boundary, including the Cloondahamper Cooloo Derrybaun Bog Complex (MIW_GA626), Cooloo East (MIW_GA682), Cooloo Lecarrow Bog (MIW_GA68) and Derrybaun Bog (MIW_GA680). The mapped Article 17 Active Raised Bog [7110] habitat detailed above in section 6.3.1.3 forms part of the Cloondahamper Cooloo Derrybaun Bog Complex (MIW_GA626).

[16] *NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report*

There are also a number of wetland areas that have been mapped adjacent to the EIAR site boundary, including the Elmhill Trasternagh South (MIW_GA683), Moylough Beg Turlough (MIW_GA684), Horseleap Cross cNHA (MIW_GA291), Derrynagran Moat Trasternagh Bog Complex (MIW_GA627) and Cottage North (MIW_GA679).

Figure 6-3 Article 17 Habitats

6.3.1.5 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 (Wyse Jackson et al., 2016) or the Flora (Protection) Order (2022) had been recorded in the relevant 10km squares in which the study site is situated (M44, M54 and M55). Each hectad contains 100 one-kilometre squares containing terrestrial habitats. Species of conservation concern are given in Table 6-7 below. No species listed under Annex II of the Habitats Directive or protected under the Flora Protection Order were identified.

The NPWS Flora (Protection) Order 2022 online map viewer[17] was also consulted for records of Flora (Protection) Order species within or adjacent to the Proposed Project.

Table 6-7 Species listed designated under the Flora Protection Order or the Irish Red Data Book within hectads M44, M54 and M55

Common Name	Scientific Name	Status	Hectad
Greater Knapweed	*Centaurea scabiosa*	NT	M54, M55
Corn Marigold	*Chrysanthemum segetum*	NT	M55
Autumn Gentian	*Gentianella amarella*	NT	M53, M55
Least Bur-reed	*Sparganium natans*	NT	M54, M55
Marsh Fern	*Thelypteris palustri*	NT	M55
Frog Orchid	*Coeloglossum viride*	NT	M54
Brown Beadsedge	*Rhynchospora fusca*	NT	M54

6.3.1.6 Bryophytes

A search of the NPWS online database for bryophytes (non-vascular land plants comprising of mosses, hornworts and liverworts) was also undertaken on the 18th of July, 2025. There were no records found within the hectads that pertain to the Proposed Project (M44, M54, M55).

6.3.1.7 National Biodiversity Data Centre (NBDC) Records

A search of the National Biodiversity Data Centre (NBDC) website was initially conducted to inform field surveys. This helped to inform survey effort and provide a baseline of likely species composition in the area. The data was then updated on the 30th June 2025. Records of protected fauna (excluding birds) recorded from hectads M44, M54 and M55 are provided in Table 6-8.

Table 6-8 NBDC Records for Species of Conservation Interest in hectads M54 and M55

Common name	Scientific name	Designation	Hectad
Common Frog	*Rana temporaria*	HD Annex V, WA	M44, M45, M55

[17] https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e

Smooth Newt	*Lissotriton vulgaris*	WA	M45
Daubenton's Bat	*Myotis daubentonii*	HD Annex IV, WA	M45
Lesser Noctule	*Nyctalus leisleri*	HD Annex IV, WA	M45
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	HD Annex IV, WA	M45
Soprano Pipistrelle	*Pipistrellus pygmaeus*	HD Annex IV, WA	M44, M45
Natterer's Bat	*Myotis nattereri*	HD Annex IV, WA	M45
Brown Long-eared Bat	*Plecotus auritus*	HD Annex IV, WA	M45
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	HD Annex II, IV, WA	M45
Pine Marten	*Martes martes*	HD Annex V, WA	M45, M55
Eurasian Pygmey Shrew	*Sorex minutus*	WA	M55
European Otter	*Lutra lutra*	HD Annex II, IV, WA	M44, M45, M55
Eurasian Badger	*Meles meles*	WA	M45, M55
Eurasian Red Squirrel	*Sciurus vulgaris*	WA	M45
West European Hedgehog	*Erinaceus europaeus*	WA	M45, M55
Marsh Fritillary	*Euphydryas aurinia*	HD Annex II	M44, M45, M55
Freshwater White-clawed Crayfish	*Austropotamobius pallipes*	HD Annex II, V, WA	M44, M45, M55
Fallow Deer	*Dama dama*	WA	M45, M55

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

6.3.1.8 National Parks and Wildlife Service (NPWS) Data

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 M44, M45 and M55. Table 6-9 lists rare and protected species records recorded available through the online NPWS map viewer. An information

request was also sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database. A response was received on the 24th of July 2025. Table 6-10 below lists rare and protected species records obtained through the data request from the NPWS. Records for birds are set out in Section 7.3.7 of Chapter 7 'Ornithology' of this EIAR.

Table 6-9 National Parks and Wildlife Service online Records

Common name	Scientific name	Designation	Hectad
Marsh Fritillary	*Euphydryas aurinia*	WA, Annex II, VU	M44, M54, M55
White-clawed Crayfish	*Austropotamobius pallipes*	WA, Annex II, VU	M44, M54, M55
Brook Lamprey	*Lampetra planeri*	Annex II	M54, M55
Atlantic Salmon	*Salmo salar*	Annex II, IV, VU	M54, M55
Common Frog	*Rana temporaria*	WA, Annex V	M44, M54, M55
Common Pipistrelle	*Pipistrellus pipistrellus*	WA, Annex IV	M54, M55
Daubenton's Bat	*Myotis daubentonii*	WA, Annex IV	M54, M55
Natterer's Bat	*Myotis nattereri*	WA, Annex IV	M44, M54, M55
Brown Long-eared Bat	*Plecotus auritus*	WA, Annex IV	M54, M55
Irish Hare	*Lepus timidus hibernicus*	WA, Annex V	M44, M54, M55
Eurasian Otter	*Lutra lutra*	WA, Annex V	M44, M54, M55
Pine Marten	*Martes martes*	WA, Annex V	M44, M54, M55
Soprano Pipistrelle	*Pipistrellus pygmaeus*	WA, Annex IV	M54, M55
Leisler's Bat	*Nyctalus leisleri*	WA, Annex IV	M55
White Cushion Moss	*Leucobryum glaucum*	Annex V	M54, M55

FPO = Flora Protection Order; RL = Red List, VU = Vulnerable, WA = Protected Species: Wildlife Acts, Annex (No.) – Protected Species: EU Habitats Directive, BoCCI – RL = Red Listed, AL = Amber Listed

Table 6-10 Records obtained through the data request from the NPWS

Common name	Scientific name	Designation	Hectad
Badger	Meles meles	WA	M54, M55
Irish Stoat	*Mustela erminea hibernica*	WA	M54
Hedgehog	*Erinaceus europaeus*	WA	M54
Marsh Fritillary	*Euphydryas aurinia*	WA, Annex II, VU	M55
White-clawed Crayfish	*Austropotamobius pallipes*	WA, Annex II, VU	M44, M54, M55
Common Frog	*Rana temporaria*	WA, Annex V	M44, M54, M55
Irish Hare	*Lepus timidus hibernicus*	WA, Annex V	M44, M54, M55

Common name	Scientific name	Designation	Hectad
Eurasian Otter	*Lutra lutra*	WA, Annex V	M44, M54, M55
Pine Marten	*Martes martes*	WA, Annex V	M55
Bryophytes			
Cladonia ciliata		Annex V	M54, M55
Cladonia ciliata var. tenuis		Annex V	M54, M55
Cladonia portentosa		Annex V	M44, M54, M55

6.3.1.9 Invasive Species

The NBDC database also contains records of invasive species identified within the relevant hectads. Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) include legislative measures to deal with the introduction, dispersal, dealing in and keeping of non-native species.

The NBDC database also contains records of invasive species identified within the relevant hectads. Records of third schedule invasive species for hectad's M44, M45 and M55 are provided in Table 6-11 below.

Table 6-11 Third schedule invasive species records from the NBDC Database

Common Name	Scientific Name	Hectad
American Mink	*Mustela vison*	M54
Giant Hogweed	*Heracleum mantegazzianum*	M45
Giant-rhubarb	*Gunnera tinctoria*	M45
Himalayan Knotweed	*Persicaria wallichi*	M45
Three-cornered Garlic	*Allium triquetrum*	M45
Rhododendron	*Rhododendron ponticum*	M44, M55

6.3.1.10 Bat Records

6.3.1.10.1 *Bat Conservation Ireland*

A data request was sent to Bat Conservation Ireland for records of bat activity and roosts within a 10km radius of an approximate central point in the Proposed Wind Farm (Grid Ref: M 55846 48731). Available bat records were provided by BCI on 14th March 2025. The search included roosts, transects and ad-hoc observations resulting in a number of roost (n = 8) and ad-hoc observations (n=9). Based on previous bat records, seven of Ireland's nine resident bat species were recorded within 10km of the Proposed Wind Farm. The results of the database search are provided in Table 6-12 below.

Table 6-12 NBDC Bat Records within 10km of the Proposed Project

Survey Type	Species	Grid reference	Date	Location
Roost	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,*	M 47000 42000	N/A	Ballynapark, Tuam, County Galway

	Myotis spp., *Nyctalus leisleri, Plecotus auritus*			
	Myotis nattereri, Myotis daubentonii, Plecotus auritus, Unidentified bat	M 47300 42300	N/A	Ballynapark, Tuam, County Galway
	Pipistrellus pygmaeus	M 50272 43581	N/A	Abbey West, Tuam, County Galway
	Myotis daubentonii	M 63015 53627	N/A	Shankill, Ballinsloe, County Galway
	Rhinolophus hipposideros	M 47000 55000	N/A	Carrowrevagh, Tuam, County Galway
	Unidentified bat	M 53400 53700	N/A	Levally, Tuam, County Galway
	Unidentified bat	M 54600 52500	N/A	Levally, Tuam, County Galway
	Unidentified bat	M 51700 43600	N/A	Abbey East, Athenry-Oranmore, County Galway
Ad-hoc	*Pipistrellus pygmaeus*	M 51700 43600	25/04/2005	Consultancy Surveys
	Pipistrellus pygmaeus	M 47300 42300	15/10/2005	Consultancy Surveys
	Pipistrellus pygmaeus	M 50200 44200	22/04/2007	Consultancy Surveys
	Pipistrellus pipistrellus, Pipistrellus pygmaeus, Myotis daubentonii, Myotis nattereri, Nyctalus leisleri	M 48000 49900	24/05/2009	BATLAS 2010
	Pipistrellus pipistrellus, Pipistrellus pygmaeus, Myotis daubentonii, Nyctalus leisleri	M 60095 49975	02/09/2019	BATLAS 2020
	Pipistrellus pipistrellus, Pipistrellus pygmaeus	M 51682 43604	04/09/2019	BATLAS 2020
	Pipistrellus pygmaeus	M 55760 46400	04/09/2019	BATLAS 2020
	Pipistrellus pipistrellus, Pipistrellus pygmaeus	M 54273 56560	11/09/2019	BATLAS 2020
	Pipistrellus pipistrellus, Pipistrellus pygmaeus, Nyctalus leisleri	M 63800 40100	03/09/2020	National Biodiversity Data Centre Bat Records

6.3.1.10.2 National Biodiversity Data Centre

The National Bat Database of Ireland was searched for records of bat activity and roosts within a 10km radius of the Proposed Wind Farm (last search 28th February 2025). Hectad M54 and M55 lies within 10km of the Proposed Wind Farm. Two of Ireland's nine resident bat species were recorded within 10 km of the proposed works. The results of the database search are provided in Table 6-13 below.

Table 6-13 NBDC Bat Records within 10km of Proposed Project

Hectad	Species	Database	Designation
M54	Common pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
M54	Soprano pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA

6.3.1.11 Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The NPWS *Margaritifera* Sensitive Area map (Version 10, 2020) was consulted during the desk study. The Site is not located within, adjacent or upstream of any Freshwater Pearl Mussel catchments or sensitive areas. There is no surface water connectivity between the Proposed Project and any *Margaritifera* catchment.

6.3.1.12 Marsh Fritillary (*Euphydryas aurinia*)

The National Biodiversity Data Centre (NBDC) and NPWS Article 17 GIS Datasets were consulted on the 30th June 2025 for records of Marsh Fritillary. As per the NBDC map viewer and NPWS data sets, Marsh Fritillary butterflies have been recorded within the hectads M44, M54 and M55.

There are five Marsh Fritillary records within proximity of the Proposed Grid Connection. The closest record is located on the edge of the Proposed Grid Connection, just off the junction of the R332 and the N63. These records are the closest to the Wind Farm site, which is approximately 970m southeast. There will be no impacts on the records of Marsh Fritillary, as all works will be restricted to the existing road and roadside verges, and all records are well outside of these areas.

There is also a record approx. 40m north and 100m northeast of the Proposed Grid Connection . Two further records can be found within proximity of the Proposed Grid Connection; approximately 435m southeast of the N63, as well as approximately 458m west of the R347. It should be noted that none of the works associated with the Proposed Project will impact on any of these known records given the intervening distance.

6.3.1.13 Aquatic Fauna and Fisheries Data

The following desk study data review has been summarised with full details provided in the Aquatic Baseline Report (Appendix 6-3).

6.3.1.13.1 Inland Fisheries Ireland (IFI) Data

A total of 43 sites were surveyed on the Clare River subcatchments between 2019 and 2020 to determine the status of their fishstocks using Ten-minute electrofishing. Only 2 of these have connectivity with the Site as there were no surveys carried out upstream of the Proposed Project. These sites are listed below along with the fish species recorded and the assigned Fish Ecological Status.

- One of the survey sites is located approximately 266m downstream of the northern site boundary in the GRANGE (GALWAY)_010. Salmon (*Salmo salar*), Brown Trout (*Salmo*

trutta) and Stone Loach (*Barbatula barbatula*) were recorded, giving a Fish Ecological Status of 'Moderate' [Sample ID: NRSP20R_30_653_373A_a].

- The other survey site is located 6.72km downstream of southern site boundary in the ABBERT_030. Salmon (*Salmo salar*), Brown Trout (*Salmo trutta*) were recorded, giving a Fish Ecological Status of 'Good' [Sample ID: NRSP19R_30_3048_237A_a]

Abbert River

According to the *Sampling Fish for the Water Framework Directive Rivers 2010 Western River Basin District*[18] and *Sampling Fish for the Water Framework Directive Rivers 2013 Western River Basin District*[19] reports, the nearest fish stock analysis is located approx. 15.5km downstream of the Proposed Project.

A total of nine fish species were recorded in the Abbert River site across 2010 and 2013. Three-spined Stickleback was the most abundant species, followed by Salmon (*Salmo salar*), Brown Trout (*Salmo trutta*), Roach (*Rutilus rutilus*), Stone Loach (*Barbatula barbatula*), European Eel (*Anguilla anguilla*), Lamprey spp. (*Lampetra* spp.), Nine-spined Stickleback (*Pungitius pungitius*) and Perch (*Perca fluviatilis*).

According to *Sampling Fish in Rivers 2019 – Clare River Catchment, Factsheet No. 2019/2*[20] which carried out fish stock analysis at locations further upstream than the 2010 and 2013 reports. The closest of these fish stock analysis locations is located 7.2km downstream of the Proposed Project. Salmon (*Salmo salar*) and Brown Trout (*Salmo trutta*) were the only species recorded within this location.

Grange River

According to the *Sampling Fish in Rivers 2019 – Clare River Catchment, Factsheet No. 2019/22*0 which carried out fish stock analysis approx. 9.4km downstream of the Proposed Project, a total of three fish species were recorded at this location. The most abundant of these species was Brown Trout (*Salmo trutta*), followed by Salmon (*Salmo salar*) and Pike (*Esox lucius*).

According to the *Sampling Fish in Rivers 2020 – Corrib Catchment. Factsheet No. 2020/02*[21] report which carried out fish stock analysis approx. 4.7km downstream of the Proposed Project, a total of three fish species were recorded at this location. The most abundant of these species was Salmon (*Salmo salar*), followed by Brown Trout (*Salmo trutta*) and Stone loach (*Barbatula Barbatula*).

6.3.2 Conclusions of the Desk Study

The desktop study has provided information about the existing environment of the hectads within which the Proposed Project is located. Two mapped surface water courses flow within the Wind Farm Site and 4 mapped watercourses and associated tributaries along the Proposed Grid Connection Route. There is potential for hydrological connectivity with the downstream European Site Lough Corrib SAC via both surface water and groundwater pathways. Additionally, by taking a highly precautionary

[18] *Kelly, F.L., Harrison, A., Matson, R., Connor, L., Feeney, R., Morrissey, E., O'Callaghan R., Wögerbauer, C., Hanna, C., Gallagher, K. and Rocks, K. (2014) Water Framework Directive Fish Stock Survey of Rivers in the Western River Basin District. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24, Ireland*
[19] *Kelly, F.L., Matson, R., Connor, L., Feeney, R., Morrissey, E., Coyne, J. and Rocks, K. (2014) Water Framework Directive Fish Stock Survey of Rivers in the Western River Basin District. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24, Ireland*
[20] *O'Briain, R., Matson, R., Gordon, P., Lopez, S., Cierpal, D., Connor, L., Corcoran, W., Coyne, J., Gavin, A., McLoone, P., Twomey, C. and Kelly, F.L. (2019) Sampling Fish in Rivers 2019 – Clare River Catchment, Factsheet No. 2019/2. National Research Survey Programme. Inland Fisheries Ireland.*
[21] *Gordon, P., Donovan, R., Matson, R., Corcoran, W.and Kelly, F.L. (2021) Sampling Fish in Rivers 2020 – Corrib Catchment. Factsheet No. 2020/02. National Research Survey Programme. Inland Fisheries Ireland*

approach, there is potential for significant effects on both Lough Corrib SPA and Lough Corrib pNHA [000297] as a result of a deterioration of surface and groundwater quality. Turlough Monaghan pNHA [001322] and Turloughcor pNHA [001788] are both located within the same groundwater body (Clare-Corrib) and due to flowpaths largely travelling in a south-westerly direction; by taking a highly precautionary approach, it is considered that the Proposed Project may result in significant effects.

The desk study identified that a variety of protected faunal species are known to occur within the wider study area, including bats, marsh fritillary, otter and badger. Given the records of marsh fritillary near the Site as well as the presence of peatland habitats, there is potential for this species to occur within the EIAR Site Boundary. The mammal species recorded during the desk study informed the survey methodologies undertaken during the Site visits. The mammal species recorded within the relevant hectad have widespread range and distributions in Ireland and are likely to be recorded frequently throughout Ireland (Marnell et al, 2009[22]). The Site is not located within a freshwater pearl mussel sensitive area.

The desk study revealed that an Annex I Article 17 habitat has been mapped within the Site, namely, Active Raised Bog. 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.

6.4 Baseline Ecological Survey Results

6.4.1 Description of Habitats and Flora within the Proposed Wind Farm Site

A total of 18 habitats were recorded within the Proposed Wind Farm Site, including:

- Wet grassland (GS4)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Arable crops (BC1)
- Buildings and artificial surfaces (BL3)
- Stone walls and other stonework (BL1)
- Recolonizing bare ground (ED3)
- Conifer plantation (WD4)
- Broadleaved woodland (WD1)
- Scrub (WS1)
- Wet grassland/scrub (GS4/WS1)
- Cutover bog (PB4)
- Raised bog (PB1)
- Rich fen (PF1)
- Treelines (WL2)
- Hedgerows (WL1)
- Lowland/depositing rivers (FW2)
- Drainage ditches (FW4)

Cutover raised bog and grassland communities have been categorised to plant communities following the Irish Vegetation Classification (IVC). Detailed botanical data from relevés recorded within the

[22] *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.*

Proposed Wind Farm site are provided in Appendix 6-1 of this EIAR. A habitat map of the Site is provided in Figure 6-4. A map showing the development footprint infrastructure overlaying the Habitat Map is shown in Figure 6-5 and Figure 6-6.

Figure 6-4 Habitat Map

Figure 6-5 Habitat Map with Proposed Project overlaid

Figure 6-6 Habitat Map with Proposed Project overlaid (2)

6.4.1.1 Grassland Habitats

Grasslands make up a significant area of the habitats within the Proposed Wind Farm site. The Proposed Wind Farm site comprises sizable areas of improved agricultural grassland (GA1) (approx. 140ha) with small areas of wet grassland (GS4) (approx. 37.3ha) and smaller, less intensively managed fields of dry meadows and grassy verges (GS2) (approx. 7.6ha).

Detailed botanical quadrat data was recorded on site in the form of relevés taken at specific locations within the Site, see Appendix 6-1. The botanical data from all relevés were uploaded to the National Biodiversity Data Centre (NBDC) online habitat classification system ERICA[10].

6.4.1.1.1 *Improved Agricultural Grassland (GA1)*

The habitat areas containing improved agricultural grassland (GA1) have primarily been intensively managed for cattle grazing, and many of these fields surveyed have been reseeded with Perennial Rye Grass *(Lolium perenne).* Turbines T2, T3, T4, T6 and T8, temporary construction compound, met mast, and the turbine delivery route accommodation area at the construction site entrance as well as to the west of the junction between N63/R332 (refer to Section 6.4.2.3) are all located within this habitat. Numerous sections of the proposed new access roads can be found through fields containing this habitat. Additionally, two spoil repository areas (SRA3 and SRA5) adjoining the proposed substation will be located within the same GA1 field. This can be seen depicted on Figure 6-5.

These areas are species-poor grassland communities with relatively little recognised conservation value. Other species found within these habitat areas include Docks (*Rumex obtusifolius, R. crispus),* Creeping buttercup *(Ranunculus repens),* Creeping thistle *(Cirsium arvense),* Dandelions *(Taraxacum officinale agg.),* Meadow Foxtail *(Alopecurus Pratensis),* White clover *(Trifolium repens),* Soft rush *(Juncus effusus),* Yorkshire fog *(Holcus lanatus),* Meadow grasses *(Poa trivialis, P. pratensis),* Mouse ear chickweed *(Cerastium fontanum)* and Bent grasses *(Agrostis stolonifera, A. capillaris).* These are relatively species-poor grassland communities with little recognised conservation value. (Plate 6-1)

Plate 6-1 Example of an improved agricultural grassland (GA1) field within the turbine overrun at construction the site entrance

6.4.1.1.2 Wet grassland (GS4)

Some less intensively managed, wetter fields are categorised as wet grassland (GS4). Infrastructure proposed to be located within fields containing this habitat includes T9, as well as numerous sections of proposed new access roads. Additionally, two peat repository areas (PRA1 and PRA4) as well as one spoil repository area (SRA1) are proposed within this habitat.

These grassland areas are relatively species rich, containing Cock's foot *(Dactylis glomerata),* Knapweed (*Centaurea nigra),* Red clover (*Trifolium pratense),* Silverweed (*Potentilla anserina),* Sweet vernal grass *(Anthoxanthum odoratum),* Bush vetch *(Vicia sepium),* Yorkshire fog *(Holcus lanatus),* Meadowsweet *(Filipendula ulmaria),* Nettles *(Urtica dioica),* Sheep's sorrel *(Rumex acetosella),* Soft rush *(Juncus effusus),* False oat grass *(Arrhenatherum elatius),* Sorrel *(Rumex acetosa),* Common bent grass *(Agrostis capillaris),* Creeping bent grass *(Agrostis stolonifera),* Willowherbs *(Epilobium spp.),* Creeping thistle *(Cirsium arvense),* Marsh thistle *(Cirsium palustre)* and occasional low invading scrub, such as Brambles *(Rubus fruticosus agg.)* and Willows *(Salix spp.).* (Plate 6-2)

Some of the areas of wet grassland also contain Devil's bit scabious *(Succisa pratensis).* These areas have been mapped and are included in the confidential appendix (Appendix 6-5). No infrastructure is proposed within these habitat areas.

Some areas of wet grassland which are found on peat soils grade into bog habitats, where fields have been agriculturally improved in the past. Species such as Purple moor grass *(Molinia caerulea),* Heath bedstraw *(Galium saxatile),* Marsh bedstraw *(Galium palustre),* Ling *(Calluna vulgaris),* Sheep's fescue *(Festuca ovina),* Tormentil *(Potentilla erecta)* and Hare's tail cotton grass *(Eriophorum vaginatum)* can be found growing intermittently with the species listed above. No proposed infrastructure is located within these habitat areas.

Plate 6-2 Wet grassland (GS4) within the field proposed to accommodate T9

6.4.1.1.3 *Dry meadows and grassy verges (GS2)*

Some smaller areas of less intensively managed fields and roadside verges with a higher sward are categorised as dry meadows and grassy verges (GS2). Infrastructure proposed within these areas include T7 and the proposed temporary construction compound. Additionally, one spoil repository area is proposed within this habitat (SRA2) directly south of T7.

Common species found within these habitat areas include Perennial rye grass *(Lolium perenne),* Yorkshire fog (*Holcus lanatus*), Sweet vernal grass (*Anthoxanthum odoratum),* Meadow Foxtail *(Alopecurus pratensis),* Cocks foot (*Dactylis glomerata),* Bent grasses (*Agrostis spp.),* Crested Dogs-tail *(Cynosurus cristatus),* Ribwort plantain *(Plantago lanceolata),* Broadleaved Dock *(Rumex obtusifolius),* Knapweed (*Centaurea nigra),* Red clover (*Trifolium pratense),* Silverweed (*Potentilla anserina),* Meadow Buttercup *(Ranunculus acris)* and Creeping Buttercup *(Ranunculus repens).* (Plate 6-3)

Plate 6-3 Dry meadows and grassy verges (GS2) at the location of the proposed temporary construction compound

6.4.1.2 Woodland Habitats

6.4.1.2.1 *Conifer plantation (WD4)*

There are four locations within the Proposed Wind Farm site comprising of mature coniferous plantation forestry of Sitka spruce (*Picea sitchensis).* The total of WD4 woodland within the Proposed Wind Farm site boundaries is approximately 15.94ha. The plantations forestry is frequently fringed by broadleaf species, including Sessile oak *(Quercus petraea)*, Silver birch *(Betula pendula)*, Hawthorn *(Crataegus monogyna)* and Brambles *(Rubus fruticosus agg.)* growing around the boundaries. Given the nature of such densely planted coniferous plantations, few other woody plant species occur within the plantation. (Plate 6-4)

The turbine hardstand of T9 and a section of the proposed new access road between T5 and T9 are located within this habitat. Additionally, approximately 0.13ha of the northwest corner of the proposed temporary construction compound is located within this habitat.

Plate 6-4: Plantation conifer forestry (WD4) occurring within a section of the proposed new road between T5/T8 and T9.

6.4.1.2.2 Broadleaved woodland (WD1)

A small number of areas within the site consist of broadleaf plantation forestry (approx. 3.8ha total). These areas consist of Alder (*Alnus glutinosa)* and Ash (*Fraxinus excelsior)* along the peripheries of the conifer plantation or in small blocks. The forest edges support species including willow (*Salix spp.*), ash (*Fraxinus excelsior*), Alder (*Alnus glutinosa*), hawthorn (*Crataegus monogyna*) and Hazel *(Corylus avellana).* Bracken *(Pteridium aquilinum),* Nettles *(Urtica dioica)* and Brambles *(Rubus fruticosus agg.)* dominate the field level of this habitat. (Plate 6-5)

No infrastructure is located within these habitat areas; however a proposed new turning bay will overlap with a section of the ash monoculture woodland, and a section of the existing access road to be upgraded between T8 and T9 immediately adjoins this habitat area on the northeast side. There will be small losses of the edge of this habitat area associated with widening of the existing road at this location.

Plate 6-5 Broadleaved woodland consisting of Ash (Fraxinus excelsior) plantation located to the west of T8

6.4.1.2.3 Scrub (WS1)

Scrub can be found throughout the Proposed Wind Farm site in various habitat pockets. In most instances, scrub forms a mosaic with bog habitats (PB1/PB4) and grassland areas. It can also be found encroaching into fields from hedgerows which have not been regularly maintained.

Species found within scrub habitats include Gorse *(Ulex europaeus),* Hawthorn (*Crataegus monogyna),* Bramble (*Rubus fruticosus agg.),* Willows *(Salix spp.),* Blackthorn *(Prunus spinosa),* Hazel *(Corylus avellana)* and occasional Sycamore *(Acer pseudoplatanus).* (Plate 6-6)

Scrub encroaching into poor condition, drained, or partially drained bog habitats can be found at the adjacent and on the fringes of cutover bog (PB4) and uncut raised bog (PB1) habitats. It is likely some of these scrub-dominated habitat areas would convert into bog woodland (WN7) habitats, if peat extraction ceased, and the scrub left unmanaged to naturally recolonize. Species found within these habitats include Downy birch (*Betula pubescens),* Willows (*Salix cinerea),* Holly *(Ilex aquifolium),* with occasional Rowan (*Sorbus aucuparia).* Ground cover is dominated by dwarf shrubs such as Ling (*Calluna vulgaris),* occasional Bilberry *(Vaccinium myrtillus*) in association with Bracken (*Pteridium aquilinum),* Bramble *(Rubus fruticosus agg.),* Ivy (*Hedera hibernica*), Purple Moor-grass *(Molinia caerulea).* No infrastructure is proposed within these habitat areas. The proposed road between T7 and T9 will travel through a relatively small section of a recolonizing scrub habitat directly adjoining the north banks of the Dangan Eighter Stream, northwest of T9.

Scrub associated with peatland habitats within the site do not conform to the Annex I Bog Woodland habitat. The ground within the scrub habitats is predominantly made up of the species composition of the adjoining habitats and low growing scrub species such as Ling (*Calluna vulgaris),* occasional Bilberry *(Vaccinium myrtillus*).

Plate 6-6 Example of Scrub (WS1) habitat within the stand-alone field in the southeast of the Proposed Project

6.4.1.3 Peatland habitats

The northwest side of the Proposed Wind Farm sitesite is mapped under Article 17 habitat as Annex I Active Raised Bog [7110] (see Section 6.3.1.3 above). A section of approximately 580m of the proposed new floating road between T7-T9 will be located within the mapped Article 17 habitat. The habitat classifications based on detailed botanical assessments within the peatland areas are described in full detail below.

The remainder of the Proposed Project footprint is located completely outside of any mapped Annex I habitat areas. The margins of the bog have been cut since at least the mid-1990s as evidenced from historic aerial imagery, with turbary cutting ongoing in a large part of the mapped Article 17 habitat area, as well as drainage throughout the habitat area. This has resulted in much of the peatland habitat within the Proposed Wind Farm site falling under the cutover bog (PB4) category (approx. 42.0ha), with areas of relatively uncut but drained bog categorised as uncut raised bog (PB1) (approx. 33.29ha).

6.4.1.3.1 *Cutover bog (PB4)*

Areas of cutover bog are comprised of vegetation that include ling heather (*Calluna vulgaris*), cross leaved heath (*Erica tetralix*), purple moor-grass (*Molinia caerulea*), tormentil (*Potentilla erecta)*, bog asphodel (*Narthecium ossifragum*), saplings of downy birch (*Betula pubescens*) and willow (*Salix sp.*). Some Sitka spruce *(Picea sitchensis)* saplings are also recolonizing small areas of cutover bog where they are close to plantation forestry. (Plate 6-7)

These areas of bog have evidently been drained and cut since at least the 1990s based on historic aerial imagery but have since started to revegetate. Areas of cutover bog in the site dominated by bare peat with revegetation are largely concentrated within the centre/west of the Proposed Wind farm site, within the lands between T5 and T6. Proposed site Smaller areas of cutover bog can be found along the road

between T7 and T9. There is also one peat repository area proposed immediately east of T5 and one spoil repository located immediately to the west of the T5 hardstand. (Plate 6-8)

The bog community within the location of T5 is categorised as per IWM 128[11] as *Calluna vulgaris–bare peat cutover bog (BP4)*. The habitat found at T5 falls into the IVC classification of *BG1B - Rhynchospora alba - Narthecium ossifragum.* Habitats classified under the 'bare peat' category do not correspond with any Annex habitats. All bare peat habitats are classified within IWM 128 as 'low conservation value' with no potential links to any EU Annex I habitats.

A peat repository area (PRA2) and a spoil repository area (SRA4) are found within cutover bog habitats. SRA4 is located immediately east of T5 within a *BP3 – Bare Peat Cutover Bog* IWM128 classification. PRA2, located to the east of T5 is a transitional habitat of *BP2 - Eriophorum angustifolium–bare peat cutover bog*. (Plate 6-9) Neither of these habitats conform to any Anex 1 habitat types.

Habitats corresponding to cutover bog (PB4) are also found along the proposed access road between T7 and T9. The margins of this bog have all been cut, with all bog margins classified as cutover bog (PB4). Many of these areas are still actively being extracted and are all heavily drained. Marginal habitat areas between the cutaway and high bog area, as well as areas within the footprint of the proposed new access road between T7 and T9 were assessed by carrying out detailed relevés and habitat condition assessments (See Appendix 6-1). Four relevés were taken within the marginal and high bog habitat areas, and of the four, the two marginal habitats were assessed as cutaway bog (PB4) based on the assessment criteria in IWM 128[11].

As outlined in Appendix 6-1 (Botanical Appendix), relevé 1 and 4 were not classified as *High Sphagnum* habitats along the proposed new access road. Relevés 2 and 3 were assessed as *High Sphagnum* communities and are therefore considered under the raised bog section below.

Relevé 1 corresponded to IWM 128 sub-communities: *MS3 Molinia caerulea – Polygala serpyllifolia cutover* bog and MS4 *Cladonia portentosa–Trichophorum germanicum cutover bog*. According to IWM 128, MS4 does not have any links with EU Annex I habitats and is categorized as having *moderate* indicative conservation value. MS3 does not have direct links to any EU Annex I habitats described within the manual, however it is considered moderate-high conservation value, and notes that where *Succisa pratensis* is present in significant numbers, it may be an important habitat for Marsh Fritillary (*Euphydryas aurinia*), listed on Annex II of the Habitats Directive. This PB4 habitat areas did not record any *Succisa pratensis.* This relevé corresponded to the IVC community *BG2B Erica tetralix - Andromeda polifolia.*

Relevé 4 corresponded closely to the IWM 128 sub community *MS4 Calluna vulgaris – Sphagnum subnitens cutover bog*. This relevé corresponded to the IVC community *BG2D Erica tetralix - Schoenus nigricans*.

The areas of cutover bog were assessed for their potential to conform to the Annex I habitat *'Active Raised Bog [7110]'* and *'Degraded Raised Bog Still Capable of Natural Regeneration [7120]* as per IWM 128.[11] Sphagnum cover was ≤40% in both relevé 1 and 4, and the condition of these areas were heavily drained in the wider area, firm to soft and relatively dry, with high percentages of recolonizing low-growing scrub species, such as Bog Myrtle *(Myrica gale)* and heath species *(Calluna vulgaris, Erica tetralix).* These areas have been largely drained and historically cut away (based on historic aerial imagery). Additionally, the IWM 128 sub-community classifications did not correspond to any Annex I habitats. However, the cutover habitats within the Proposed Wind Farm site do hold biodiversity value in a local context.

Plate 6-7 Example of revegetating Cutover bog (PB4) located within the centre of the Proposed Wind Farm site

Plate 6-8 Example of cutover bog with active peat extraction and dominated by bare peat, immediately south of the proposed T5

Plate 6-9 Example of cutover bog (PB4) habitat located within a proposed peat repository area

6.4.1.3.2 Raised Bog (PB1)

As described above, much of the high bog area has been cutaway around the edges and the heavily drained. (Plate 6-10). However, the central section of the high bog area is relatively intact, and historical aerial imagery shows that this area has not been extensively cutaway in the past, however large parallel drainage features have been created throughout much of this habitat. Therefore, this habitat is considered as uncut raised bog. (Plate 6-11)

The uncut areas are surrounded by deep drains and extensive areas of cutover bog, with small pockets of bare peat present. The majority of these habitats are dry in nature, and the vegetation is typically dominated by abundant ling heather (*Calluna vulgaris),* bog asphodel *(Narthecium ossifragum),* bog myrtle *(Myrica gale)* cross-leaved heath *(Erica tetralix). Sphagnum* cover is limited throughout, with few hummocks, sparse pool and overall, relatively dry ground. No areas were identified as quaking. The ground became wetter and softer as you move west to east through the bog, with small hummocks becoming more frequent. Uncut areas that have not been drained are limited in extent throughout this habitat, and areas of high *Sphagnum* areas are fragmented within this habitat.

The proposed new floating road between T7 and T9 crosses through approximately 285m of uncut raised bog habitat. As outline above in Section 6.4.1.3.1, Relevés 2 and 3 were identified as corresponding to *High Sphagnum* communities as per IWM 128[11]. Therefore, the relevé data was subsequently assessed based on the criteria in the IWM 81[12]. See Appendix 6-1 for relevé data of this habitat within the location of the proposed floating access road.

Based on the ecotopes criteria and active peat forming communities complex key, found in Appendix 2 of the IWM 81, relevé 2 corresponds to two ecotopes – (1) *Sub-marginal ecotope Complex 9/7* and (2) *Sub-central ecotope community complex 9/7/10.* The IVC classification of this relevé corresponds to *BG2B Erica tetralix - Andromeda polifolia.*

Relevé 3 was assessed based on the same criteria and the relevant ecotopes assigned to this habitat were *Sub-central ecotope 10/9/3* and *sub-central ecotope community complex 9/7/10.* The IVC classification assigned to this habitat is *BG2B Erica tetralix - Andromeda polifolia*. Both relevés were assigned as raised bog (PB1). According to IWM 81, central and sub-central ecotopes are typically classified as active raised bog, while face-bank, marginal and sub-marginal ecotopes are typically classified as degraded raised bog habitats. Recently, the Irish Vegetation Classification assigned Degraded Raised Bog (DRB) to vegetation communities under the two main bog vegetation groups: *Rhynchospora alba-Sphagnum cuspidatum (BG1)* and *Erica tetralix-Sphagnum capillifolium (BG2).*

As described above, the raised bog habitat areas within the areas proposed for the floating road between T7 and T9 have been historically drained, large areas surrounding the high bog have been historically cutaway and the bog is dry-soft but not quaking. Very few hummocks are present, and *Sphagnum* pools are limited in extent.

The likelihood of these relevés to correspond with the Annex I habitat *Active Raised Bog (7110)* was considered. According to IWM 128, to identify positive indicator species and to define thresholds, the presence and absence of characteristic active raised bog species must be present, in combination with at least 40% *Sphagnum* cover. At least 12 indicator species must be present (from tables 18 and 19 of IWM 128), with all 8 constant species in Table 19 required. Relevé 2 did not meet these criteria, with only 4 constant species corresponding to table 19 and 6 species corresponding to Table 18. For Relevé 3, only 6/8 of the required 8 species were recorded from Table 19, and 8 species recorded from Table 18. Therefore, it is concluded that the habitat does not conform to the Annex I habitat *Active Raised Bog (7110).*

In further consideration of Annex I habitats, the IWM no. 128 states the following,

> *'Another Annex I habitat frequently found on raised bogs is Rhynchosporion depressions (7150). Similarly to ARB, to date this habitat has not been described from cutover areas in Ireland. NPWS (2019) state that "in raised bogs, Rhynchospora vegetation communities are only considered Annex I type when they occur in their most developed form in the wettest sections of Active raised bog (7110), which correspond with pools, Sphagnum lawns and hollows".*

As described in the paragraphs above, based on the condition of the raised bog habitat within the location of the proposed floating road between T7-T9 as well as the conclusion that this habitat does not conform to 7110, the habitat area does not conform to the Annex I habitat *Rhynchosporion depressions (7150).*

Based on this condition assessment, the relevé data (Appendix 6-1) as well as the IVC classifications and IWM 128 sub-community classification, it is likely that this habitat is a degraded raised bog habitat with small, fragmented areas of active raised bog. By taking a precautionary approach, it was determined that the location of the proposed floating road between T7 and T9 is located within a habitat that corresponds to the Annex 1 habitat *7120 Degraded raised bogs still capable of natural regeneration.*

It should be noted that the definition of Degraded Raised Bog has also been changed in the 2019 Article 17 Reporting. Whilst previously (from the 2013 Reporting), the habitat previously pertained to all vegetated areas of uncut Raised Bog that did not meet the criteria to be classified as Active Raised Bog, it is now recognised that the extent is much narrower and dependant on specific hydrological conditions. This habitat still does not occur on cutover bog in the Irish context and is more limited in its extent on uncut bogs.

According to the EU Commission[23]:

[23] *https://eunis.eea.europa.eu/habitats/10143*

> *'These are raised bogs where there has been disruption (usually anthropogenic) to the natural hydrology of the peat body, leading to surface desiccation and/or species change or loss. Vegetation on these sites usually contains species typical of active raised bog as the main component, but the relative abundance of individual species is different. Sites judged to be still capable of natural regeneration will include those areas where the hydrology can be repaired and where, with appropriate rehabilitation management, there is a reasonable expectation of re-establishing vegetation with peat-forming capability within 30 years.'*

Further, the IWM no. 81 states the following,

> *In the case of ARB, the Favourable Reference Range is currently considered to be the Range of Degraded Raised Bog still capable of regeneration, as according to the definition of DRB in the Habitats Directive Interpretation Manual (Anon, 2007), the habitat should be capable of regeneration to ARB in 30 years if appropriate measures are put in place (i.e. no major impacting activities are present and any necessary restoration works are implemented).*

Therefore, based on the condition assessment described above and detailed relevé data (provided in Appendix 6-1 Botanical Appendix), the location of the proposed new floating road between T7 and T9 does not correspond to the Annex I habitat *Rhynchosporion depressions (7150).* It also does not correspond to the Annex I habitat *Active Raised Bog (7110).* However, by taking a precautionary approach, approximately 285m of the proposed new floating access road between T7 and T9 correspond to the Annex I habitat *Degraded raised bogs still capable of natural regeneration (7120).*

Plate 6-10 Raised bog (PB1) found north of T5

Plate 6-11 Raised bog (PB1) habitat located within the section of the road between T7 and T9

6.4.1.3.3 Rich Fen (PF1)

An area in the north section of the stand-alone field to the east of the Proposed Wind Farmconsists of a rich fen (PF1) habitat. This area is depressed from the rest of the field and contains a number of species characteristic of rich fen habitats, including Purple Moor-grass *(Molinia caerulea),* Grass-of-parnassus *(Parnassia palustris),* Marsh Cinquefoil *(Potentilla palustris),* Slender sedge *(Carex lasiocarpa),* Bottle sedge *(Carex rostrata),* Bog bean *(Menyanthes trifoliata),* Bladder sedge *(Carex vesicaria),* Devil's Bit Scabious *(Succisa pratensis),* Sharp-flower rush *(Juncus acutiflorus),* Soft rush *(Juncus effusus),* Marsh Horsetail *(Equisetum palustre),* Common Cottongrass (*Eriophorum angustifolium),* marsh orchid *(Dactylorhiza spp.),* Water mint *(Mentha aquatica)* and Marsh thistle *(Cirsium palustre).* Bryophytes present include *Campylium stellatum* and *Scorpidium scorpioides.* (Plate 6-12)

Species recorded within this habitat are indicator species of the Annex I habitat *7230 Alkaline Fen,* and therefore there this habitat likely conforms to *7230 Alkaline Fen.*

There is no infrastructure provided within this habitat area. It is proposed to retain this entire habitat and enhance the habitat, as outlined in the BMEP found in Appendix 6-4.

Plate 6-12 Rich fen (PF1) habitat found within the stand-alone field in the east of the Proposed Wind Farm

6.4.1.4 Aquatic habitats

6.4.1.4.1 *Lowland Depositing Rivers (FW2)*

The watercourses identified within the vicinity of the Proposed Project are typically small, historically modified lowland depositing rivers (FW2).

Two rivers flow directly through the Proposed Wind Farm site, along with the Proposed Grid Connection. The Grange River (Grange(Galway)_010), (EPA Code: IE_WE_30G020200) and the Abbert River (Abbert_030) (EPA code: IE_WE_30A010300). The Grange River flows through the northern part of the site, while the Abbert River flows through two locations of the site in the south. A number of tributaries and unnamed streams that feed into these two rivers can also be found within the Proposed Project.

The Grange River, a major tributary of the Clare River, is a spring-fed river which rises some 5km north of Summerville Lough. It has been extensively deepened in places, as well as historically straightened in places. In-stream enhancement works have been carried out at numerous locations along this river.

The Abbert River is another major tributary of the Clare River. Having previously been modified by arterial drainage, rehabilitation works have restored areas of this river and it is now considered to provide good salmonid habitat (O'Reilly, 2009). Generally, this river within the Site has a semi-natural profile with only localised modifications such as scour protection in vicinity of the N63 road crossing. However, some locations have been historically straightened and/or deepened.

Additionally, the Abbert River, Feagh East Stream and the Grange River can all be found crossing the Proposed Grid Connection. Descriptions of the habitats at each of the watercourse crossing points can be found below.

A full description of watercourses is provided in the Aquatic Baseline Report attached as Appendix 6-3.

Internal Wind Farm Water Crossing

There are 5 proposed new watercourse crossings within the Proposed Wind Farm. All water crossings will consist of clear-span structures which will not require any in-stream works. This is described in full in Section 4.9.3 of Chapter 4 Description.

The first water crossing is located northeast of the turbine delivery accommodation main construction site entrance. There is no existing structure at this location. This crossing point will cross between two existing improved agricultural grassland (GA1) fields over a tributary of the Forty Acres Stream, classified as a lowland depositing river (FW2). The river profile was made up of a riffle and shallow glide with occasional shallow pools. The substrate largely was made up of mixed gravels, sand and small cobble. (Plate 6-13)

Plate 6-13 Water crossing point 1 on a tributary of the Forty Acres Stream, northeast of the proposed main construction site entrance

The second proposed water crossing point is located northeast of T2, which is proposed to cross between a field of arable crops (BC1) and improved agricultural grassland (GA1). This proposed crossing point is located on the Lecarrow Stream (FW2), with an approximately 2m wide and 0.1m deep channel with bank heights of 2m. (Plate 6-14)

Plate 6-14 Proposed water crossing point 2 on the Lecarrow Stream (FW2)

The third water crossing point is located on an unnamed drainage ditch (FW4) that is culverted beneath an existing road, southeast of T6. The channel was approx. 2m wide and 0.2-0.4m deep in very slow-flowing glide. (Plate 6-15)

Plate 6-15 Water crossing point 3 located southeast of T6

The fourth water crossing point is located north of T5. This location crosses over the Dangan Eighter Stream tributary (FW2). The channel was 2-2.5m wide with stagnant water of 0.05-0.15m deep. This proposed crossing point is located between peatland (PB1) and existing conifer forestry (WD4). (Plate 6-16)

Plate 6-16 Representative image of water crossing point 4 within the Proposed Wind Farm

The fifth water crossing point has a pre-existing concrete culvert which crosses over the Dangan Eighter Stream (FW2) between a section of conifer forestry (WD4) and cutover/raised bog habitats. The channel is wide (approximately 2-2.5m) and deep with overhanging vegetation. (Plate 6-17)

Plate 6-17 Dangan Eighter Stream (FW2) located northwest of T9, where the fifth proposed water crossing point for the road between T7 and T9 is located

6.4.1.4.2 Drainage Ditches (FW4)

A number of manmade ditches/drains were recorded across the Proposed Wind Farm site. These drains were associated with areas of cutover bog (PB4), uncut raised bog (PB1) and along sections of the existing forestry access roads and field boundaries. Most were heavily vegetated with scrub species such as Bracken *(Pteridium aquifolium),* Brambles (*Rubus fruticosus agg.*) and Gorse (*Ulex europaeus).* Additionally, a number of unnamed streams/drains can be found traversing the proposed Grid Connection Route. These are described in detail in Appendix 6-3.

Drainage ditches associated with cutover bog areas have very little to no instream vegetation and are species poor. Species include Common reed (*Phragmites australis),* Gorse (*Ulex europaeus),* and Ling heather (*Calluna vulgaris).* (Plate 6-18)

Plate 6-18 Drain (FW4) located near T5, adjoining a Cutover Bog (PB4) habitat

6.4.1.5 Other Habitats

6.4.1.5.1 *Arable Crops (BC1)*

Three fields of arable crops can be found in the southwest of the Proposed Project. The fields contain monoculture cultivated Barley crops. Infrastructure proposed to be located within these fields includes T01 and its associated hardstand, as well as a section of the proposed internal access road. (Plate 6-19)

Plate 6-19 Field containing Barley crops in the southwest of the Proposed Wind Farm

6.4.1.5.2 Hedgerows (WL1)

Hedgerows (WL1) throughout the site consist of Sycamore *(Acer pseudoplatanus),* Gorse *(Ulex europaeus),* Hawthorn (*Crataegus monogyna),* Bramble (*Rubus fruticosus agg.),* Willows *(Salix spp.),* Elder *(Sambucus nigra)* and Blackthorn *(Prunus spinosa).*

At field level, many of the hedgerows contain Nettles *(Urtica dioica),* Willowherbs *(Epilobium spp.),* Docks *(Rumex spp.),* Cleavers *(Galium aparine),* Woundwort *(Stachys palustris),* Ivy *(Hedera hibernica),* Meadow foxtail *(Alopecurus pratensis),* Yorkshire fog *(Holcus lanatus),* Soft rush *(Juncus effusus),* Cow parsley *(Anthriscus sylvestris),* Bindweed *(Convolvulus arvensis)*, False oat grass *(Arrhenatherum elatius)*, Bracken *(Pteridium aquilinum)*, Bush vetch *(Vicia sepium)*, as well as *Dryopteris spp.* (Plate 6-20)

Plate 6-20 Example of hedgerows (WL1) located along field boundaries in the Proposed Wind Farm site

6.4.1.5.3 Treelines (WL2)

Treelines consist of Ash *(Fraxinus excelsior),* Sycamore *(Acer pseudoplatanus),* Gorse *(Ulex europaeus),* Hawthorn (*Crataegus monogyna),* Bramble (*Rubus fruticosus agg.),* Beech *(Fagus sylvatica)* and Alder *(Alnus glutinosa).* In some places there are planted Sitka spruce *(Picea sitchensis)* within the treeline. (Plate 6-21)

Plate 6-21 Treeline located within the Proposed Wind Farm site

6.4.1.5.4 Buildings and artificial surfaces (BL3)

Vacant/derelict dwellings, derelict sheds/farm structures as well as agricultural buildings are also present within the Site and are categorised as buildings and artificial surfaces (BL3). Existing roadways within the Project Site are also categorised as BL3. (Plate 6-22)

6.4.1.5.5 Recolonising bare ground (ED3)

Small habitat areas within the Proposed Wind Farm site becoming recolonised by ruderal plants are categorised as recolonising bare ground (ED3). These areas are small and are not mapped in detail. Many consist of unbound farm tracks becoming recolonized by plants as well as farmyards and roadside verges with limited plant cover. One of the peat repository areas (PRA3) is proposed to be located within a field containing recolonizing bare ground (ED3) immediately east of the proposed substation.

Plate 6-22 Example of an agricultural structure categorised as Buildings and artificial surfaces (BL3) with Recolonizing bare ground (ED3) within the hardstanding area adjoining the structure.

6.4.1.5.6 Stone walls (BL1)

Stone walls (BL1) frequently line field boundaries within the Proposed Wind Farm site and are almost entirely associated with scrub (WS1), hedgerows (WL1) and treelines (WL2) within the site. (Plate 6-23)

Plate 6-23 Stone wall (BL1) within the Proposed Wind Farm site

6.4.2 Description of Habitats and Flora within the Proposed Grid Connection

6.4.2.1 Habitats within the Substation and BESS Compound

The proposed Substation and BESS compound are located within an improved agricultural grassland (GA1) field in the southeast of the Proposed Wind Farm Site. A description of the improved grassland habitat and flora species is found above in Section 6.4.1.1.1. Additionally, detailed relevés taken at the location of the proposed Substation and BESS compound are described in the Botanical Assessment found in Appendix 6-1.

6.4.2.2 Habitats along the 110kV Underground Cabling

It is proposed to connect the on-site 110kV substation to the existing 110kV Cloon substation in the townland of Cloonascragh, Co. Galway via 110kV underground electrical cabling. The underground electrical cabling route is approximately 20.9km in length and located primarily within the public road corridor, with approx. 2.6km located within the Proposed Wind Farm site. (Plate 6-24) A full description of the proposed underground cabling route is provided in Section 4.9.6.2 of Chapter 4 Description.

Habitats found alongside the Proposed Grid Connection (which will not be impacted as a result of the proposed GCR) include Improved agricultural grassland (GA1), Buildings and artificial surfaces (BL3), Cutover bog (PB4), Treelines (WL2), Hedgerows (WL1), Wet grassland (GS4), Parkland and scattered trees (WD5), Conifer plantation (WD4), (Mixed) Broadleaved woodland and Dry meadows and grassy verges (GS2). There are eight watercourse crossings over watercourses (FW2) drains (FW4) which pass beneath the existing road along which the underground cable connection route will be located. This is outlined below in Table 6-14.

Plate 6-24 Section of the proposed grid connection route located along a public road

6.4.2.2.1 Water Crossings

There are 8 identified watercourse crossings along the Proposed Grid Connection underground electrical cabling route, one of which includes a proposed new clear-span bridge within the Proposed Wind Farm site as detailed in Section 6.4.1.4 above. The construction methodology for the mapped crossings has been designed to eliminate the requirement for in-stream works. A description of the water crossing points can be found below, and a full description of the watercourse crossing options is available in Section 4.9.6.5 of Chapter 4.

Table 6-14 Water crossing detail and structures

Crossing No.	Watercourse Type	Width of Channel (m)	Cover from Road Level to Top of Bridge/Culvert (m)	Crossing Type Description	Watercourse Crossing Type	Extent of in-channel works
WC 1	Open Channel (no existing water crossing)	1.5	N/A	New Clear Span Bridge	N/A	None. No in-stream works required
WC 2	Stone Culvert	2.5	1.4	Standard Formation Crossing under Culvert	Option B	None. No in-stream works required
WC 3	Stone Culvert	2.3	1.3	Standard Formation	Option B	None. No in-stream

				Crossing under Culvert		works required
WC 4	Plastic Pipe	2.5	2.0	Standard Formation Crossing over Culvert	Option A	None. No in-stream works required
WC 5	Stone Arch Bridge	1.5	2.25	Standard Formation Crossing over Culvert	Option A	None. No in-stream works required
WC 6	Stone Culvert	0.7	3.5	HDD	Option D	None. No in-stream works required
WC 7	Stone Arch Bridge	1.5	2.6	Standard Formation Crossing over Culvert	Option A	None. No in-stream works required
WC 8	Concrete Clear Span Bridge	8.0	1.55	HDD	Option D	None. No in-stream works required

Water crossing 1

The first water crossing is located northeast of the turbine delivery accommodation area at the proposed construction site entrance. This crossing point crosses between two existing improved agricultural grassland (GA1) fields over a tributary of the Forty Acres Stream, classified as a lowland depositing river (FW2). The river profile was made up of a riffle and shallow glide with occasional shallow pools. The substrate largely was made up of mixed gravels, sand and small cobble. (Plate 6-25)

Plate 6-25 Water crossing point 1 on a tributary of the Forty Acres Stream, northeast of the proposed TDR at the site entrance

Water crossing 2

The first water crossing point when leaving the entrance of the Proposed Wind Farm site is an existing concrete-pipe culvert beneath the R332 over the Forty Acres Stream. It was dry on the upstream side of the road at the time of the survey, with a trickle flow. Further upstream within the Proposed Project, this stream is heavily vegetated, overgrown lowland/depositing river (FW2) forming part of the Forty Acres Stream. It is approximately 2-2.5m in width and less than 100cm deep. (Plate 6-26)

Plate 6-26 Water crossing point 2 from the entrance of the Proposed Project over the Forty Acres Stream

Water crossing 3

The third Proposed Grid Connection water crossing point is also part of the Forty Acres Stream (Lowland depositing river – FW2), located directly downstream of the 1st water crossing point. The river is culverted by an existing concrete structure under the N63. The river had a glide flow and was approximately 15cm deep and 1-1.5m in width. (Plate 6-27)

Plate 6-27 Water crossing point 3 beneath the N63, at the Forty Acres Stream

Water crossing 4

The fourth water crossing point crosses the Feagh East Stream beneath the L6324. This section of the river is classified as a lowland/depositing river (FW2). The stream was 3-4m wide and 0.3-0.6m deep with banks of up to 2m. The river had a very slow-flowing glide at the time of the survey. (Plate 6-28)

Plate 6-28 Fourth water crossing point at the Feagh East Stream beneath the L6324

Water crossing 5

The 5th water crossing structure is an existing stone arch bridge over an unnamed drain (FW4) along the L2128. This water crossing is has a rapid flow and dense vegetation cover. The channel wisth is approx. 1.5m. The stone arch bridge provides an existing culvert within the road. (Plate 6-29)

Plate 6-29 Unnamed stream beneath the road at water crossing 5

Water crossing 6

Water crossing 6 is located west of Water crossing 5, also on the L2128. This watercourse is an unnamed, shallow drain (FW4) with banks approx. 0.5m in height. The drain is culverted beneath the road and heavy vegetated with scrub. (Plate 6-30)

Plate 6-30 Unnamed watercourse (FW4) found below the 6th water crossing point

Water crossing 7

Water crossing 7 is located on the R347 and is an unnamed drain (FW4) which flows from conifer forestry (WD4) on either side of the road. The drain was shallow and heavily vegetated by scrub (WS1) on either side of the road. (Plate 6-31)

Plate 6-31 Unnamed drain (FW4) at water crossing 7 which flows from conifer forestry (WD4) on either side of the road

Water crossing 8

Water crossing 8 crosses the Grange River (Lowland Depositing River – FW2) at Ballinderry Bridge (R347). The river was 10-12m wide and ranged from 0.5-3m deep with a profile of slow-flowing glide and pool (no riffle). (Plate 6-32 and Plate 6-33)

Plate 6-32 Water crossing point 8 along the Proposed Grid Connection

Plate 6-33 Side view of water crossing point 8

6.4.2.3 Habitats along the Turbine Delivery Route

Accommodation works will be required at only one location along the turbine delivery route, between the Galway City Port and the Proposed Wind Farm site. The delivery route will utilize mainly national and regional roads, with one accommodation area required in the field west of the N63/R332 junction. This area requiring works has been assessed from an ecological perspective with habitat details provided within the Botanical Assessment found in Appendix 6-1.

Turbine Delivery Accommodation at the N63/R332 Junction

The proposed turbine delivery accommodation is located within an area of Improved agricultural grassland (GA1) surrounded by a low growing Hawthorn (*Crataegus monogyna)* hedgerow at the N63/R332 Junction. The dominant species within this grassland habitat include Perennial Ryegrass (*Lolium perenne),* Broadleaved Dock (*Rumex obtusifolius)* and Common Sorrel *(Rumex acetosa).* Approximately 145m of this hedgerow will be lost to accommodate turbine delivery. (Plate 6-34 and Plate 6-35).

As outlined in Section 6.4.3.4.5, this habitat was assessed as Low value for bat foraging and commuting, with no (None) potential for roosting bats.

Plate 6-34 Improved Agricultural Grassland (GA1) within turbine delivery route accommodation area

Plate 6-35 Improved Agricultural Grassland (GA1) and low-growing Hawthorn hedgerow (WL1) within turbine delivery route accommodation area

Turbine Delivery Overrun at the Proposed Wind Farm Site Entrance

The habitat within the field at the proposed construction site entrance is made up of improved agricultural grassland (GA1). This habitat is dominated by Perennial Ryegrass *(Lolium perenne),* Yorkshire fog *(Holcus lanatus)* and Creeping buttercup *(Ranunculus repens).*

A treeline (WL2) of approx. 108m lines the turbine delivery accommodation area at the construction site entrance. (Plate 6-36) As outlined in Section 6.4.3.4.5, although the treeline offers *Moderate* suitability for commuting and foraging bats, targeted ground-level inspections (following Andrews, 2018) confirmed that none of the trees contained potential roost features (PRFs). Accordingly, all trees were classified as having *None* roosting potential in line with Collins (2023).

All of these trees will be permanently lost to facilitate the overrun area at the construction site entrance.

Plate 6-36 Receiving habitat at of the proposed turbine overrun area at the site entrance

6.4.2.4 Protected Habitats/Flora

In summary, as described in the preceding sections, the following habitats which correspond to Annex I habitats are present within the EIAR Site Boundary:

- Raised Bog (PB1) - Degraded raised bogs still capable of natural regeneration (7120)
- Rich Fen (PF1) - Alkaline Fen (7230)

It should be noted that the habitat corresponding to Alkaline Fen (7230) is located completely outside of the footprint of any infrastructure within the Proposed Wind Farmand will be entirely retained.

Peatlands present within the Proposed Wind Farm footprint include cutover raised bog (PB4) and some raised bog (PB1). The proposed new floating road between T7 and T9 crosses through approximately 580m of the mapped Article 17 habitat '*Active Raised Bog'.* However, as detailed in sections 6.4.1.3.1

and 6.4.1.3.2 (as well as the detailed Botanical Appendix in Appendix 6-1) by taking a precautionary approach, approximately 285m of the proposed new floating road between T7 and T9 is classified as corresponding to the Annex I habitat *degraded raised bog capable of natural regeneration (7120).* The total area of PB1 lost as a result of the Proposed Project amounts to approximately 1.7% of the overall development footprint area.

Furthermore, no botanical species listed under the Flora (protection) Order or listed in the Irish Red Data Books were recorded on the Proposed Wind Farm site. All species recorded are common in the Irish landscape. No rare and protected plant species recorded in the desk study, including those obtained from NPWS data request were recorded within the study area.

6.4.2.5 Invasive species

During field 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 Third Schedule invasive species American mink (*Neovision vison*) was recorded on the Lecarrow Stream, directly south of the 3rd water crossing point along the proposed grid connection route, in July 2024 during the Aquatic Surveys carried out.

The Third Schedule invasive species Rhododendron *(Rhododendron ponticum)* was also recorded along the hedgerows and on the edge of a conifer woodland (WD4), south of the Water crossing 4 and within the roadside verges of the Proposed Grid Connection (see Plate 6-37 below). No additional Third Schedule invasive species were recorded within the EIAR site boundary.

Plate 6-37 Rhododendron (Rhododendron ponticum) recorded at the edge of an existing Conifer Woodland (WD4) habitat along the northwestern section of the Proposed Grid Connection

6.4.3 Fauna in the Existing Environment

Faunal walkover surveys were undertaken during each of the multidisciplinary walkover surveys carried out within the Proposed Wind Farm site and the Proposed Grid Connection survey (see dates above in Section 6.2.3). The walkover surveys and dedicated faunal surveys were designed to detect the presence, or likely presence, of a range of protected species, including birds, bats, otter and badger. Potential suitable habitats were investigated for signs of animal presence. The following subsections provide a breakdown of the species recorded within the Site during these surveys. A map showing locations of evidence of fauna observed is in Figure 6-7.

6.4.3.1 Badger

No signs of badger foraging activity were recorded within the Proposed Wind Farm site and no badger setts were recorded within the Proposed Wind Farm. Two incidental records of Badgers were recorded outside of the Site during the ornithological surveys undertaken in 2024/2025. One badger was recorded commuting northwest of the proposed construction compound, outside of the EIAR site boundary on the 23rd of July 2024 during a Breeding Bird Walkover Survey. A dead badger carcass was recorded northeast of T9 (outside of the EIAR site boundary) during the ornithology survey effort on the 8th of January 2025. There were no further recordings of badger evidence within the EIAR site boundary during any of the surveys carried out.

The Proposed Wind Farm does provide suitable supporting habitat for this species, particularly within conifer plantation habitat and linear features within the Proposed Wind Farm site. However, this is considered on a precautionary basis given that there was no evidence of badger found directly within the EIAR site boundaries during any of the surveys carried out.

6.4.3.2 Otter

The desk study identified that otter is widespread in the wider area surrounding the Proposed Project. Watercourses within the Proposed Wind Farm along the Proposed Grid Connection Route provide suitable habitat for otter. As such, all watercourses within the Proposed Wind Farm and along the Proposed Grid Connection were surveyed for signs of otter. Watercourses in the wider study area were also surveyed to inform the aquatic baseline, which included surveying for signs of otter. See Figure 2-1, Aquatic Baseline Report, Appendix 6-3 for survey locations).

Otter surveys undertaken in the wider study area identified a single spraint downstream of the bridge at survey location Site A1 on the Dangan Eighter Stream at a proposed access track crossing within the EIAR site boundary. This is located within the Proposed Wind Farm site boundary, approximately 10m northeast of the proposed road between T5 and T6. A regular spraint containing abundant crayfish and diving beetle remains, was recorded on a boulder at the pipe culvert.

Additionally, further evidence of otter was recorded a location on the Grange River at a local road, located approx. 488m from the EIAR site boundary, and approx. 1 km northeast off the nearest Proposed Wind Farm infrastructure (T7). Otter spraint (fish remains only) was recorded on the grassy banktop adjoining the bridge abutment at this location.

No breeding (holts) or resting (couch) sites were identified either within the Proposed Wind Farm site, along the Proposed Grid Connection or in the wider study area where otter surveys were conducted. Further information can be found in the Aquatic Baseline Report, Appendix 6-3.

6.4.3.3 Marsh Fritillary

Marsh fritillary surveys were undertaken on the 21st August and the 18th September 2024 within suitable areas of the site containing Devil's Bit Scabious (*Succisa pratensis),* as mapped in the confidential appendix (Appendix 6-5). The substation was initially proposed to be located within one of the fields discovered as containing larval webs before mitigation by design was applied to the finalised Proposed Wind Farm layout to avoid impacts on this species. There is no infrastructure proposed within this habitat area.

Larval webs were also recorded within a field to the northwest of the Proposed Wind Farm site which was proposed as a potential woodland replanting area early in the design of the Proposed Project. Following the discovery of webs within this area, the layout design was altered to avoid this field. This field is no longer located within the Proposed Wind Farm boundaries. (Plate 6-38)

A singular Marsh Fritillary larval web was also recorded within the proposed new access road north of T5. The proposed road design layout was altered to avoid the known record of the larval web. The location of the larval web recorded is now approximately 17m north of the hardstand/new access road associated with T5. These records can be found in the confidential appendix (Appendix 6-5).

No additional suitable Marsh Fritillary habitat, or suitable supporting habitat consisting of devils bit scabious (*Succisa pratensis)* will be lost as a result of the Proposed Project. Following the design alterations to avoid known locations of Marsh Fritillary larval webs, there are two fields containing recorded larval webs within the Proposed Wind Farm.

Plate 6-38 Marsh fritillary larval webs recorded north of T5 (left) and within the stand-alone field to the southeast of the Proposed Project (right).

6.4.3.4 Bats

Bat surveys were carried out throughout 2024 and 2025 and followed the guidance set out in NatureScot (2021) and incorporated a combination of approaches including desktop study, habitat and landscape assessments, roost inspections, manual activity surveys, and static detector surveys deployed at ground level.

Full details of results are provided in the Bat Report in Appendix 6-2 and are summarised here.

6.4.3.4.1 *Roost surveys*

Daytime Roost Inspections

A search for roosts was undertaken within 200m plus the rotor radius (i.e. 81.5m) of the Proposed Wind Farm (NatureScot, 2021). The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. Daytime roost inspections were carried out in May, June, July, August, and September 2024 and September 2025.

Structures

Twelve structures, and their associated outbuildings, were identified within and around the Proposed Wind Farm site and assessed for bat roost potential (Table 6-15 below). These were subject to a roost assessment which comprised a detailed inspection of the interiors and exteriors to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises. Locations of all inspected structures are presented in Figure 3-1 of the Bat Report in Appendix 6-2.

Table 6-15 Building structures inspected within and around the Cooloo wind farm site

Structure No.	Description	IG Ref	Nearest Turbine	Distance to nearest turbine (m)
1	Shed	M 55031 47386	T1	370
2	Large Hay Shed	M 55135 47805	T1	300
3	Small Farm Shed	M 55089 47969	T1	470
4	Cattle Shed	M 55758 49068	T3	470
5	Turf Shed	M 56299 48333	T4	245
6	Derelict Building	M 55768 49063	T5	198
7	Turf Barn	M 55966 50469	T7	350
8	Unused Building	M 56152 50500	T7	550
9	Unused House	M 57203 49326	T8	160
10	Farm Buildings	M 57430 49132	T8	430
11	Farm Buildings	M 57493 49530	T8	512
12	Unused House	M 57481 49608	T8	532

Of the 12 structures surveyed, six structures were assessed as offering *Negligible* roosting potential, three structures had *Low* roosting potential, two buildings had *Moderate* roosting potential and one with *High* roosting potential. Details on the further survey effort carried out at *Moderate* and *High* roosting potential structures are provided below in Section 6.4.3.4.2.

Further details on each of the 12 structures identified above is provided in sections 4.3.2.1.1, 4.3.2.1.2, 4.3.2.1.3, and 4.3.2.1.4 of Appendix 6-2 (Bat Report).

Trees

A number of trees and treelines were inspected within and adjacent to the Proposed Wind Farm site during ground-level surveys in 2024 and 2025 to assess their potential for supporting roosting bats. These inspections focused on areas where tree removal or disturbance may occur due to infrastructure development. All trees and treelines within the wind farm footprint, particularly those scheduled for felling at the TDR entrance and near Turbines 1, 3, 5, 6 and 8, were inspected for potential roost features (PRFs) following Andrews (2018), including rot holes, hazard beams, cracks/splits, partially detached bark, knot holes and branch junctions.

No PRFs were identified on any tree, including those scheduled for felling. Any superficial features observed offered no roosting potential; accordingly, all inspected trees were assessed as *None* in line with Collins (2023). No PRFs and no signs of bat use or evidence of roosting was found during the tree inspections.

Further detail is provided in Section 4.3.2.1.5 and Table 4-7 of the Bat Report in Appendix 6-2.

6.4.3.4.2 *Emergence Surveys*

As outlined above, there were 12 structures in total identified within the Proposed Wind Farm site that were inspected during a bat habitat appraisal. Of the twelve structures surveyed, six were assessed as having negligible bat roost potential, three as low, two as moderate (Structure 6 and Structure 8), and one as high (Structure 9). Eleven of the twelve structures will be retained and avoided as part of the Proposed Project. Table 6-16 below summarises the findings of the bat activity surveys carried out on the structures assessed as having 'moderate' and 'high' roosting potential.

The derelict Building (Structure 6) was assessed as having moderate roost potential and is the only structure proposed for demolition to facilitate the construction of a new site road. Emergence surveys were completed at this structure in summer 2021 and autumn 2024. No bats were observed emerging from this structure during the surveys. Pipistrelle species and Leisler's bats were observed foraging along a treeline nearby the building during the surveys.

All other structures surveyed are avoided by the Proposed Project footprint.

Vacant Farmhouse Building (Structure 9) was surveyed in autumn 2021, 2022 and spring 2024. This structure was confirmed as a bat roost as soprano pipistrelle bats were observed emerging from the structure.

During the summer 2024 survey period, a dusk emergence survey was conducted at the Vacant Single-Storey House (Structure 8). One soprano pipistrelle was recorded emerging from a hole in the roof on the south-eastern side of the house. Leisler's bats, common and soprano pipistrelles were recorded commuting and foraging by the treeline to the south-east of this structure.

Table 6-16 Emergence Survey Results from moderate and high roost suitability structures (2024)

Structure	PRF Suitability	IG Ref	Survey Type	Date Surveyed	Survey Results
Derelict Building (Structure 6)	*Moderate*	M 55768 49063	Dusk Emergence Summer 2021	15th July 2021	No bats recorded emerging
Vacant Farmhouse Building (Structure 9)	*High*	M 57203 49326	Dusk Emergence Autumn 2021	5th October 2021	7 Soprano pipistrelles observed emerging
	High	M 57203 49326	Dusk Emergence Autumn 2022	22nd September 2022	20 Soprano pipistrelles observed emerging

	High	M 57203 49326	Dusk Emergence Spring 2024	27th May 2024	10 Soprano pipistrelles observed emerging
Vacant Single-Storey House (Structure 8)	*Moderate*	M 56152 50500	Dusk Emergence Summer 2024	26th June 2024	One Soprano pipistrelle confirmed emerging
Derelict Building (Structure 6)	*Moderate*	M 55768 49063	Dusk Emergence Autumn 2024	27th August 2024	No bats recorded emerging

Two active roosts were confirmed through the dusk emergence surveys at Structure 8 and Structure 9. Structure 9 supported a small soprano pipistrelle roost with 7 individuals recorded in 2021, 20 individuals recorded during autumn of 2022 and 10 individuals observed emerging during spring of 2024. Structure 8 was confirmed to support a single soprano pipistrelle.

No large or significant maternity roosts (i.e. >100 individuals or of National Importance) were identified within the Proposed Wind Farm.

6.4.3.4.3 Manual transects

Manual transects were undertaken in spring, summer and autumn 2024. Bat activity was recorded in all seasons. A total of 355 bat passes were recorded, including emergence surveys. In general, Common pipistrelle (n=133) was recorded most frequently, followed by Soprano pipistrelle (n=111) and Leisler's bat (n=103). *Myotis spp.* (n=4) and Brown long-eared bat (n=4) were less frequent.

Bat activity was concentrated along woodland edges, treelines, hedgerows, and linear (road/track) habitats. Common pipistrelle occurred most frequently in spring and summer of 2024, while Leisler's bat occurred most often in autumn. (Plate 6-39)

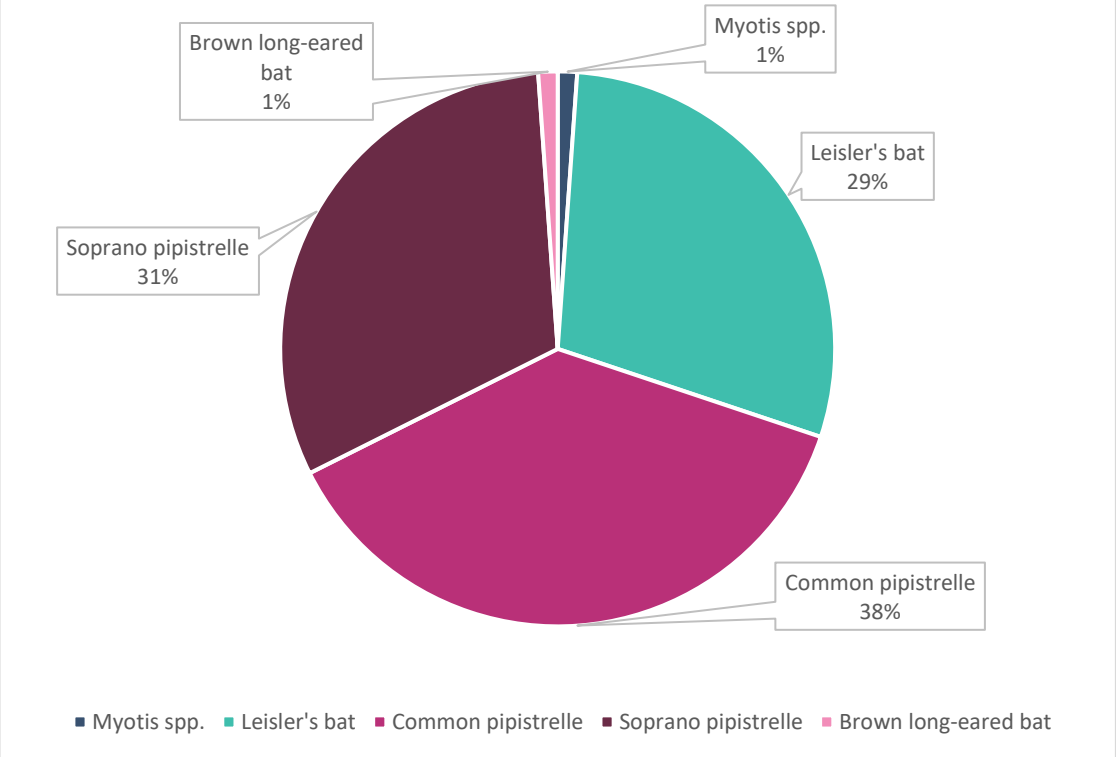

Plate 6-39 2024 Manual Activity Surveys (Total Species Composition)

6.4.3.4.4 Ground-level Static Surveys

In total, 81,713 bat passes were recorded across all deployments. In general, Common pipistrelle (n=46,446) occurred most frequently, followed by Soprano pipistrelle (n=25,194). Instances of Leisler's bat (n=7,998), *Myotis spp.* (n=1,470), Brown long-eared bat (n=393) and Nathusius' pipistrelle (n=212) were recorded less frequently during the 2024 survey period.

Spring activity was dominated by Common pipistrelle. Summer and autumn activity predominantly consisted of Common and Soprano pipistrelle with some Leisler's bat and *Myotis* spp. recorded. Brown long-eared bat and Nathusius' pipistrelle instances were relatively rare.

Assessment of bat activity levels-Adapted site-specific ranges

Low, Medium and *High* activity levels were assigned to median and maximum pass rates (bpph) identified during spring, summer and autumn at the detectors deployed across the Proposed Wind Farm site, as adapted from Mathews *et al.* (2016). Where no maximum activity at a detector is reported, no data was recorded for that species throughout the deployment.

Leisler's bat typically exhibited *Low* to *Moderate* Median Activity Levels in spring, with generally *Low* Activity observed in summer and autumn. However, a significant outlier was detected at D04 during the autumn, recording a *High* Median Activity of 6.15 bpph and a Maximum Activity of 24.6 bpph. This detector was situated within a hedgerow (WL1) adjacent to improved agricultural grassland (GA1).

For Common pipistrelle, Median Bat Activity was generally *Low* to *Moderate* across summer and autumn. Common pipistrelle exhibited increased activity during the spring season, as four detectors recorded *High* Median Activity, accompanied by higher Maximum Activity compared to the rest of the Proposed Wind Farm during those periods.

Soprano pipistrelle generally displayed *Low* Median Bat Activity, with occasional instances of *Moderate* Activity. D01 in autumn was the sole detector recording *High* Median Activity, with a rate of 28.6 bpph and a Maximum of 52.7 bpph.

Myotis spp. recorded relatively *Low* activity compared to other species across the Proposed Wind Farm. Median Activity was generally *Low* in all three seasons, with the exception of D09, which recorded *Moderate* Median Activity in spring. *High* Maximum Activity was also observed at D09 during spring at a value of 7.8 bpph.

Brown long-eared bat exhibited *Low* Median Activity at all detectors in all periods across the Proposed Wind Farm. Maximum Bat Activity for the species peaked at D09 in autumn with a rate of 3.5 bpph.

Nathusius' pipistrelle also recorded *Low* Median Activity at all locations in all seasons throughout 2024, with a Median Activity of 0.2 bpph or less for all locations.

Refer to Table 4-10 of the Bat Report in Appendix 6-2 for a full overview of the data from the median nightly bat activity during surveys carried out at the Proposed Wind Farm site.

6.4.3.4.5 Turbine Delivery Route Accommodation Work Area

As described in Chapter 4, Section 4.5.2 of this EIAR, limited turbine delivery route accommodation works are required to facilitate the transport of turbine components to the Proposed Wind Farm site. These works include the removal of a small area of Improved Agricultural Grassland (GA1) bordered by low-growing Hedgerow (WL1). This habitat was assessed as *Low* value for bat foraging and commuting, with no (*None*) potential for roosting bats.

At the site entrance, the turbine delivery route (TDR) overrun area will require the removal of a treeline (WL2). Although the treeline offers *Moderate* suitability for commuting and foraging bats,

targeted ground-level inspections (following Andrews, 2018) confirmed that none of the trees contained potential roost features (PRFs). Accordingly, all trees were classified as having *None* roosting potential in line with Collins (2023).

6.4.3.4.6 *Proposed Grid Connection Underground Cabling Route Crossing Structures*

The Proposed Grid Connection underground cabling route will traverse 8 no. watercourse crossings that will require works. Six of these watercourse crossings have an existing culvert or bridge and these structures were assessed for bat roost potential during field surveys conducted on 13th August 2024, 18th June 2025 and 2nd September 2025. The remaining two watercourse crossings (WC1, WC4) consist primarily of a field drain and lacks suitable structures for bat roost potential.

Of the culverts and bridges assessed seven had *None* roosting potential and one had *Moderate* roosting potential. No bats were identified roosting within the assessed culverts and bridges and no evidence of roosting was found during the surveys

Table 6-17 below describes the findings in relation to bats at each water crossing point along the Proposed Grid Connection.

Table 6-17 Bat Roost Suitability of Bridges/culverts along the Proposed Grid Connection underground cabling route

Crossing	Grid Ref	Culvert type	Photo	Bat Roost Potential	Extent of Works
WC2	M 53917 46891	Concrete pipe		No evidence of bats found. The structure has a smooth, solid concrete surface with no gaps, cracks or crevices. **None** bat roost potential.	Option B – Standard Formation Crossing under Culvert
WC3	M 53657 44939	Concrete box culvert		No evidence of bats found. The structure has a smooth, solid concrete surface with no gaps, cracks or crevices. **None** bat roost potential.	Option B – Standard Formation Crossing under Culvert

WC5	M 49584 45287	Stone Arch Bridge		No evidence of bats found. No access for bats due to dense vegetation overgrowth blocking the stone bridge structure. **None** bat roost potential.	Option A – Standard Formation Crossing over Culvert
WC6	M 49317 45375	Concrete pipe		No evidence of bats found. The structure has a smooth, solid concrete surface with no gaps, cracks or crevices. Loose boulders on top of the concrete pipe with large gaps unsuitable for roosting. **None** bat roost potential.	Option D – Horizontal Directional Drilling

WC7	M 53134 44601	Concrete pipe culvert		No evidence of bats found. The structure has a smooth, solid concrete surface with no gaps, cracks or crevices. **None** bat roost potential.	Option A – Standard Formation Crossing over Culvert
WC8	M 44508 46972	Stone Arch Bridge		No evidence of bats found. Some deep crevices present at the wall and under the arch. **Moderate** bat roost potential. No works proposed on bridge infrastructure.	Option D – Horizontal Directional Drilling offset from bridge

6.4.3.5 Reptiles and Amphibians

Adult Common frog (*Rana temporaria*) was recorded within the EIAR site boundary in cutover bog/raised bog habitat within the northeast of the site, south of the proposed road between T7 and T9. Common frog was also heard in several locations along an existing bog access road to the west of T7, outside of the EIAR boundary. Frog spawn was also recorded on one occasion in 2022 along a roadside drain.

A singular Common Lizard *(Zootoca vivipara)* was recorded basking in 2021 to the northwest of T7, outside of the EIAR site boundary.

Although no further evidence of reptiles and amphibians was recorded within the EIAR site boundaries, suitable habitat in the form of scrub and stone walls exists for the Common Lizard, as well as watercourses/drains and standing water suitable for the Common Frog. The Proposed Project will not result in a significant loss of suitable habitat for reptiles and amphibians. It is considered that suitable habitat is extremely widespread in the study area and beyond.

6.4.3.6 Fisheries and Aquatic Fauna

The small streams that flow from the Proposed Project and downstream watercourses were subject to biological evaluation and assessment through fisheries assessments (electro-fishing and or fisheries habitat appraisal), white-clawed crayfish surveys, macrophyte and aquatic bryophyte survey sand biological water quality sampling (Q-sampling) or macro-invertebrate sweep sampling (where applicable) between the 24th and the 27th of July 2024. Full details of the results of these surveys are provided in full within the Aquatic Baseline Report - Appendix 6.3 and summarized below.

6.4.3.6.1 *Kick-sampling and Q-Value*

The survey included a general habitat assessment and biological water quality assessment at watercourses within or downstream of the EIAR study area boundary. The water quality, as per Q-value (Quality Rating System)[24], is fully described in Appendix 6.3. A total of 3 no. sites on the Abbert River (site C4), Dangan Eighter Stream (D2) and Grange River (E4) achieved Q4 (good status) water quality and thus met the target good status (≥Q4) requirements of the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 and the Water Framework Directive (2000/60/EC).

The biological water quality of the survey area was generally of poor status (Q2-3 or Q3) with significant siltation, eutrophication and hydromorphological impacts evidently contributing to a reduction in water quality.

6.4.3.6.2 *Fish Species*

The following paragraphs summarise the fish species that were found during the aquatic baseline surveys. The below paragraphs should be read in conjunction with Figure 2.1 (survey locations) found within the Aquatic Baseline Report (Appendix 6-3):

- Salmonids were present at ten no. sites in total, with Atlantic salmon present at seven of these: A7 (Grange River), A8 (Grange River – Grange Bridge), E4 (Grange River – Ballinderry Bridge), B2 (Aghloragh Stream), C3 (Lecarrow Stream), C4 (Abbert River, N63 crossing).

[24] *Toner, P., Bowman, J., Clabby, K., Lucey, J., McGarrigle, M., Concannon, C., & MacGarthaigh, M. (2005). Water quality in Ireland. Environmental Protection Agency, Co. Wexford, Ireland.*

- C4 had the highest densities of Atlantic salmon recorded during the survey, as well as provides good nursery habitat for Salmonids.
- B2 Lecarrow is of high value for salmonids supporting a high density of juvenile trout and lower numbers of salmon.
- A8 was an excellent salmonid nursery despite historical drainage works, with abundant instream refugia supporting high densities of juvenile salmonids.

- Lamprey was only recorded at site D2 on the Dangan Eighter Stream. There were no other records of lamprey, despite numerous locations providing potentially suitable habitat. This location was also noted as a good quality salmonid nursery.
- No lamprey ammocoetes were recorded within the site boundaries and the quality of lamprey habitat within the site boundaries was generally poor. The peat-dominated and or flocculent soft sediments typically found in the survey area do not provide optimal burial/burrowing habitat for ammocoetes.
- European Eel was not recorded at any of the survey locations, despite numerous locations providing potentially suitable habitat due to suitable depths, foraging habitat and connectivity to higher value rivers and streams.
- Other species recorded include Three-spined stickleback (abundant in site E3), Stone Loach, Brown Trout and Pike.

Despite evident stressors (mainly hydromorphology), the Ahgloragh Stream (a Grange River tributary) was of high value for salmonids and supported the highest density of brown trout in the survey area

During the previous survey (September 2022), the Danagan Eighter Stream, a tributary of the Grange River, was found to support brown trout, lamprey (*Lampetra* sp.), stone loach, three-spined stickleback and non-native roach (*Rutilus rutilus*) (Triturus 2022 data). Three-spined stickleback was the only fish species recorded from the Forty Acres Stream, with no fish recorded from 2 no. sites on the Lecarrow Stream (Triturus 2022 data).

6.4.3.6.3 White-clawed Crayfish

White-clawed crayfish were only recorded from the Danagan Eighter Stream. Low densities (according to Peay, 2003) were present at site A1, including both juveniles and adults (6-30mm carapace length). The Danagan Eighter Stream is a tributary of the Grange River. Using eDNA sampling, crayfish plague (*Aphanomyces astaci*) was detected within the Grange River (Triturus, 2023) and the downstream Clare River.

6.4.3.7 Other species

Mammal paths were occasionally recorded within the Proposed Wind Farm site, however there was no evidence or signs of mammals within the locations of any infrastructure. The Irish hare *(Lepus timidus)* was recorded in various locations throughout agricultural grassland areas, cutover bog habitats and along existing roads. There is potentially suitable habitat for Red Squirrel (*Sciurus vulgaris*) within broadleaved and conifer wooded areas of the site.

Pine Marten *(Martes martes)* were recorded outside of the EIAR site boundary, south of T6. They were recorded hunting along drains and kits emerged from some scrub located within a marginal cutover/raised bog habitat. However, conifer woodland exists within the EIAR site boundary which likely provides supporting habitat for this species.

Fox *(Vulpes vulpes)* was recorded on several occasions throughout the Proposed Wind Farm site commuting. These were largely recorded within agricultural grassland, along hedgerows, within cutover box/scrub transitional habitats as well as crossing existing internal roads.

The Irish Stoat *(Mustela erminea hibernica)* were observed on occasion outside of the EIAR Site Boundary. One was recorded in a field between T3 and T4, while another was recorded west of T7, both outside of the EIAR site boundary.

No significant areas of suitable habitat for other taxa including invertebrates or amphibians, species listed in Annex II or IV of the EU Habitats Directive, or other species of conservation concern was identified within the boundaries of the Proposed Project.

Additionally, incidental records of aquatic invertebrates were identified during kick samples of the watercourses on site, as outlined in Appendix 6-3.

Figure 6-7 Faunal signs

6.4.4 Importance of Ecological Receptors

Table 6-18 lists all identified receptors and assigns them an ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). This table also provides the rationale for this determination and identifies the habitats that are Key Ecological Receptors. These ecological receptors are considered in Section 6.5 of this report and mitigation/ measures will be incorporated into the Proposed Project where required, to avoid potential significant impacts on the features.

Table 6-18 Ecological Receptors identified during the assessment

Ecological feature or species	Reason for inclusion as a KER	KER
Designated Sites		
European Designated Sites **International Importance**	The following Special Areas of Conservation are identified in the AA Screening as being within the Likely Zone of Influence and are assessed fully in the NIS that accompanies this application: › Lough Corrib SAC [000297] › Lough Corrib SPA [004042] These sites are assigned **International importance** and included as a KER as there is potential for indirect effects on them. **Note: SPAs within the Likely Zone of Influence are considered in Chapter 7, Ornithology and in the NIS.**	Yes
Nationally Designated Sites **National Importance** and **International Importance**	The following Nationally designated sites have been assessed as being within the Likely Zone of Influence: › Turlough Monaghan pNHA [001322] › Turloughcor pNHA [001788] › Lough Corrib pNHA [000297] Turlough Monaghan pNHA, Turloughcor pNHA are assessed as **National Importance.** Lough Corrib pNHA have also been assessed as of **International Importance** due to also having a European designation (Lough Corrib SAC/Lough Corrib SPA).	Yes
Aquatic Habitats		
Lowland/Depositing Rivers (FW2), Drains (FW4), groundwater and aquatic fauna	A number of natural watercourses are located within the Proposed Wind Farm Site boundary. These watercourses include: › The Grange River (Grange (Galway)_010), (EPA Code: IE_WE_30G020200) › Abbert River (Abbert_030) (EPA code: IE_WE_30A010300) Additionally, the Proposed Grid Connection Route crosses over the Abbert River, Feagh East Stream and the Grange River. These Rivers and Streams have been assigned **Local importance (Higher Value)** as they connect to downstream waterbodies, which form part of the Lough Corrib SAC and Lough Corrib SPA further downstream. The Grange River where it crosses the Proposed Grid Connection Route forms part of the Lough Corrib SAC. This section of the Grange River is therefore assigned **International Importance.**	Yes

	Drainage ditches are found throughout the site along field boundaries and particularly throughout cutover bog areas. They are highly modified and species poor where they occur but do provide some connectivity with natural watercourses within the site. As such they are assessed as being **local importance (lower value)** and are considered further as a KER due to potential for conductivity with higher value watercourses. The aquatic species that are associated with the watercourses occurring within the Proposed Wind Farm site and along the Proposed Grid Connection underground cabling route and downstream have been assigned **Local Importance (Higher Value)** as they have a high biodiversity value in the local context. Fish and other aquatic species are therefore included as a KER for further assessment along with the river habitats described above. Additionally, watercourses that are hydrologically connected downstream to SACs/SPAs, as well as the Grange River where the Proposed Grid Connection crosses that forms part of Lough Corrib SAC (and the designated aquatic fauna within them) have been assigned as **International Importance.** There is potential for indirect effect on these features as a result of impacts on water quality. Fish and other aquatic species are therefore included as a KER for further assessment. There are no GSI mapped karst features within the Proposed Wind Farm site and therefore there are no associated GSI mapped karst feature vulnerability buffer zones mapped. However, there is 1 no. GSI mapped karst feature (i.e. a spring) within 30m of the Proposed Grid Connection cable route outside the Proposed Wind Farm site. This feature is located along the N63 approximately 2km to the southwest of Horseleap Lough. The Site is located within the Clare-Corrib groundwater body. According to Chapter 9 of the EIAR, due to the nature of Wind Farm and Grid Connection developments being near-surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor. However, the primary risk to groundwater at the Site would be from hydrocarbon and cement spillage and leakages at excavations locations which has the potential to impact on surface water receptors and associated fauna.	
Terrestrial Habitats		
Raised Bog (PB1) **County Importance**	As described in detail in Section 6.4.1.3, detailed relevés taken within the footprint of the proposed floating road between T7 and T9 were assessed based on the criteria set out in IWM 128 and IWM 81. Two of the relevés correspond with cutover bog (PB4) habitats and do not correspond to any Annex 1 habitats. The central 2 relevés were assessed as conforming to sub-marginal/sub-central ecotopes. The condition of this area of bog consisted largely of dry plant communities, with firm to soft ground and a very limited extent of any hummocks, pools or quaking bog. Although *Sphagnum* coverage is ≥50% in these 2 relevé locations, in the context of the wider high bog area, the overall *Sphagnum* cover was low. It is likely that this bog area contains uncut raised bog in poor condition, with small and fragmented pockets of active raised bog. This habitat area has been previously mapped as the Article 17 habitat '*Active Raised Bog' and* has been assessed as corresponding to the Annex 1 habitat *Degraded raised bogs still capable of natural regeneration (7120).* However, based on detailed condition assessments and releve data in Section 6.4.1.3 (and presented in Appendix 6-1) and in consideration with the NRA guidelines (NRA, 2009) this habitat area is not a 'best example' of habitat type listed in Annex 1 of the Habitats	Yes

	Directive, and therefore does not correspond to an International Importance KER. Additionally, the condition of this habitat is not a site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive and is therefore not considered as a National Importance KER. However, this habitat does contain an area of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National. Therefore, this habitat area is classified as **County Importance.** By taking a conservative and precautionary approach, approximately 285m of the proposed new floating access road between T7 and T9 corresponds to the Annex 1 habitat *Degraded raised bogs still capable of natural regeneration (7120).*	
Cutover bog (PB4) and associated Scrub (WS1) **Local importance (higher value)**	**Cutover Bog (PB4)** Cutover bog habitats within the Proposed Wind Farm site are highly degraded due to extensive drainage and turbary activity. The cutover bog habitats within and surrounding the development footprint are degraded and do not support active peat formation as the habitats are extensively drained. The cutover peatland habitats are subject to recent and continued turbary activity and are dominated by bare peat and low *Sphagnum* communities. They do not correspond to Annex I peatland habitats. The Proposed Project will result in the loss of this habitat associated with internal new roads, T5, the hardstand of T2 as well as one peat repository area. This habitat has been classified as **Local Importance (Higher Value)** as they provide high biodiversity value in a local context. **Scrub (WS1) associated with Cutover bog (PB4)** It is anticipated that these identified habitat areas would likely regenerate into a bog woodland (WN7) if left unmanaged. The proposed road between T7 and T9 will traverse through a small section of this habitat and therefore considered a KER for further assessment. Additionally, proposed roads between T5 and T6, infrastructure associated with T5, and hard stands/a small section of a proposed road at T2 will result in the loss of areas of recolonizing scrub associated with cutover bog (PB4) habitats within the Proposed Wind Farm Site. Some areas of scrub (WS1) associated with cutover bog habitats are assessed as **local importance (higher value)** and will be removed to facilitate the Proposed Project and bat buffer areas associated with the turbines. While species composition is generally poor and of wide availability in the wider landscape, the loss of scrub, including potential loss of its function as wildlife corridors, is included as a KER for further assessment.	Yes
Rich fen (PF1) **County Importance**	A habitat area containing Rich fen (PF1) can be found in the stand-alone field to the southeast of the Proposed Wind Farm site. This habitat is considered **County Importance,** as it has links to the Annex 1 habitat *7230 Alkaline Fen.* It should be noted that this habitat area was originally within the footprint area of the proposed substation and BESS compound, however, the project layout was altered in order to avoid this habitat (see Section 3.5.3.5 of Chapter 3 Reasonable Alternatives). The substation is now located within the west side of the Proposed Wind Farm site and is therefore entirely outside of this habitat area.	No

	The location of the rich fen (PF1) habitat has been retained as part of the EIAR site boundaries to ensure that this habitat is entirely retained. Enhancement measures have also been proposed within the BMEP in Appendix 6-4. This habitat is not considered as a KER as it will be entirely retained and enhanced as part of the Proposed Project (see BMEP in Appendix 6-4).	
Linear Habitats including: • Treeline (WL2) • Hedgerow (WL1) • Stone walls (BL1) **Local importance (higher value)**	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. In order to facilitate construction of the Proposed Wind Farm and maintain a separation in distance between the turbine blades and hedgerow features (likely to be used by commuting and foraging bat species locally), there will be a loss of approximately 3.74km of hedgerow/treeline habitat within the Proposed Wind Farm site. For this reason, these habitats have been identified for further assessment as a KER. Stone walls, often occurring in association with hedgerows within the Site have been assessed as of local importance (higher value) as they provide connectivity to the wider landscape and provide supporting habitat for a wide variety of faunal species. In order to facilitate some of the Proposed Wind Farm footprint there will be some loss of hedgerow habitat with associated stone wall within the Proposed Wind Farm site. For this reason, stone walls have been identified for further assessment as a KER in combination with hedgerows.	Yes
Broadleaved woodland (WD1) **Local importance (higher value)**	This habitat occurs within the Proposed Wind Farm site predominantly as monoculture broadleaved woodland plantations. There will be a loss of 0.17ha of this habitat as a result of the proposed new access roads between T5, T8 and T9. This habitat is considered to be of local importance (higher value) and is therefore considered a KER for further assessment.	Yes
Conifer plantation (WD4) **Local importance (lower value)**	Some of the infrastructure associated with the Proposed Wind Farm (new access road) is proposed to be located within Conifer Plantation (WD4). The conifer woodland located between T5 and T9 will also be felled as part of the proposed BMEP measures (Appendix 6-4) in order to replant this area with a native broadleaf woodland with higher species diversity. This habitat is highly modified, as well as being widespread in the wider landscape. As such, the loss of this habitat type was not considered to be significant. This is classified as **Local Importance (Lower Value).** For these reasons, this habitat has not been identified as a KER.	No
Scrub (WS1)/Wet grassland/Scrub (GS4/WS1) mosaic habitat **Local importance (lower value)**	Areas of scrub (WS1) and wet grassland/scrub (GS4/WS1) mosaic habitat are located completely outside of the Proposed Wind Farm footprint and are therefore not considered further as KERs.	No
Dry meadows and grassy verges (GS2) **Local importance (lower value)**	This habitat is found along the verges of existing roads and tracks within the Proposed Wind Farm boundary, along the Proposed Grid Connection and turbine delivery route. Additionally, T7, the temporary construction compound and SRA2 will be located within a GS2 habitat. This habitat is dominated by common grass species and occurs in isolated, fragmented areas. It is of some low biodiversity value and is	No

	assessed as being of local importance (lower value). The loss of this habitat is not considered significant at any geographic scale.	
Improved Agricultural grassland (GA1)/Wet grassland (GS4) **Local importance (lower value)**	Much of the Proposed Wind Farm infrastructure is located within either wet grassland (GS4) or improved agricultural grassland (GA1) (including T1, T2, T3, T4, T6, T8, substation and BESS compound, met mast, SRA3, SRA5 as well as large sections of the proposed new access roads). These habitats have been assessed as of local importance (lower value) as they are generally of low biodiversity value primarily due to intensive management. As such, the habitat has been assessed as of Local Importance (lower value). The loss of this habitat is not considered significant. They are therefore not considered further in this assessment.	No
Arable Crops (BC1)	This habitat has been assessed as of Local Importance (lower value) as it is a highly modified habitat and is of low biodiversity value. This habitat will be partially lost as a result of new access roads and T1. For this reason, it has not been identified for further assessment and is not a KER.	No
Recolonising bare ground (ED3) and Buildings and Artificial Surfaces (BL3)	These habitats are common and widespread in the wider area. The habitat has been assessed as of Local Importance (lower value) as it is largely associated with artificial site access tracks and is of low biodiversity value. For this reason, it has not been identified for further assessment and is not a KER.	No
Fauna		
Otter **International Importance**	No otter holts, couches or slides were identified during dedicated surveys undertaken for the species within the Site. Otter surveys undertaken in the wider study area identified two locations with Otter spraint. A single spraint downstream of the bridge at survey location Site A1 on the Dangan Eighter Stream at a proposed access track crossing within the site boundary. A regular spraint containing abundant crayfish and diving beetle remains, was recorded on a boulder at the pipe culvert. Additionally, further evidence was recorded at a location on the Grange River at a local road. This is located approx. 488m northeast of the Proposed Wind Farm site. A recent otter spraint (fish remains only) was recorded on the grassy banktop adjoining the bridge abutment. The potential for local otter populations to be associated with Lough Corrib SAC is considered given that the SAC is approx. 2.6km downstream of the Proposed Wind Farm and crosses directly over the SAC via the Proposed Grid Connection. The population is therefore considered of **International importance.** Otter is considered a KER and the potential for impact on this species is considered further.	Yes
Marsh Fritillary **County importance**	Marsh fritillary larval webs were recorded within the Proposed Wind Farm site. A singular larval web was identified north of T5. All suitable marsh fritillary habitat (including the recorded larval webs) is now located completely outside of the Proposed Wind Farm footprint. There will be no direct losses of any suitable Marsh Fritillary habitat. However, there is potential that the proposed new access roads, hard-stands and associated infrastructure at T5 may result in changes in the hydrological regime of the cutover bog (PB1) habitat, which may result in an alteration in habitat. This has potential to render the habitat no longer suitable for the food plant of Marsh Fritillary, thus impacting habitat availability.	Yes

	This population is considered to be of **County Importance** on a precautionary basis considering that it is an important population of an Annex II species and considering the relative scarcity of suitable habitat for the species in the wider landscape. Therefore, the potential for impact on this species must be considered and they are considered a KER for further assessment.	
Badger **Local importance (higher value)**	There was no evidence of Badgers recorded during either of the site walkover surveys carried out at the Proposed Project. As outlined in Section 6.4.3.1, incidental records of badger were recorded outside of the EIAR site boundary during Ornithology VP surveys. It is therefore assumed that the Proposed Project does provide suitable supporting habitat for this species, particularly in areas of the site containing conifer woodland, linear hedgerows/treelines and scrub. By taking a precautionary approach given the likelihood of the Proposed Project being used by this species, there may be direct and indirect impacts upon these species in the absence of mitigation**. Therefore, Badgers are considered as a KER.**	Yes
Pine Marten and Red Squirrel **Local importance (higher value)**	The recorded evidence suggests that the Site is not utilised by populations of pine marten and red squirrel of higher than **Local Importance (higher value)** and no potential for significant effects have been identified at the population level. Due to the small footprint of woodland habitats within the site and the nature of the Proposed Project, they are unlikely to be significantly affected by the Proposed Project. However, given the recorded activity of these species within the Site or surrounding area, they are included as a KER for further assessment.	Yes
Bats **Local importance (higher value)**	All bat species in Ireland are protected under international and national legislation, including the Bonn Convention (1992), Bern Convention (1982), and the EU Habitats Directive (92/43/EEC). In Ireland, they are also protected under the Wildlife Acts (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). Bats have been assessed as Ecological Receptors of **Local Importance (Higher Value)** based on the presence of a regularly occurring bat population recorded within the Proposed Wind Farm, including confirmed roosts and use of the site for foraging and commuting. 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
Reptiles and Amphibians **Local importance (higher value)**	It is considered that the Proposed Project will not result in a significant loss of suitable habitat for amphibians. No evidence of populations of amphibians being significant at more than a local level was recorded. No likely significant effects on these species are anticipated and therefore further survey/ assessment was not deemed necessary. Based on the limited observation of amphibians within the Proposed Wind Farm site (a few incidental sightings of common frog) and the lack of any significant breeding sites for these species, these species have been assessed as of **Local Importance (Lower Value)** and therefore are not considered to be KERs.	No
Additional fauna (e.g. Irish hare, fox etc).	The recorded evidence suggests that the study area is not utilised by populations of higher than local significance and no potential for significant effects have been identified at the population level. Due to the nature of the Proposed Project, they are unlikely to be significantly	No

Local importance (lower value)	affected by the Proposed Project. For this reason, other faunal species are not considered further in this EIAR. Significant effects are not anticipated.	

6.5 Ecological Impact Assessment

6.5.1 'Do-Nothing' Scenario

If the Proposed Project were not to proceed, it is unlikely that any changes would be made to the current land use practices. The majority of the lands within the Site would continue to be managed as they are now either as forestry or improved agricultural grassland and associated turbary activities. The other habitats identified within the Proposed Wind Farm site and Proposed Grid Connection, including stone walls, treelines, hedgerows, watercourses etc. would likely remain in a similar condition.

In some areas where scrub succession is establishing, this scrub may develop if not managed by the landowners and in time, this may undergo succession to small areas of woodland. The general biodiversity on the Proposed Wind Farm site and Proposed Grid Connection, as described in this chapter, would likely remain similar to its current state as activity levels and land use would not change. The opportunities for biodiversity enhancement, as outlined in detail within the BMEP in Appendix 6-4, would not proceed.

6.5.2 Likely Effects During Construction Phase

6.5.2.1 Effects on Habitats During Construction

Table 6-19 below provides details of the extent of the recorded habitats on the Site, the extent of the habitat that will be lost to facilitate the Proposed Project (including bat buffers, spoil repository areas and peat repository areas) and the percentage of the total area of that habitat in the EIAR study area that it represents.

Table 6-19 Extent of habitat lost to the Proposed Project and the percentage of the total area of that habitat on site

Habitat	Total Area (Ha) /Length (Km) within the EIAR study boundary	Area (ha)/length (km) to be lost to development footprint	% of total to be lost	KER (Yes/No)
Improved agricultural grassland (GA1)	140.04ha	8.77ha	6%	No
Wet grassland (GS4)	37.25ha	3.05ha	8%	No
Dry meadows and grassy verges (GS2)	7.60ha	1.85ha	24%	No
Arable Crops (BC1)	13.54ha	0.81ha	6%	No
Cutover bog (PB4)	42.00ha	2.12ha	5%	**Yes**
Scrub (WS1)[25]	0.86ha	0.06ha	6%	No

[25] *Please note that this scrub habitat relates only to areas of stand-alone scrub and not low invading scrub or recolonizing scrub within cutover bog habitats. These habitats are assessed within the loss of cutover bog habitat.*

Conifer plantation (WD4)	15.94ha	11.25ha[26]	70.5%[27]	No
Broadleaved Woodland (WD1)	3.80ha	0.17ha[28]	4%	**Yes**
Buildings and artificial surfaces (BL3)	2.75ha	0.39ha	14%	No
Recolonizing Bare Ground (ED3)	1.02ha	0.43ha	42%	No
Raised bog (PB1)	32.29ha	0.18ha	0.54%	**Yes**
Hedgerow (WL1) and associated stone walls (BL1)	14.9km	3.21km[29]	22%	**Yes**
Treeline (WL2)	1.30km	0.53km[29]	41%	**Yes**

The Proposed Project will result in the loss of areas of habitat that are of Local Importance (Lower Value) and are not identified as KERs. This mainly involves the loss of coniferous plantation forestry (WD4) and improved agricultural grassland (GA1)/Wet grassland (GS4) which has been assessed as of low ecological value. Other habitats assessed as of local importance (lower value) include; Scrub (WS1), grassy verges (GS2), Buildings and artificial surfaces (BL3), Recolonising bare ground (ED3) and Arable crops (BC1). Any direct or indirect impacts on these habitats are not significant.

The effects on habitats that are identified as KERs are described in Table 6-20 – 6-23.

6.5.2.1.1 Assessment of Potential Effects on Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species

Table 6-20 Potential for impact on rivers, streams and sensitive aquatic species

Description of Effect	This section assesses the potential for likely significant effects on aquatic features including aquatic habitats (i.e. watercourses), groundwater, salmonids, lamprey, coarse fish, white-clawed crayfish, aquatic invertebrates and other aquatic species identified during the desk study and field surveys, and which are likely to occur downstream of the Proposed Project. **Surface Watercourses (and associated aquatic species)** *Direct impacts (mortality and barrier to migration)* There are 2 no. watercourses located within the Proposed Wind Farm site (The Abbert River and the Grange River), and a number of other drains and tributaries that provide connectivity to these watercourses within the Proposed Wind Farm site. The Proposed Wind Farm will require 5 clear-span watercourse crossings using clear-span bridge

[26] *Approximately 0.7ha of WD4 will be lost as a result of the Proposed Wind Farm infrastructure. The remaining areas will be felled in order to provide habitat area for new broadleaf woodland, as part of the biodiversity measures found within the BMEP in Appendix 6-4*
[27] *Approximately 70.5% of the total area of conifer woodland will be lost as a result of both infrastructure and the BMEP measures. However, only approximately 4.5% of the total conifer woodland habitat will be lost as a result of the Proposed Wind Farm infrastructure (including roads).*
[28] *Approximately 0.17ha of broadleaved woodland will be lost as a result of the Proposed Wind Farm infrastructure and bat buffers. The remaining areas, including the existing Ash woodland will be felled in order to provide habitat area for broadleaf woodland, as part of the biodiversity measures found within the BMEP in Appendix 6-4*
[29] *The total linear feature habitat loss as a result of the Proposed Project will be 3.74km (including all hedgerows, treelines and stone walls)*

structures at each location. However, there will be no instream works required for these, and no structures will be located directly within the river. Therefore, there is no potential for the Proposed Project to result in any barrier to the movement of aquatic species.

The potential for impacts on associated aquatic fauna is also assessed including white-clawed crayfish, salmonids, coarse fish, aquatic invertebrates, molluscs and other aquatic species identified during the desk study and dedicated aquatic surveys and likely to occur downstream of the Site.

A general description of the various construction methods employed at watercourse crossings along the Proposed Grid Connection are described in Chapter 4 of the EIAR. The measures minimise potential for impact on the receiving environment as instream works are completely avoided. Therefore, there is no potential for direct impacts on any aquatic receptors associated with the Proposed Grid Connection.

Indirect impacts (water quality)

A direct surface water pathway exists between the Proposed Wind Farm site and downstream watercourses. Within the Proposed Wind Farm site, there are 2 watercourse and several drainage ditches across the site which flow into these identified watercourses. Additionally, the Proposed Grid Connection will cross over 8 watercourse locations. There is a risk that pollutants and sediment laden surface water run-off may discharge to surrounding ditches and watercourses, which has potential to significantly affect sensitive watercourses and aquatic species downstream.

Potential sources of pollution to surface waters within the Proposed Wind Farm site and along the Proposed Grid Connection include the following:

Surface water

- Slit laden surface water run-off;
- Release of chemicals, including hydrocarbons, from onsite machinery, concrete and other cement-based products.
- Earthworks (removal of vegetation cover, excavations and stock piling) resulting in suspended solids entrainment in surface waters
- Clear felling of coniferous plantation and potential surface water quality effects
- Excavation dewatering and potential impacts on surface water quality
- Morphological and hydrological effects due to watercourse crossing works
- Potential surface water quality effects of the Proposed Grid Connection, earthworks works and watercourse crossings (associated with the Proposed Grid Connection)

Groundwater

Due to the nature of Wind Farm and Grid Connection developments being near-surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor. However, the primary risk to groundwater at the Site would be from hydrocarbon and cement spillage and leakages at excavations locations.

It is acknowledged that the Proposed Wind Farm site is underlain by a limestone aquifer which is mapped by the GSI as Regionally Important and Karstified. However, a large portion of the Proposed Wind Farm site is covered by low permeability peat, with other parts having poorly draining soil. However, activities associated with the Proposed Project may result in impacts to groundwater, as identified below:

- Potential Effects on groundwater as a result of oil, fuels and hydrocarbon spillages

Assessment of Significance prior to mitigation	In the absence of mitigation, the indirect effect of water pollution on aquatic habitats and species during construction has the potential be a significant effect on surface water quality and groundwater quality of local and downstream surface and groundwater water features. There is potential for works associated with the Proposed Wind Farm site and Proposed Grid Connection works to result in a significant indirect effect on the identified aquatic habitats and species at a **local scale** in the form of pollution during the construction phase. This would also result in impacts on aquatic receptors ranging from **Local (Higher Value)** to a receptor of **International Importance.**
Mitigation	Detailed mitigation measures in relation to the protection of surface water during construction is detailed in Chapter 9 (Hydrology). In summary the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by application of suitable buffer zones. A buffer zone of 50m has been put in place for on-site streams and rivers. All of the key infrastructure areas are located significantly away from the delineated 50m watercourse buffer zones with the exception of the new watercourse crossing and upgrades to existing site access tracks. Detailed control measures in relation to the protection of surface waters during construction are detailed in Section 9.5.2.3, Section 9.5.2.5 and of Chapter 9. Mitigation measures in relation to the 5 new watercourse crossings (i.e. bridges/culverts) or upgrades of existing watercourse crossings within the Proposed Wind Farm site is detailed in Section 9.5.2.9 of Chapter 9. Mitigation in relation to the Proposed Grid Connection water crossings, morphological and hydrological effects due to water crossings and earthworks have been provided in Section 9.5.2.9 and 9.5.2.15 of Chapter 9. Mitigation in relation to the potential release of hydrocarbons and cement-based products during construction and storage have been provided in Section 9.5.2.6 and 9.5.2.8 respectively, of Chapter 9. Mitigation by design in relation to the clearfelling operations and potential effects on surface water quality is provided in Section 9.5.2.2 of Chapter 9. A description of the site drainage management proposals for the Proposed Project is provided in Section 4.6 (Chapter 4 of this EIAR). This plan provides details of how water quality will be protected during the construction of the Proposed Wind Farm site, as outlined in Chapter 9, the maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works with regular inspections of all installed drainage systems undertaken throughout the Proposed Project development (see further detail on monitoring in Section 9.4.1 of Chapter 9.).
Residual Effect following Mitigation	Following the implementation of the mitigation measures as described above, there will be no significant residual effect on aquatic habitats or species as a result of the Proposed Project. The Proposed Project will not cause any waterbodies to deteriorate, irrespective of their current condition, and will not in any way prevent any waterbodies from meeting the biological and chemical characteristics for good ecological status.

6.5.2.1.2 *Assessment of Potential Effects on Degraded raised bogs still capable of natural regeneration (7120) and Cutover Bog (PB4) Habitats*

Table 6-21 Loss of cutover bog and associated habitats

Description of Effect	**Direct habitat loss:** There will be a direct loss of raised bog (PB1) habitat classified as the Annex 1 habitat *Degraded raised bog still capable of natural regeneration (7120) habitat* as a result of the Proposed Project. The permanent loss of habitat area will be approximately 0.18ha

of uncut raised bog habitat as a result of the proposed floating access road between turbine location T7 and T9, which crosses approximately 285m of the *degraded raised bog still capable of natural regeneration (7120)* habitat. This loss amounts to approximately 0.54% of the total raised bog (PB1) habitat within the Proposed Project as a whole.

The remainder of the Proposed Project has been designed to avoid areas of Article 17 mapped raised bog habitat. As discussed in Section 6.4.1.3, the peatland habitats within the footprint of the Proposed Wind Farm are largely drained and consist of dry plant communities and large areas of the bog do not conform to any Annex I peatland habitat types. However, approximately 285m of the proposed access road will be built through the Annex I habitat *degraded raised bog still capable of natural regeneration (7120).*

Additionally, the Proposed Project will result in the direct loss of approximately 2.12ha of cutover bog (PB4) which is not linked to any Annex 1 habitats. This amounts to approximately 5% of the total cutover bog (PB4) habitat within the Site as a while. The impacts of the Proposed Project on non-Annex I peatland habitats are also assessed below.

Alteration of Surface Water Hydrochemistry

In addition to the direct loss of intact bog habitat, there will also be an alteration of surface water flow paths (surface water flushes) which flow mainly easterly across the alignment of the proposed access road.

The proposed section of access road leading to proposed turbine T7 will be a floating design with regular cross drains to maintain flow paths on the surface of the bog as much as possible. However, according to the Chapter 9 of this EIAR, significant alteration of surface water flowpaths (surface water flushes) which flow mainly easterly across the alignment of the proposed access road is still likely, despite the floating structure. This will result in indirect hydrological effects on the existing semi-intact habitat. The presence of the road structure will likely significantly alter the natural drainage characterises of the bog within a 50-100m impact area, regardless of the proposed drainage. However, much of the surrounding high bog habitat area has been subject to artificial drainage and are not in their original hydrological condition.

Air Quality Impacts and Dust Emissions:

The construction of turbines, the anemometry mast, substation, site roads and other onsite infrastructure will require the operation of construction vehicles and plant on site and the transport of workers to and from the site. Exhaust emissions associated with vehicles and plant such as NO_2, Benzene and PM_{10} will arise as a result of construction activities. This potential effect will not be significant and will be restricted to the duration of the construction phase and localised to works areas.

Air quality impacts could occur as a result of dust production and wind blow during construction and excavation activities, as well as transport of materials and exhaust emissions associated with vehicles and plant.

The construction of turbine foundations and hardstands, site roads and other onsite infrastructure will give rise to dust emissions during the construction phase. The excavation of the grid connection cabling route trench may give rise to localised dust emissions on surrounding peatland habitats outside of the Proposed Wind Farm. These are removed from the peatland habitats within the Proposed Wind Farm. The transport construction materials to and waste from the Proposed Wind Farm site will give rise to some localised dust emissions during periods of dry weather.

Dust emissions arise when particulate matter becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated PM_{10} and $PM_{2.5}$ concentrations and may also cause dust soiling. Dust deposition has the potential

	to smother sensitive plant communities. The amount of dust generated and emitted from a working site and the potential impact on the surrounding areas varies according to: a) The type and quantity of material and working methods b) Distance between site activities and sensitive receptors c) Climate/local meteorology and topography
Assessment of Significance prior to mitigation	**Direct habitat loss:** As described above, the loss of 2.12ha of cutover bog habitats comprises approx. 5% of the area of the wider, local cutover bog complex. The loss of Cutover Bog (PB4) habitats to the above-described infrastructure areas has therefore been assessed as a permanent significant effect on a receptor of Local Importance (higher value) in the absence of mitigation. The direct loss of approximately 0.18ha of *degraded raised bog still capable of natural regeneration (7120)* habitat as a result of the proposed floating road between T7 and T9 will result in a permanent, significant effect on a receptor classified as County Importance. **Alteration of Surface Water Hydrochemistry:** Hydrological effects on the Annex 1 habitat *Degraded raised bogs still capable of natural regeneration (7120)* within a 50-100m distance of the proposed T7 to T9 access road will be negative, significant, long-term effects at a county level. The hydrological effects on the drained cutover bog (PB4) habitat areas will be a negative, long term and not significant at any geographical scale. **Air Quality Impacts and Dust Emissions:** Dust emissions as a result of the construction of the Proposed Project has potential to result in a temporary, significant effect on a receptor of both county importance (in relation to the Annex 1 habitat Degraded raised bog still capable of regeneration - 7120) and Local Importance (higher value) in relation to the cutover bog (PB4) habitats within the Proposed Project.
Mitigation	**Direct habitat loss:** Where direct impacts on peatland habitat will occur (proposed T5, the hardstand of T2, sections of the new site access track between T5 and T6 as well as sections of the proposed access track between T7 and T9, and the peat and spoil repository areas), mitigation measures as described below will be implemented to minimise the works area within the project footprint. This will avoid any loss of peatland habitat outside the Proposed Wind Farm footprint. Where excavation is required, such as at turbine T5 and T2 hardstands, all turves and sub-peat arising from the initial construction phase will be used to provide a layer of peatland vegetation on top of proposed peat repository areas in the site. This is described in the accompanying Biodiversity Management and Enhancement Plan (BMEP), provided in Appendix 6-4 of the EIAR. Additionally, areas within the Proposed Wind Farm site classified as cutover bog (PB4) (either with current extraction activities or past extraction activities) which are recolonizing with scrub vegetation have been identified as potential enhancement areas. As detailed in Appendix 6-4, all current or ongoing extraction activities will cease, and all native scrub/broadleaved woodland species will be allowed to colonize this habitat area.

Alteration of Surface Water Hydrochemistry (mitigation by design)

Mitigation by design has been developed in relation to the proposed new access road between T7 and T9 will be a floating road design. This is described in Appendix 4-2 of Chapter 4 Description of the EIAR and described above. Floating roads over peat are proposed for areas where the peat stability assessment indicates that this construction method is suitable. Floating roads minimise impact on the peat, particularly peat hydrology, as there is no excavation required, and no subsequent peat arisings are generated. They also minimize the loss of habitat lost by reducing the alteration of flowpaths through the bog by drainage design within these habitat areas.

Air Quality Impacts and Dust Emissions:

Transport to and from site:

The transport of turbine components, construction materials, waste and workers to and from the site will also give rise to exhaust emissions associated with the transport vehicles.

Mitigation:

- All construction vehicles and plant used onsite during the construction phase will be maintained in good operational order. If a vehicle requires repairs this work will be carried out at an appropriate offsite location, thereby minimising any emissions that arise.
- Turbines components will be transported to the Proposed Wind Farm on specified routes only (see Chapter 15 Material Assets), unless otherwise agreed with the Planning Authority.
- All machinery and vehicles will be switched off when not in use and not left idling.
- The majority of aggregate materials for the construction of the Proposed Project will be imported from off-site. This will significantly reduce the number of delivery vehicles accessing the Proposed Wind Farm, thereby reducing the amount of emissions associated with vehicle movements.
- Deliveries of aggregate materials will be sourced from local quarries which will reduce the distance of these deliveries, thereby reducing the effect to traffic and transport in the wider area.
- The Materials Recovery Facility (MRF) will be as close as possible to the Proposed Wind Farm and Proposed Grid Connection to reduce the amount of emissions associated with vehicle movements.

Dust emissions:

Turbines and Other Infrastructure:

- A wheel wash facility will be installed on the Proposed Wind Farm site and will be used by vehicles before leaving the Site
- Wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression will be carried out along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid increased runoff.
- All plant and materials vehicles for the Proposed Project will be stored in dedicated areas within the Proposed Wind Farm.
- Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.
- Turbines and construction traffic will be transported to the Proposed Wind Farm on specified haul routes only.
- The Proposed Grid Connection infrastructure will be transported to the Proposed Grid Connection on specified haul routes only.

	› Construction materials for the Proposed Project will be sourced locally from licenced quarries. › The agreed haul route road adjacent to the Proposed Wind Farm will be checked weekly by the Site Manager for cleanliness and cleaned as necessary. › The roads adjacent to the Proposed Wind Farm entrances will be checked weekly for damage/potholes and repaired as necessary. › The transportation of materials around the Proposed Wind Farm will be covered by tarpaulin or similar covered vehicles. › The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection infrastructure and a small volume for the Proposed Wind Farm Site will be covered by tarpaulin. › In periods of extended dry weather, excavated material will be dampened prior to transport to the spoil management areas. › Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by an appropriately licensed waste contractor. The MRF facility will be local to the Proposed Project to reduce the amount of emissions associated with vehicle movements
Residual Effect following Mitigation	With the above mitigations in place, there will be no potential for residual significant impact on peatland habitats adjacent to the development footprint as a result of air quality impacts. However, it is considered that there will be a residual effect through the loss of peatland habitat at the county scale in relation to the proposed floating road between T7 and T9, given the loss of a small area of the Annex 1 habitat *Degraded raised bog still capable of natural regeneration (7120).* Additionally, there will also be a residual effect in relation to the alteration of drainage within approx. 50-100m distance of the proposed turbine T7 to T9 access road. Residual significant effects are anticipated at the County level.

6.5.2.1.3 *Assessment of Potential Effects on Broadleaved Woodland (WD1)*

Table 6-22 Loss of broadleaf woodland (WD1) habitat

Description of Effect	The construction of the Proposed Wind Farm and associated infrastructure will result in the direct loss of approximately 0.17ha of Alder/Ash broadleaf woodland (WD1) habitat along the edges of the habitat area as a result of the proposed road widening between Turbine 8 and Turbine 5 and 9. The combined total loss of broadleaf woodland (WD1) as a result of the Proposed Project will be 0.17ha. This habitat, while limited in extent within the EIAR Site Boundary, provides shelter for a range of fauna and comprises a community of native flora which adds to the biodiversity value of the local area.
Assessment of Significance prior to mitigation	The loss of the above-described woodland habitats has been assessed as a permanent significant effect on a receptor of Local importance (higher value), in the absence of mitigation.
Mitigation	The existing conifer plantation woodland, consisting of a monoculture of Conifer Woodland (WD4) will be removed to accommodate replanting of native broadleaved woodland, as outlined below. It is proposed to replant approximately 11.5ha of native broadleaved woodland consisting of a higher species diversity within the felled conifer woodland areas, as well as between T3 and T5. The habitat area will also encompass the area currently consisting of conifer woodland (WD4) directly adjacent to the broadleaf plantation. This is described in the accompanying BMEP, provided in Appendix 6.4 of the EIAR.

	The replanting measures will be monitored by a suitably qualified ecologist appointed by the wind farm operator over the lifetime of the Proposed Project as part of the BMEP to confirm their effectiveness and to allow for alteration in approaches where necessary.
Residual Effect following Mitigation	With the above habitat creation and BMEP implemented, there will be a temporary residual effect given that there will be an interim period between the removal/loss of woodland and the replanting of broadleaf woodland. However, this will be a temporary residual effect and will not be long-term once the BMEP is implemented.

6.5.2.1.4 Assessment of Potential Effects on Hedgerows, Treelines and Stone Walls

Table 6-23 Hedgerow, Treeline and stone Wall impact assessment

Description of Effect	The footprint of the Proposed Wind Farm, including new internal roads and road widening, Turbine hardstands, bat buffers as well as the proposed substation will result in the loss of linear features present within the Proposed Wind Farm site. The proposed TDR will also result in the loss of approximately 145m of hedgerow at the turbine delivery route N63/R332 junction accommodation works area, as well as 108m of treelines at the turbine delivery overrun at the construction site entrance. Approximately 3.74km of linear habitat consisting of hedgerows and treelines will be lost as a result of all elements of the Proposed Project.
Assessment of Significance prior to mitigation	The permanent loss of these habitats totalling approximately 3.2km is not considered to be a significant effect at any greater than the local geographical scale, as these habitats, are widespread within the Proposed Wind Farm site, as well as widespread and common within the local farmlands surrounding the Proposed Wind Farm site. This loss equates to approximately 22% of the total existing linear features within the Proposed Wind Farm. Removal of the hedgerows/treelines at this scale would not cause any significant fragmentation of habitat connectivity within the landscape. The loss of approx. 3.2km of linear habitats (treeline and hedgerow) is considered significant at the local geographic scale.
Mitigation	In order to compensate for the loss of linear vegetation, approximately 4.7km of new replacement hedgerow planting will be carried out along selected boundaries of fields within the Proposed Wind Farm site and along any new or realigned access tracks. Additional replanting will also be planted in conjunction with the proposed fencing of rivers/drains from livestock poaching, as described in full within the BMEP found in Appendix 6-4. The replanting areas are presented in Figures 3-1 of the BMEP (Appendix 6-4), in consultation with the landowners who are supportive of the proposal. This will result in a net gain in this habitat within the Proposed Wind Farm site. Species planted in these locations will be of a similar composition to those occurring on site and will be of local provenance. Further details with regard to species, planting location, and management is contained within the BMEP. In addition, stone walls that have to be taken down will be re-instated where possible. Where stone walls are re-instated, they will be left to naturally re-colonise with vegetation.
Residual Effect following Mitigation	With the above habitat creation and BMEP implemented, there will be a temporary residual effect given that there will be an interim period between the removal/loss of hedgerows and the replanting of hedgerow replanting. However, this will be a temporary residual effect and will not be long-term once the BMEP is implemented.

6.5.2.2 Effects on Protected Fauna During Construction

The Proposed Project has the potential to result in habitat loss and disturbance impacts on faunal species that were recorded within the Site but were not included as KERs, see Table 6-18.

The majority of the Proposed Wind Farm is located within improved agricultural grassland (GA1) and peatland habitats (PB1, PB4). Extensive areas of higher-value habitat will remain undisturbed throughout the Proposed Wind Farm and the avoidance of the most significant areas of faunal habitat (peatlands, scrub and watercourses) have been implemented, with 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 following species are assessed below in Tables 6-24 – 6-28:

- Badger
- Otter
- Pine Marten and Red Squirrel
- Bats
- Marsh Fritillary

No instream works are required for any of the proposed new water-crossing structures within the Proposed Wind Farm site or for the cabling along the Proposed Grid Connection. The potential for significant effects on aquatic species is restricted to indirect effects on their habitat resulting from water pollution. This has been assessed in Section 6.5.2.1.1 above and is not repeated below.

6.5.2.2.1 *Assessment of Potential Effects on Badger*

Table 6-24 Assessment of Potential Impacts on Badger

Description of Effect	During the ecological surveys undertaken of the Proposed Project, no badger setts were found in close proximity to the Proposed Wind Farm infrastructure or near any of the proposed new access roads. Some badger activity was noted outside of the Site However, by taking a precautionary approach given that suitable habitat exists within the Proposed Wind Farm site, badgers are likely to use the area, and it is possible that they may create a sett in the intervening period prior to the commencement of construction. Therefore, a potential for significant effect to badger was identified due to potential direct mortality and sett loss during the construction phase. Badger tunnel systems can extend some distance from sett entrances (over 20m in some cases[30]), 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. This scenario is not currently anticipated, given that no badger setts were recorded within the Site. However, this is considered further below on a precautionary basis.
Assessment of Significance prior to mitigation	In the absence of mitigation, the potential for direct mortality of badgers as a result of potential direct mortality and sett lost during the construction phase of the Proposed Project is assessed as being a significant effect on the local badger population. The potential for loss of sett habitat as a result of construction work is assessed as a permanent, irreversible, significant effect on the local badger population.
Mitigation	Following the surveys onsite and by taking a precautionary approach, it was determined that suitable habitat for badgers is present within the Site and may use the Proposed Wind Farm site or the surrounding areas at least on occasion. The loss of potential supporting

[30] *National Roads Authority (2006) Guidelines for the treatment of badgers prior to the construction of National Road Schemes*

	habitat has not been considered as significant at any scale and these habitats are widespread and common within the surrounding and wider landscape. Therefore, no mitigation is required for the loss of suitable badger habitats within the Proposed Project, however, there are scrub and grassland enhancement measures which will provide foraging habitat for badgers within the Proposed Wind Farm site. This is described in detail within the BMEP in Appendix 6-4. Prior to the commencement of construction works, the following measures will be undertaken for the avoidance of disturbance and/or direct mortality to badger and to ensure no additional setts have been established since the original surveys undertaken. The following measures are in line with *Guidelines For The Treatment Of Badgers Prior To The Construction Of National Road Schemes* (TII 2009). › From a precautionary basis, a pre-commencement badger 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 additional setts in close proximity to proposed infrastructure have been built. › In the event that a badger sett is identified within or immediately adjacent to the Proposed Project footprint, mitigation measures will follow the *Guidelines For The Treatment Of Badgers Prior To The Construction Of National Road Schemes (TII 2009),* and are summarized below: o No heavy machinery should be used within 30m of badger setts o Lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance o Light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances. o During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.
Residual Effect following Mitigation	Following the implementation of the mitigation proposed above, there will be no significant residual effect on badger as a result of the Proposed Project at any geographic scale.

6.5.2.2.2 Assessment of Potential Effects on Otter

Table 6-25 Assessment of Potential Impacts on Otter

Description of Effect	As described above in relation to aquatic habitats and species, the Proposed Project has been deliberately designed so that all major infrastructure, i.e., turbine bases and hardstands, avoid significant watercourses. It is proposed to construct 5 clear-span watercourse crossing within the Proposed Wind Farm site where new or upgrades crossings are required. Additionally, there are 8 proposed water crossings along the Proposed Grid Connection, which includes HDD, clearspan and standard formation over/under culverts. No instream works are required for any of the water crossing works along the Proposed Grid Connection or within the Proposed Wind Farm. There will therefore be no barrier to migration, as no structures are proposed within the river, and there will be no riparian habitat loss. No otter holts were found within the Proposed Wind Farm site or along water courses in the vicinity of the Proposed Grid Connection. Taking a precautionary approach, the construction of wind farm infrastructure in the vicinity of watercourses within the EIAR Site Boundary may result in disturbance effects to otter due to noise impacts, particularly if any new holts have been constructed in the interim between planning consent and construction. The construction of the Proposed Project near the Dangan Eighter Stream at a proposed access track crossing where otter spraint was identified within the site boundary may result in significant disturbance effects. The Proposed Project also has the potential to result in indirect effects on otter habitat in the form of water pollution resulting from construction activity as described in Section

	6.5.2.1.1 above. Pollution to watercourses may result in a depletion of food prey biomass for otter in watercourses within the EIAR Site Boundary and downstream of the Site. Potential for effects on Otter has been considered regarding NPWS Threat Response Plan (TRP) which identifies four significant threats facing Otter in an Irish context: Habitat destruction, Water pollution, Disturbance (Recreational sources) and Accidental death/persecution
Assessment of Significance prior to mitigation	Taking a precautionary approach, due to the records of otter activity found on watercourses within and downstream of the Proposed Project, there is potential for temporary significant effect via disturbance to otter, deemed to be a receptor of potentially **International Importance** due to the potential for otter in the area being associated with the population designated for Lough Corrib SAC. In the absence of mitigation and following the precautionary principle, there is also potential for the Proposed Project to result in temporary significant effect on otter in the form of habitat deterioration and prey reduction resulting from pollution.
Mitigation	**Mitigation by Design:** The Proposed Project layout has been designed so that the majority of the key infrastructure are located outside of the delineated 50m natural watercourse (river and stream) buffer zones. No in-stream excavation works are proposed, as all water crossings within the Proposed Wind Farm will involve clear span structures where new water crossings are required, and existing water crossings along the Proposed Grid Connection within the public road will either involve HDD, standard formation crossings (above or below culvert) or clear span bridge structure (refer to Table 6-14 in Section 6.4.2.2.1). Therefore, there will be no direct impact on any rivers or streams, and thus no potential barriers to migration for otter. **Specific Mitigation:** **Water Quality Impacts resulting in Deterioration of Water Quality and Reduction of Prey:** Specific mitigation is provided in relation to water quality in Chapter 9: 'Hydrology and Hydrogeology' of this EIAR and is assessed in Section **Error! Reference source not found.**above. A detailed drainage maintenance plan for the Proposed Project is provided in Section 4 of this EIAR. This plan provides full 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 water quality in Chapter 9: 'Hydrology and Hydrogeology' of this EIAR. These mitigation measures will ensure that there will be no potential indirect effects on otter as a result of a deterioration in water quality. **Disturbance:** Prior to the commencement of construction works associated with the installation of watercourse crossings, the following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2007): › From a precautionary basis, a pre-commencement otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works to ensure that current activity levels are confirmed prior to commencement of works. In the unlikely event that an otter holt is identified within or immediately adjacent to the Proposed Project footprint, consultation will be undertaken with the National Parks and Wildlife Service and a derogation licence applied for. › All conditions of a derogation licence will be implemented in full.

	› No works will be undertaken within 150m of any holts at which breeding females or cubs are present. › No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance will not take place within 15m of such holts, except under licence (TII, 2006[31]). › All of the above works will be undertaken or supervised by an appropriately qualified ecologist.
Residual Effect following Mitigation	Following the implementation of the mitigation proposed above, there will be no significant residual effect on otter as a result of the Proposed Project at any geographic scale.

6.5.2.2.3 *Assessment of Potential Effects on Pine Marten and Red Squirrel*

Table 6-26 Assessment of Potential Impacts on Bats

Description of Effect	During the ecological surveys undertaken of the Site, no pine marten dens or red squirrel dreys were found within the EIAR site boundary. However, as described in Section 6.4.3.7, evidence of pine marten and red squirrel activity was found outside of the Proposed EIAR site boundaries. 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 dreys in the vicinity of proposed infrastructure during the interim between the grant of planning and construction phase. There is potential for pine marten to create dens within the infrastructure footprint. 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. However, taking a precautionary approach, the potential for disturbance to these species during construction works is considered and 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. › 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 the 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. › Consultation will be carried out with NPWS and a Species Protection Plan as agreed by the project ecologist and NPWS will be put in place in advance of felling works.

[31] *NRA, 2006. Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. Dublin: Transport Infrastructure Ireland. Available at: www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Otters-prior-to-the-Construction-of-National-Road-Schemes.pdf*

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.

6.5.2.2.4 *Assessment of Potential Effects on Bats*

The impact assessment in relation to bats has been undertaken in accordance with NIEA[32] and NatureScot Guidance[33]. As per the NatureScot Guidance, wind farms present four potential risks to bats:

- Collision mortality, barotrauma and other injuries
- Loss or damage to commuting and foraging habitat
- Loss of, or damage to, roosts
- Displacement of individuals or populations

For each of these four 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. Additionally, disturbance in relation to potential noise and vibration generated from the Horizontal Directional Drilling (HDD) required at two of the proposed water crossings (as well as one bridge crossing with no watercourses) along the Proposed GCR are also considered in the table below. Potential risk of collision, barotrauma and other injuries relate to the operational phase and are presented in Section 6.5.3.2.1.

Table 6-27 Assessment of Potential Impacts on Bats

Description of Effect	**Loss or Damage to Commuting and Foraging Habitat** Hedgerows and treelines bordering the agricultural fields are expected to be removed to accommodate the footprint of the proposed wind farm access road and other infrastructure. As described in Chapter 4, Section 4.5.2 of this EIAR, limited turbine delivery route accommodation works are required. At the turbine delivery accommodation at the N63/R332 junction, a section of GA1 and a short length of immature hedgerow (WL1), considered to be of low value for bat foraging and commuting. At the site entrance, the turbine delivery route (TDR) overrun area will require the removal of a treeline (WL2). Although the treeline offers *Moderate* suitability for commuting and foraging bats In total, approx. 3.74km of linear habitat consisting of hedgerows and treelines will be lost as a result of the Proposed Project. The conifer plantation within the road between T5 and T9 will be removed to accommodate the proposed new road, as well as to implement biodiversity enhancement measures as described in the BMEP in Appendix 6-4. As the plantation was established as a commercial crop, this felling is expected regardless of the wind farm proceeding. The removal of dense plantation may result in a net benefit to bat populations by increasing edge habitat, which is known to support commuting and foraging activity. Bat buffers will be created around existing turbines as detailed. 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.

[32] *Northern Ireland Environment Agency Natural Environment Division (NED) published Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland (NIEA, 2021).*
[33] *NatureScot (2021) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: August 2021*

Loss of, or damage to, roosts

Twelve built structures within the Proposed Wind Farm site were assessed during the 2024 survey season (three of these structures were also assessed during the 2021/2022 survey period). Of these twelve structures, two were confirmed to support active roosts based on dusk emergence results. one structure (No.9) supported a roost of soprano pipistrelle (10 individuals observed in spring 2024, 20 individuals recorded in autumn 2022 and 7 recorded in autumn 2021), and another structure (No.8) supported a single soprano pipistrelle. These confirmed roosts and their associated linear habitat features will be retained and avoided as part of the Proposed Project.

A third structure (No. 6) located near Turbine 5 is scheduled for demolition as part of the Proposed Project and is the only structure that will be removed as part of the Proposed Project. As detailed in Section 6.4.3.4.2, no bats were identified roosting within the structure.

There are eight proposed watercourse crossings along the Proposed Grid Connection. Of the culverts and bridges assessed, seven had *None* roosting potential and one had *Moderate* roosting potential. No bats were identified roosting within the assessed culverts and bridges and no evidence of roosting was found during the surveys carried out at these locations. Horizontal Directional Drilling (HDD) is proposed at WC8 which was assessed as having a *Moderate* roosting potential. HDD at this location is proposed with an appropriate setback from the structure and no physical alterations to the structure are required. As such, no loss or damage to potential roosting habitat is anticipated as a result of these works.

As outlined in Section 6.4.3.4.1, tree inspection surveys were carried out at the Proposed Wind Farm site and focused on areas where tree removal or disturbance may occur due to infrastructure development. All trees and treelines within the wind farm footprint, particularly those scheduled for felling at the TDR entrance and near Turbines 1, 3, 5, 6 and 8, were inspected for potential roost features (PRFs). No PRFs were identified on any tree, including those scheduled for felling. Any superficial features observed offered no roosting potential; accordingly, all inspected trees were assessed as *None* in line with Collins (2023).

Additionally, all trees proposed to be removed at the TDR overrun at the site entrance as well as the TRD accommodation at the N63/R332 junction were assessed as having *None* roosting potential in line with Collins (2023).

The underground grid connection route will follow existing road corridors and agricultural fields and does not require tree removal. Therefore, no loss of roosting habitat is anticipated along the grid connection.

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 to result in displacement of bats is also assessed below.

Disturbance

A small number of bridge structures along the proposed GCR were assessed as Low to Moderate roosting potential Horizontal Directional Drilling (HDD) is proposed for three bridges along the Proposed Grid Connection Route (2 at watercourse crossings and one at an old railway crossing); no structural works are required for any of the bridges. However, excavations associated with launch and receiver pits will be set back a minimum of 20m from the bridges. In addition, the crossings are subject to existing traffic conditions. Noise and vibration from HDD drilling are not likely to be out of character with that associated with existing traffic conditions to which any roosting bats

	would be accustomed. In addition, the HDD works are short-term. Therefore, the work is unlikely to result in any significant disturbance to bats.
Assessment of Significance prior to mitigation	**Loss or damage to commuting and foraging habitat** The unmitigated loss of 3.74km of hedgerow and treeline habitat within the footprint of the proposed wind farm access roads and the associated wind farm infrastructure is considered to be a significant effect on bats at the local scale. However, an extensive area of habitat remaining undisturbed throughout the site will be retained. Commuting and foraging habitats will remain available to all bat species throughout the site and no significant effects are expected at any other geographic scale. The felling of plantation forestry (WD4) within the site to facilitate site access roads and the BMEP measures (as described in Section 6-4), 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 with regard to felling of forestry.
	Loss of, or damage to, roosts Emergence surveys carried out on structure 6 (proposed for demolition) in 2021 and 2024 did not indicate evidence of roosting bats. The two identified roosts (structure 8 and 9) within the Proposed Wind Farm will be retained and avoided. There is no potential for significant effect as a result of loss or damage to roosts. Trees assessed within the Proposed Project footprint had no roosting potential. Therefore, there is no potential for loss or damage to potential tree roosts.
	Displacement of Individuals or Populations As part of the Proposed Project, a number of treelines and hedgerows located within the bat felling buffers and infrastructure development footprint will require removal or partial clearance. Although these features contribute to the site's overall connectivity and habitat diversity, the majority of linear features will be retained, and the project layout has been designed to avoid significant bat roosts and high-quality foraging areas. The overall extent of suitable bat habitat across the site will remain broadly unchanged. However, temporary impacts from construction phase noise and lighting have the potential to result in negative effects in the form of disturbance on local bat populations recorded at the site. Although these are not expected to be significant, mitigation has been prescribed below.
	Disturbance Due to the nature and scale of the works, there is no potential for significant disturbance to bats.

Mitigation	**Loss or damage to commuting and foraging habitat** To comply with buffer requirements and minimise risk, linear vegetation within the turbine zones will be removed. The final extent of vegetation removal is estimated at 3.74km. A habitat replacement strategy has been developed to offset this loss. This includes: › Approximately 4.7km of new linear planting will occur within the Proposed Wind Farm site. › This will result in a net gain of approximately 960m of hedgerow and treeline habitat; › Planting of native semi-mature trees to ensure immediate connectivity benefits; › Species selection and long-term management plans as detailed in the BMEP A Biodiversity Management and Enhancement Plan (BMEP) has been developed to mitigate the loss of bat foraging/commuting habitat associated with the Proposed Project and is presented in Appendix 6.4. The replanting design outlined in the BMEP will ensure habitat connectivity is maintained and enhanced around the Proposed Project. While no significant effects are anticipated as a result of the loss of habitats, linear features and woodland areas will be fully re-instated or enhanced by replanting of the hedgerows, treelines and woodland habitats.
	Loss of or Damage to Roosts Structure No. 6, located near Turbine 5 is scheduled for demolition as part of the Proposed Project and is the only structure that will be removed. As no bats were identified roosting within the structure during emergence surveys carried out in 2021 or 2024, a derogation licence is not considered necessary. However, in line with best practice guidance, a pre-demolition inspection by a suitably qualified ecologist will be undertaken prior to any works. If any bats or signs of bat use are detected, appropriate mitigation – including potential exclusion under NPWS licence and provision of compensatory roosting habitat – will be implemented to ensure compliance with legal protections and avoid significant effects on bat populations. The recommendation of a pre-demolition survey does not present a lacuna in the survey assessment but is fully in line with best practice guidance. The function of this survey is to assess any potential changes in baseline environment since the surveys were undertaken Additional bat roosting opportunities will be provided in the form of 20 bat boxes to provide potential additional roost resources. This is detailed in the BMEP found in Appendix 6-4.
	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 woodland/forestry edges and linear features. Exterior lighting, during construction and post construction, shall be designed to minimize light spillage, reducing the effect on surrounding habitat features and bat activity. Lighting will be directed away from mature trees and treelines around the periphery of the site boundary. Directional accessories will be used to direct light appropriately, such as light shields (Stone, 2013). All luminaires will be of a type that prevents upward and lateral spillage. The proposed lighting will comply with ILP Guidance Note 08/23 – Bats and Artificial Lighting in the UK (ILP, 2023)[34]. 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	Taking into account the sensitive design of the project and the implementation of best practice and adaptive mitigation measures, no significant long-term residual effects on bats are anticipated with regard to loss or damage to roosts, and displacement of individuals or populations. However, a temporary residual significant effect at the local scale is anticipated in relation to the loss of commuting and foraging habitat, as a result of the removal of treelines and hedgerows required to facilitate construction of the Proposed Project and bat buffers. While this loss will be offset through a comprehensive woodland and hedgerow enhancement and replanting programme (as outlined within the BMEP in Appendix 6-4), it will take approximately 5–10 years for new plantations to establish and restore full habitat functionality. As such, there will be a temporary residual effect during this period, however, this will be a temporary residual effect and will not be long-term once the BMEP is implemented.

6.5.2.2.5 *Assessment of Potential Effects on Marsh Fritillary*

Table 6-28 Assessment of Potential Impacts on Marsh Fritillary

Description of Effect	**Direct Effects/Mortality** The Proposed Wind Farm has been designed to avoid areas of breeding marsh fritillary and suitable habitat. Given the proximity of the construction works required for some elements of the Proposed Wind Farm to identified marsh fritillary breeding areas, the potential for direct impacts on the species has been considered. Construction within identified breeding areas has been avoided through the iterative design process. However, construction works will occur within approximately 17m of the identified marsh fritillary populations at T05 and the associated hard stand/access road. In the absence of mitigation, direct effects could occur as a result of accidental access to adjacent marsh fritillary breeding areas. **Indirect Effects**

[34] *ILP (2023). Guidance Note 08/23: Bats and Artificial Lighting at Night. Institution of Lighting Professionals.*

	In the absence of mitigation, construction works adjacent to existing breeding areas has the potential to indirectly impact marsh fritillary due to dust related impacts. Airborne dust from construction works could settle on marsh fritillary larval webs resulting in suffocation or degradation of breeding habitat. **Loss of Suitable Breeding Habitat** As outlined in Section 6.4.3.3, Marsh Fritillary larval webs were recorded within two fields within the Proposed Wind Farm site. The Proposed Wind Farm has been specifically designed to avoid any areas identified as providing suitable habitat for marsh fritillary. As a result, there is no potential for direct impacts on any existing breeding areas. No suitable Marsh Fritillary habitat within the Proposed Wind Farm site will be lost as a result of the Proposed Project. **Alteration of Hydrological Regime** A singular larval web was recorded in 2024 approximately 17m north of T5, entirely outside of the footprint of the Proposed Project. Therefore, the larval web location will be entirely retained. This habitat has been recorded as cutover bog (PB4) and was actively being cut for peat extraction at the time of the survey. The larval web was located within vegetation on the banks of a drain. However as outlined in Chapter 9, due to the already cutover nature and existing extensive drainage at these locations, no significant additional effects on remaining areas of intact bog nearby are expected as a result of the construction of infrastructure located within cutover bog habitats.
Assessment of Significance prior to mitigation	**Direct Effects/Mortality** Construction works will occur in close proximity to identified marsh fritillary meta-population at T05 and the associated access road. Taking a precautionary approach, in the absence of mitigation, the potential for direct impacts to marsh fritillary would be a significant effect to the population at the County Scale. **Indirect Effects** Taking a precautionary approach, the potential for indirect effects to marsh fritillary as a result of adjacent construction works has the potential to be a significant effect to the population at the County scale. **Loss of Suitable Breeding Habitat** Given that high quality and existing breeding habitat for marsh fritillary has been avoided, and the Proposed Wind Farm footprint does not contain any areas identified as consisting of suitable Marsh Fritillary habitat, it is considered that there is no potential for significant effect to marsh fritillary. **Alteration of Hydrological Regime** The construction of T5 and the associated access roads will not result in any significant effects on the known larval web north of T5, or any other larvae identified within the EIAR Site Boundary as a result of any alteration to the local hydrological regime. Additionally, there will be no losses of suitable marsh fritillary habitat given that there is no infrastructure proposed at the only other location known to support breeding marsh fritillary, and no other suitable habitat was found within the site boundaries.
Mitigation	**Mitigation by Design** The Proposed Project was specifically designed to avoid all known records of Marsh Fritillary larval webs. Woodland replanting as a measure to offset the loss of woodland was originally proposed to be located within a field to the west of the Proposed Wind Farm site, however larval webs were recorded here, and subsequently this area was

removed from the project all together. Additionally, the singular larval web was initially recorded within a section of road north of T5. The road layout was subsequently redesigned to avoid the larval web.

The BMEP (found in Appendix 6-4) outlines details for the habitat creation and enhancement of existing suitable marsh fritillary habitat with a total area of 15.96ha within the Proposed Wind Farm site. It is proposed to create 12.76ha of land managed for marsh fritillary within the Proposed Wind Farm site, as well as to enhance approximately 3.2ha of existing breeding marsh fritillary habitat within the Proposed Wind Farm site.

Additional measures to prevent any accidental loss or damage to known breeding habitat of marsh fritillary will involve the following:

The existing known marsh fritillary breeding areas will be fenced off with a minimum buffer of 5m. This is particularly important at the known location of a larval web, directly north of T5.

The construction works area for proposed turbine T5 and associated site access routes will be fully fenced off (with solid hoarding where possible) to ensure there is no access or egress to adjacent areas of sensitive habitat.

Dust Mitigation

The following mitigation applies to construction areas within 20m of recorded marsh fritillary larval webs (in line with Table 4 of Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction 2024[35]):

- Groundworks (i.e works with potential to create dust) associated with proposed Turbine T05 and associated access road will be fully supervised by an ECoW.
- The ECoW will regularly monitor adjacent marsh fritillary larval web areas on a daily basis for potential signs of dust deposition or any other habitat degradation. Dust level thresholds and weather will also be monitored in line with the mitigations set out in Section 6.5.2.1.2 above.
- If any signs of habitat degradation are noted, the dust-producing works will be immediately halted and further mitigation to protect larval web areas from dust will be implemented in advance of resuming work.
- The ECoW will have power to halt construction works if required as outlined above.
- All of the additional dust mitigation measures outlined in Chapter 10 Air Quality will apply.

Mitigation - Loss of suitable breeding habitat

Although no loss of suitable breeding habitat will be lost as a result of the Proposed Project, as part of the BMEP (Appendix 6-4) it is proposed to create 12.76ha of land managed for marsh fritillary within the Proposed Wind Farm site, as well as to enhance approximately 3.2ha of existing breeding marsh fritillary habitat within the Proposed Wind Farm site. These measures will not only enhance existing suitable habitat areas but will also result in a significant net gain in suitable marsh fritillary habitat within the Proposed Wind Farm site.

Full details on habitat establishment and monitoring are provided in the BMEP (Appendix 6-4).

[35] https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

Residual Effect following Mitigation	Following the implementation of the mitigation proposed above, there will be no significant residual effect on Marsh Fritillary as a result of the Proposed Project at any geographic scale.

6.5.2.2.6 *Biosecurity*

A small stand of the Third Schedule invasive species Rhododendron *(Rhododendron ponticum)* was recorded along the hedgerows within the roadside verges of the northwest section of the proposed grid connection route. No additional Third Schedule invasive species were recorded within the EIAR site boundary.

Due to the construction works associated with the Proposed Grid Connection, in the absence of mitigation there is potential for spread of this species to other habitats within the Proposed Project 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. Given that the Proposed Grid Connection is to be constructed entirely within the existing road network, the following avoidance measures will be implemented to ensure that there is no spread of this invasive species:

- A pre-commencement survey for invasive species within the footprint of the Proposed Grid Connection 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 Environmental Clerk of Works or Ecological Clerk of Works 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 Ecological Clerk of Works or Environmental Clerk of Works.
- The infestation will be roped off from the public road network with clear signage identifying the presence of invasive species and instructing site operators to stay out of this area. This will be in place for the duration of the underground cabling works associated with the Proposed Grid Connection.

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

- 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.

6.5.3 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.

6.5.3.1 Effects on Habitats during Operation

The operation of the Proposed Project will not result in any additional land take or loss of revegetated peatland habitats and as such there is no potential for any significant effects in this regard. These habitats are not considered to be a KER in the context of the operation of the Proposed Project.

The implementation of the Biodiversity Management and Enhancement Plan (BMEP) will ensure that any treeline or hedgerow habitats lost to facilitate the proposed infrastructure will be replaced within the Proposed Wind Farm site. The BMEP included as Appendix 6-4, also includes for the enhancement of grassland areas, planting of 4.7km of hedgerows (approx. 960m gain), marsh fritillary grassland enhancement, native woodland planting, bog woodland enhancement and peat and spoil repository area enhancement. Additional measures proposed in the BMEP will include the proposed permanent fencing along waterbodies with additional riparian hedgerow planting which will serve to enhance the riparian zone and protect the waterbodies from livestock. This fencing will be a permanent measure and implemented for the operational phase of the Proposed Wind Farm.

6.5.3.1.1 *Assessment of Potential Effects on Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species*

Please see Table 6-29 for assessment of the Proposed Project and its potential impacts on Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species during the operational phase.

Table 6-29 Assessment of Potential Impacts on Groundwater, Surface Watercourses and Sensitive Aquatic Faunal Species

Description of Effect	This section assesses the potential for likely significant effects on aquatic features including aquatic habitats (i.e. watercourses), groundwater, salmonids, lamprey, coarse fish, white-clawed crayfish, aquatic invertebrates and other aquatic species identified during the desk study and field surveys, and which are likely to occur downstream of the Proposed Project during the operational phase. **Removal of Vegetation Cover and Progressive Replacement of Natural Surface with Low Permeability Surfaces** The increase in the amount of hard standing areas and removal of vegetation cover associated with the proposed infrastructure has the potential to result in faster water runoff from the Site to the surrounding watercourses. This may have the indirect effect of causing erosion, which could lead to deterioration of surface water and supporting habitat quality. Additionally, there is the potential for the faster run off of any pollutants that may be associated with vehicular usage on the site. **Runoff Resulting in Suspended Solids Entrainment in Surface Waters** During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. In addition, all permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works are likely to be completed, such as maintenance of site entrances, internal roads and hardstand areas. These works will be of a very minor scale and will be very infrequent. Potential sources of sediment laden water will only arise from surface water runoff from small areas where new material is added during maintenance works. **Oils, fuels and/or hydrocarbon spills** During the operational phase, the potential for effects is much more limited than those associated with the construction phases as there is no further excavation/movement of soil/subsoil and the drainage system is fully constructed and operational. However,

	potential effects exist which may result in a deterioration of groundwater quality with regard contaminants such oils and fuels. The predicted impacts on water quality are fully described in Chapter 9: 'Hydrology and Hydrogeology' of this EIAR and are described here in relation specifically to biodiversity.
Assessment of Significance prior to mitigation	Significant effects on water quality (surface and groundwater) are not anticipated at any geographic scale during the operation of the Proposed Project. However, mitigation has been provided below in order to block any potential pathway for effect.
Mitigation	**Removal of Vegetation Cover and Progressive Replacement of Natural Surface with Low Permeability Surfaces** 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 4-3**) 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; › Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, Settlement ponds will be designed in consideration of the greenfield runoff rate. 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. **Runoff Resulting in Suspended Solids Entrainment in Surface Waters** The mitigation measures outlined in Sections 9.5.2.3 & 9.5.3.1 of Chapter 9 will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstand and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, checks dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment. **Oils, fuels and/or hydrocarbon spills**

	› During the operational phase of the Proposed Project, the only regular plant which will be required on site will be maintenance/inspection vehicles (jeeps/vans/quads) and these will not be refuelled on-site. › Any hydrocarbons (oil) present within the turbine generator and gear box will be enclosed within a bund with 110% capacity. › There will be no storage of fuels, oils and chemicals inside any of the turbines. › Automated oil leak detectors will be placed in each of the turbines which will allow early detection of even the smallest leaks of oil or hydraulic fluid that may arise from components such as the transformer or gearbox. › Automated oil leak detectors will be placed in each of the turbines which will allow early detection of even the smallest leaks of oil or hydraulic fluid that may arise from components such as the transformer or gearbox. › The automated detection system will then rapidly notify the wind farm operator by cloud-based systems. This early detection system will prevent large leaks of oil or hydraulic fluid.
Residual Effect following Mitigation	Following the implementation of the mitigation proposed above, there will be no significant residual effect on surface water and groundwater as a result of the Proposed Project at any geographic scale.

6.5.3.2 Effects on Fauna during Operation

The operation of the Proposed Project will not result in any additional habitat loss or deterioration, nor will it result in a significant increase in anthropogenic activity due to its location and scale.

There is no potential for significant negative effects on non-volant terrestrial fauna (otter, badger) during the operational phase of the Proposed Project as there will be no loss of suitable habitat for these species associated with the operational phase. Implementation of the BMEP measures during the operational phase of the development will ensure that any woodland, treelines, hedgerows and scrub that are lost to facilitate the proposed infrastructure will be replaced within the Site with linear features of value for local faunal species, providing more foraging opportunities for fauna, as well as additional shelter for birds and mammals, and commuting links for bats.

Similarly, it is not anticipated that the operation of the Proposed Project will have any effect on marsh fritillary or habitat for the species during the operation of the Proposed Project. Implementation of the BMEP measures during the operational phase of the development will ensure that habitats are managed for marsh fritillary during the operational life of the Proposed Project having a positive impact on this species as well as other local invertebrate/pollinator species.

The implementation of the BMEP will ensure that any broadleaved woodland, treeline and hedgerow that is lost to facilitate the proposed infrastructure will be replaced within the Proposed Wind Farm site. The BMEP will incorporate measures to ensure the establishment of habitats of higher value for local faunal species during the operational period, including grassland enhancement for Marsh Fritillary and retaining higher-value habitat such as Rich Fen habitat. As such the operation of the Proposed Project will not result in a significant impact at any geographic scale. Such measures will have positive effects on the non-volant terrestrial fauna at the site of the Proposed Project, including Marsh Fritillary and amphibians (such as common frog) which were both recorded within the site, as well as for birds and invertebrates. There is no potential for significant negative effects on non-volant terrestrial fauna including otter that was identified as a KER during the construction phase of the development.

It should be noted that no significant habitat for salmonids, lamprey, European eel, aquatic invertebrates or other aquatic species was recorded within the footprint of the Proposed Wind Farm and all major infrastructure such as turbine bases are located over 50 metres from the watercourses and wetlands within the Proposed Wind Farm site. The potential for significant effects on the above aquatic

species is restricted to indirect effects on their habitat resulting from water pollution. This has been assessed in Section 6.5.2.1.1 and is not repeated below.

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.

6.5.3.2.1 Assessment of Potential Effects on Bats during operation

Please see Table 6-30 for assessment of the Proposed Project and its potential impacts on bats during the operational phase

Table 6-30 Assessment of Potential Impacts on Bats

Description of Effect	There is no potential for loss or fragmentation of foraging or roosting habitat for bat species during the operational phase of the Proposed Project as there will be no additional loss of any habitats following construction. The bat survey report that is provided in Appendix 6-2, found bat species composition and abundance to be typical of the geographic location and largely open nature of the Site. As per NatureScot Guidance, the operational phase of wind farms presents the following risk which is assessed in this section: Collision mortality, barotrauma and other injuries; (Operational Phase Impact). The following high-risk species were recorded during the dedicated surveys: Leisler's bat, Common pipistrelle Soprano pipistrelle Nathusius' pipistrelle Overall Risk for the above listed species was determined, in accordance with Table 3b of NatureScot guidance, by a cross-tablature of the Site risk level (i.e. Low) bat activity outputs for each species. The assessment was carried out for both median and maximum activity categories in order to provide insight into typical bat activity (i.e. median values) and activity peaks (i.e. maximum values). NatureScot recommends that the most appropriate activity level (i.e. median or maximum) be utilised to determine the overall risk assessment for a species. 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 were low for the above species; therefore, no significant collision related effects are anticipated. A summary of the results of the collision risk assessment contained in the Bat Report, Appendix 6-2, is provided here. › Leisler's bat activity within the Proposed Project was characterised by having a **low typical collision risk in all seasons** (based on median activity rates), and **medium collision risk at peak activity levels.** › A **low to medium** collision risk is assigned to both the local population of Soprano pipistrelle

	› A **low to medium** collision risk is assigned to the local population of Common pipistrelle throughout all survey seasons. › The collision risk to the local population of Nathusius' pipistrelle is considered **Low** across all survey seasons. Across most detectors and seasons, typical activity levels (based on median bat passes per hour) were within low to moderate ranges, with peak levels reaching medium risk thresholds particularly for Leisler's bat, Common pipistrelle, and Soprano pipistrelle. Detailed detector-level analysis identified six locations that recorded High Median Activity for high collision-risk species. Most high activity records occurred in spring, with four detectors (D02, D03, D07, and D08) exceeding high activity thresholds for Common pipistrelle. In autumn, D01 exceeded the threshold for Soprano pipistrelle, and D04 recorded high Leisler's bat activity with a median of 6.15 bpph and maximum of 24.6 bpph.
Assessment of Significance prior to mitigation	Due to the lack of regular high activity levels across the site, no significant collision related effects are anticipated on *Myotis spp.* and Brown long-eared bats. A potential for long-term negative effects was identified for Common and Soprano pipistrelles, Soprano Pipistrelle and Leisler's bat due to the high levels of activity recorded within the Proposed Wind Farm site and their classification as high-risk species. The potential unmitigated effects on these species as a result of their potential interaction with wind turbines are considered significant at a local geographic scale. No significant effects are anticipated at any other geographic scale.
Mitigation	Detailed mitigation measures have been provided within the Bat Report, found in Appendix 6-2, and have been summarized below. **Mitigation measures are proposed together with post-construction monitoring:** › Manage felling buffers around turbines › Implement blade feathering as a standard › Any 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 (ILP, 2023). › Implement curtailment on proposed turbines which recorded high median activity levels, as per Table 6-1 of the Bat Report, in Appendix 6-2. › 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 postconstruction monitoring
Residual Effect following Mitigation	Taking into consideration the sensitive design of the Proposed Project, the proposed best practice and adaptive mitigation measures, significant residual effects on bats as a result of collision and barotrauma are not anticipated.

6.5.4 Likely Significant Effects During Decommissioning phase

Decommissioning is fully described in Chapter 4 (Section 4.11). 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.

The wind turbines proposed as part of the Proposed Wind Farm are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the equipment may be replaced with a

new technology, subject to planning permission being obtained, or the Proposed Project may be decommissioned fully.

Upon decommissioning of the Proposed Project, the wind turbines will be disassembled in reverse order to how they were erected. The turbines will be disassembled with a similar model of crane that was used for their erection. The turbine will likely be removed from the Proposed Wind Farm site using the same transport methodology adopted for delivery to the Proposed Wind Farm site initially. The turbine materials will be transferred to a suitable recycling or recovery facility.

The underground electrical cabling connecting the turbines to the on-site substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.

All above ground turbine components would be separated and removed off-site for recycling. Turbine foundations will remain in place underground and will be covered with earth and reseeded as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in unnecessary environmental emissions such as noise, dust and/or vibration.

Site roadways will be in use for purposes other than the operation of the Proposed Project by the time the decommissioning of the Proposed Wind Farm site is to be considered, and therefore the Proposed Wind farm site roads will be left in situ for future use. It is envisaged that the roads will serve as agricultural roads for local landowners.

The Proposed Grid Connection underground electrical cabling, the onsite substation will remain in place as it will be under the ownership and control of the ESBN/Eirgrid.

A Decommissioning Plan has been prepared (Appendix 4-6 of Chapter 4 Description), the detail of which will be agreed with the local authority prior to any decommissioning. The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agreed with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Project has been fully assessed in the EIAR.

As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the Proposed Project, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore:

"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".

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. It can be concluded that following the implementation of preventative mitigation, there is no potential for the decommissioning of the Proposed Project to result in significant effects on biodiversity.

6.5.5 Likely Significant Effects on Designated Sites

6.5.5.1 European Designated Sites

The Proposed Project is located completely outside of the boundary of any European site. The Proposed Grid Connection Route crosses Lough Corrib SAC, while watercourses within the Proposed Wind Farm site also have a direct hydrological connection downstream to the Lough Corrib SAC. A potential for likely significant effect was therefore identified on the following European sites:

- Lough Corrib SAC
- Lough Corrib SPA

In relation to European sites, an Appropriate Assessment Screening Report and Natura Impact Statement (NIS) have been prepared to provide the competent authorities with the information necessary to complete an Appropriate Assessment 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 potential impacts on European sites.

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, individually or in combination with other plans and projects, would be likely to have a significant effect on the following European Sites:

- *Lough Corrib SAC [000297]*
- *Lough Corrib SPA [004042]*

As a result, an Appropriate Assessment is required, and a Natura Impact Statement shall be 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'.

6.5.5.2 Nationally Designated Sites

As identified in 6, the below listed Nationally Designated Sites have been identified as being within the Likely ZOI of the Proposed Project. A potential for impact as a result of deterioration in groundwater quality as a result of construction of the Proposed Wind Farm was identified, as well as via surface water connectivity due to the Proposed Grid Connection underground cabling route:

- Turlough Monaghan pNHA [001322]
- Turloughcor pNHA [001788]
- Lough Corrib pNHA [000297]

Lough Corrib pNHA is also assessed under their SAC and SPA designation within the NIS which accompanies this application. As discussed in Section 6.5.2 and 6.5.3, a range of mitigation measures are in place to protect surface water receptors and groundwater receptors during construction of the Proposed Project. Further detail with regard to these measures are provided in Chapter 9 'Water' of this EIAR. With the prescribed mitigations in place, there is no potential for impact on the designated sites via the identified pathways.

6.6 Cumulative Impacts

The Proposed Project was considered in combination with other plans, existing and approved projects and planning applications pending a decision, in the surrounding area that could result in cumulative impacts on the KERs identified in Section 6.4.4 of this report, including European Sites 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 Chapter 2: Background of the Proposed Project. The full list of projects has been considered and relevant ones from this list are discussed in this section.

6.6.1 Assessment 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 6.6.1.1 concludes on their potential for impact on biodiversity.

Table 6-31 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 Section 7.7 of Chapter 7 of this EIAR.

Table 6-31 Cumulative Study Areas in relation to ecological receptors

Individual Topic	Maximum Extent	Justification
Biodiversity (excluding birds)	**Proposed Wind Farm** 10km from the Proposed Wind Farm **Proposed Grid Connection** 200m 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). For the purposes of this cumulative assessment, wind farms within a 10-kilometre radius of the Proposed Wind Farm area were considered. Using the precautionary approach and given the nature and scale of the Proposed Project, the geographical boundary for terrestrial ecological aspects, i.e. habitats and fauna (excluding bats and birds), is 2km for cumulative assessment of other non-wind farm

		projects for the Proposed Wind Farm and 200m from the Proposed Grid Connection underground electrical cabling route.
Water	**Proposed Wind Farm** A combination of surface water and groundwater bodies which show potential connectivity to the Proposed Project. Lough Corrib (Corrib_030) surface water 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** Within a 200m buffer zone of the Proposed Grid Connection.	Regional surface water catchments are used for cumulative impact assessment with regard to 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). Therefore, other wind-farm developments are considered within the Lough Corrib (Corrib_030) surface water 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.

6.6.1.1 Other Wind Farm Projects

For the purposes of this cumulative assessment, wind farms within a 10km radius of the Proposed Project have been considered in further detail below. Details of wind farm projects within 10km of the Proposed Project are provided in Section 2.9.2 of this EIAR and are summarised below also in the context of terrestrial ecology. In total, there are 4 applications relating to wind energy within a 10km radius of the proposed turbines. Two of these applications relate to a single or 2 no. wind turbine development, while the remaining two relate to larger, multiple turbine wind farm developments.

There are 4 no. wind farm developments operational, consented or proposed, that have been identified due to either an application, a request for pre-application consultation having been lodged or permitted, or proposed wind farm projects identified in the Public Domain within the cumulative study area:

- Pl ref: 082407 Cloonlusk - 2 Turbines
- Pl ref: ABP -307058-20 Clonberne - 11 Turbines
- Pl ref: 319307 Laurclavagh - 8 Turbines
- Pl ref: 22/1175 Cloonascragh – 1 Turbine

Further details of these projects are provided below in Table 6-32.

Table 6-32 Wind Farms within 10km of the Proposed Project

Planning Authority	Wind Farm Name	Distance from the Proposed Project	Decision	Status	Turbine no.
Galway County Council Ref: 082407	Cloonlusk	6.4km west of the Proposed Wind Farm	Granted by GCC	Existing	2

		770m north of the Proposed Grid Connection			
An Coimisiún Pleanála Ref: ABP - 307058-20	Clonberne	4.3km north of the Proposed Wind Farm 8.1km north of the Proposed Grid Connection	Proposed	Proposed	11
An Coimisiún Pleanála Ref: 319307	Laurclavagh	9.7km from the Proposed Wind Farm Laurclavagh Wind Farm Grid Connection Route adjoins the end of the Proposed Grid Connection	Proposed	Proposed	8
Galway CoCo. Ref. 221175	Cloonascragh	8.9km west of the Proposed Wind Farm 500m east of the Proposed Grid Connection	Granted by GCC	Permitted	1

6.6.1.1.1 Cloonlusk Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the 2 no. existing turbines at Cloonlusk Wind Farm was considered. The planning file was reviewed on the Galway County Council Planning Register[36]. The wind farm consists of 2 no. turbines on agricultural lands. Given the small scale of the Cloonlusk development and distance from the Proposed Wind Farm (6.4km and approx. 8.1km west of the nearest turbine), as well as no grassland KERs identified as part of the Proposed Project, there is no potential for significant cumulative effects identified.

6.6.1.1.2 Clonberne Wind Farm

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the Clonberne wind farm (11 Turbines) which is proposed to be located approx. 4.3km north of the Proposed Project (4.6km fnorth of the nearest turbine) . A search was made on An Coimisiún Pleanála and the chapter of the EIAR of the EIAR[37] was consulted. The chapter of the EIAR of the EIAR

[36] https://www.eplanning.ie/GalwayCC/AppFileRefDetails/082407/0
[37] *MKO (2024) Environmental Impact Assessment Report, Clonberne Wind Farm, County Galway*

concluded that there will be no residual impacts on biodiversity as a result of the Proposed Project. The only peatland loss assigned as a KER for the Clonberne Wind Farm was cutover bog (PB4), and there were no losses of raised bog (PB1) associated with the Wind Farm. However, through the implementation of the BMEP associated with the EIAR, it was proposed to rewet cutover bog areas to promote the development of wetland vegetation. Thus, it was concluded that the Wind Farm development would not result in any significant residual effects. Fauna assigned as KERs, including otter, bats, marsh fritillary and badger, were also considered in combination with the Proposed Project. Both the Clonberne Wind Farm and the Proposed Project have blocked any potential pathways for significant residual effects on fauna species by the implementation of avoidance (mitigation by design), disturbance mitigation and implementing additional habitat creation within the sites, such as linear replanting. Therefore, as well as the lack of significant residual effects predicted as a result of the Proposed Project, there is no potential for significant cumulative effect.

6.6.1.1.3 *Laurclavagh Wind Farm*

The potential for the Proposed Project to result in significant cumulative effects when assessed alongside the proposed Laurclavagh Wind Farm (8 Turbines) which is proposed to be located approx. 9.7km west (11.3km from the closest turbine within the Proposed Project). A search was made on An Coimisiún Pleanála and the chapter of the EIAR of the EIAR[38] was consulted. The proposed infrastructure associated with the Laurclavagh Wind Farm is all proposed to be located within modified habitats such as improved agricultural grassland. Fauna assigned as KERs, including otter, bats and badger, were also considered in combination with the Proposed Project. Both the Laueclavagh Wind Farm and the Proposed Project have blocked any potential pathways for significant residual effects on fauna species by the implementation of avoidance (mitigation by design), disturbance mitigation and implementing additional habitat creation within the sites, such as linear replanting. Therefore, as well as the lack of significant residual effects predicted as a result of the Proposed Project, there is no potential for significant cumulative effect. The chapter of the EIAR of the EIAR concluded that there will be no residual impacts on biodiversity as a result of the Proposed Project. Based on the information provided within in the EIAR and outlined above, significant cumulative impacts in combination with the Proposed Project are not anticipated.

6.6.1.1.4 *Cloonascragh Wind Turbine*

This project consists of a single turbine on cutover bog (PB4) habitat. The planning file was reviewed on the Galway County Council Planning Register[39]. This wind turbine will result in the loss of cutover bog (PB4), which was identified as a KER within the Proposed Project. However, there were no residual significant effects identified as a result of the Proposed Project. Given the small scale of the single turbine, and the lack of significant residual effects identified as a result of this single turbinge project, there is no potential for significant cumulative effects.

6.6.1.2 Projects within 200m of the Proposed Grid Connection

A desk-based planning search was undertaken to identify permitted developments within 200m vicinity of the Proposed Grid Connection using the Galway County Council planning portal. A total of 23 projects were identified within this area and consisted predominantly of the construction of individual once-off private dwellings, extensions to existing dwellings, agricultural shed and infrastructure projects. The following additional projects were reviewed:

- To erect 20kw domestic wind turbine and associated site works. (Ref: 2374)
- To upgrade the existing 220k overhead line between the existing Cashla 220kV Substation in the townland of Barrettspark, Co. Galway, & Tower 138 in the townland of Oughtagh, Co. Galway. The Proposed Project will consist of refurbishment works to the existing overhead

[38] *MKO (2024) Environmental Impact Assessment Report, Laurclavagh Wind Farm, County Galway*
[39] https://www.eplanning.ie/GalwayCC/searchresults

Line (approximately 49 km long & comprising of 138no. steel angle masts). The refurbishment works to towers will consist of: installation of replacement parts on the towers including insulators, shield wire, vibration dampeners, arching horns & anti-climbing guards; associated site development works, including temporary work areas, foundation refurbishment /strengthening & recapping/clearing of shear blocks; clearance of shear block bases; & ancillary works; ancillary site preparation works, site clearance & levelling at the 6no. temporary construction compounds & associated temporary works to existing tracks & new temporary access routes to provide internal access routes to each tower with all associated works required to facilitate the development. No works will be undertaken to the overhead line (conductor). The Proposed Project will also consist of upgrades to the Cashla 220kV substation that will consist of: the decommissioning and removal of line bay equipment within the substation boundary; construction of a new adjacent offline like for like line bay & associated bay protection cabinets within the substation boundary; & new overhead lines connection between the end mast & the new line bay. (Ref: 23355)

- For the development consisting of a wind energy development comprising of one electricity generating wind turbine, with an overall blade tip height of up to 168m, construction of c. 150m of permanent access track, 110m of temporary access track, road widening works along the existing local access road from the R327 to the proposed site access track, a crane hardstand, a 20kV substation, site electrical & fibre optic cabling & ancillary site works. (Ref: 221175)
- For the development consisting of an 80-metre-high temporary meteorological mast and all associated works for a period of 5 years (ref: 23119)
- For a ten-year planning permission for an electrical transformer compound comprising (i) a hardcore surfaced compound with a footprint of approximately 1300m^2 enclosed by a 2.6m high palisade security fence and security gates, (ii) a control room with a gross floor area of approximately 140m2, (iii) a 110kV electricity transformer, with associated equipment including cable sealing end, surge arrestor, earth disconnect, current/voltage transformer, house transformer, circuit breaker and lightning mast, (iv) a diesel generator for emergency lighting, (v) the upgrade of an existing access point from the L6141 and the construction of approximately 130m of access track, (vi) underground electrical and communications cabling, (vii) underground electrical cable connecting the transformer compound to the electrical cable permitted as part of the Tuam Energy Park (Galway County Council Planning Register Reference 20/1387) and (viii) all associated and ancillary site development, landscaping and reinstatement works. (Ref: 2560096)

The works along the Proposed Grid Connection are minor and transient, similar to roadworks being completed across the country and have no potential for adverse cumulative effects on downstream European sites.

6.6.1.3 Other EIA Projects within 10km of the Proposed Project

A total of 8 projects requiring EIA (excluding wind farms) were identified within 10km of the Proposed Project. These included quarrying activities (Harrington Concrete and Quarries, Cloonascragh Sand and Gravel, McTigue Quarries Ltd, Cartron Quarry and Newtown Farming Ltd.), the N63 road realignment scheme, two dwelling houses as well as infrastructure (220kV electrical substation, all associated electrical plant and apparatus and all ancillary works, underground cabling) associated with the Clonberne Wind Farm. Please see Table 6-33 below for further detail.

Table 6-33 Other EIA Projects within 10km of the Proposed Project

Portal Ref	Competent Authority	Application Ref	Applicant name	Location	Description	Date of application
2022016	An Coimisiún Pleanála	ABP-312875-22	Galway	Abbeyknockmoy, Co Galway	N63 Liss to Abbey Realignment Scheme, comprising construction of	17/2/2022

			County Council		2.3km of National Secondary Road including the provision of a bridge over the River Abbert, and incorporating pedestrian and cycle provisions along the existing N63	
2022149	Galway County Council	N/A	McTigue Quarries Ltd	Cloonascragh Sand and Gravel Pit, Tuam, County Galway. ITM Co-ordinates: E:544266 N:748244	Quarrying operations including the extraction of sand and gravel over an area of 6.5ha; the recovery of inert waste from construction and demolition activity via inert waste recycling and recovery of natural materials for use in restoration of site.	10/8/2022
2024113	An Coimisiún Pleanála	ABP-320087-24	Clonberne Windfarm Limited	The townlands of Cloonarkan, Clonbern and Laughil, Co. Galway	A 220kV electrical substation, all associated electrical plant and apparatus and all ancillary works, underground electrical cabling (220kV), site entrances, joint bays, cable access track, site drainage, tree felling, All ancillary works and apparatus.	25/6/2024
N/A	Galway County Council	N/A	Newtown Farming Ltd.	Lomaunaghbaun, Tuam, Co. Galway	The development of a quarry for the extraction of sand in a phased basis over an area of c. 6.2 ha by an average depth of 3m from existing ground levels in the townland of Lomaunaghbaun, Co. Galway.	8/12/2023
2022039	Galway City Council	N/A	Diarmuid Murphy	Pollaturk Belclare Tuam Co. Galway	Permission to construct serviced dwelling house and domestic garage. This application is accompanied by a Natura Impact Statement.	23/3/2022
2022040	Galway County Council	N/A	Oisin Murphy	Pollaturk Belclare Tuam Co. Galway	Permission to construct serviced dwelling house and domestic garage. This application is accompanied by a Natura Impact Statement.	23/3/2022

2021107	An Coimisiún Pleanála	ABP-310435-21	McTigue Quarries Ltd	Cartron Quarry, Belclare, Tuam, County Galway.	Application to An Coimisiún Pleanála (formerly An Bord Pleanála) for Substitute Consent for the unauthorised continuation of quarrying operations and the unauthorised continued use and/or operation of buildings, structures, plant and machinery at Cartron Quarry, Tuam, Co. Galway.	27/5/2021
2024175	Galway County Council	N/A	Harrington Concrete and Quarries	Ardgaineen, Claregalway, Co. Galway	Proposed lateral extension of an existing limestone quarry.	29/10/2024

6.6.1.4 Existing Habitats and Land Uses

The potential for the Proposed Project to result in a cumulative loss or deterioration of habitats, or impact on the KER species identified, was considered in relation to the existing land uses in the area. Land use in the wider area is dominated by agricultural pasture and peatland turbary, as well as both cut and uncut raised bog habitats.

Adjacent peatland habitats to the Site are designated as NHAs and SACs with active restoration works ongoing on the peatland habitats within. As shown in Section 6.5.5, there will be no impacts on the condition of peatlands within the designated sites. There will be no significant impact on the potential for restoring adjacent areas of cutover bog within the development site in the future. However, as there is a potential for a negative impact at the local scale due to the loss of cutover bog (PB4) for the Proposed Wind Farm, a potential for cumulative impact with regard to turbary activities on adjacent habitats cannot be ruled out.

The loss of hedgerow, treeline and broadleaved woodland will be mitigated through habitat enhancement and replanting proposed as part of this development.

Other land use within the wider area in relation to potential habitat losses will not contribute to significant cumulative effects to biodiversity in-combination with the Proposed Project.

6.6.2 Assessment of Plans

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

- Galway County Development Plan 2022 – 2028
- 4th National Biodiversity Action Plan 2023-2030
- Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032

The review focused on policies and objectives that relate to nationally 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 6-34.

Potential for cumulative impacts on European sites are considered within the Natura Impact Statement that accompanies this application.

Table 6-34 Assessment of Plans

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
Galway County Development Plan 2022 – 2028	**Policy Objectives Natural Heritage and Biodiversity** **NHB 1 Natural Heritage and Biodiversity of Designated Sites, Habitats and Species** Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts and extend to any additions or alterations to sites that may occur during the lifetime of this plan. Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts (as amended) and the Flora Protection Order (SI 94 of 1999). Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network. **NHB 2 European Sites and Appropriate Assessment** To implement Article 6 of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant. **NHB 3 Protection of European Sites** No plans, programmes, or projects etc. giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites. The Proposed Project is located outside of any Nationally designated sites. All identified pathways for impact to designated sites have been assessed and mitigated where necessary as detailed in Section 6.5.5. Where it was possible, the Proposed Project was designed in order to avoid sensitive wetland habitats and the proposed infrastructure has been limited to degraded peatland habitat areas. The BMEP (Appendix 6-4) has been designed to provide a net gain of approximately 960m hedgerow replanting, which will offset the losses of linear features within the Proposed Wind Farm as well as create additional linear features.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects.* **NHB 4 Ecological Appraisal of Biodiversity** Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites. Where appropriate require an ecological appraisal, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively. **NHB 5 Ecological Connectivity and Corridors** Support the protection and enhancement of biodiversity and ecological connectivity in non-designated sites, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife areas where these form part of the ecological network and/or may be considered as ecological corridors in the context of Article 10 of the Habitats Directive. **NHB 6 Implementation of Plans and Strategies** Support the implementation of any relevant recommendations contained in the National Heritage Plan 2030, the National Biodiversity Plan, the All Ireland Pollinator Plan and the National Peatlands Strategy and any such plans and strategies during the lifetime of this plan. **NHB 7 Mitigation Measures** Require mitigating measures in certain cases where it is evident that biodiversity is likely to be affected. These measures may, in association with other specified requirements, include establishment of wildlife areas/corridors/parks, hedgerow, tree planting, wildflower meadows/marshes and other areas. With regard to residential development, in certain cases, these measures may be carried out in conjunction with the provision of open space and/or play areas.	As also described within the BMEP, known habitat supporting marsh fritillary will be entirely retained and protected during the construction phase. Additional habitat within the Proposed Wind Farm will also be enhanced to provide additional marsh fritillary habitat within the Proposed Project. The identified Rich Fen (PF1) with links to the Annex 1 habitat *Alkaline Fen (7230)* will also be protected throughout the construction phase and enhanced as part of the BMEP. The proposed 8 water crossings along the Proposed Grid Connection as well as the 5 internal Proposed Wind Farm water crossings have all been designed to avoid any in stream works and have been designed to avoid any significant effects water quality associated with these works. No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	NHB 8 Increased Awareness of the County's Biodiversity and Natural Heritage Facilitate increased awareness of the County's biodiversity and natural heritage through the provision of information to landowners and the community generally, in cooperation with statutory and other partners. **NHB 9 Protection of Bats and Bats Habitats** Seek to protect bats and their roosts, their feeding areas, flight paths and commuting routes. Ensure that development proposals in areas which are potentially important for bats, including areas of woodland, linear features such as hedgerows, stonewalls, watercourses and associated riparian vegetation which may provide migratory/foraging uses shall be subject to suitable assessment for potential impacts on bats. This will include an assessment of the cumulative loss of habitat or the impact on bat populations and activity in the area and may include a specific bat survey. Assessments shall be carried out by a suitably qualified professional and where development is likely to result in significant adverse effects on bat populations or activity in the area, development will be prohibited or require mitigation and/or compensatory measures, as appropriate. The impact of lighting on bats and their roosts and the lighting up of objects of cultural heritage must be adequately assessed in relation to new developments and the upgrading of existing lighting systems. **NHB 10 NPWS & Integrated Management Plans** Article 6(1) of the Habitats Directive requires that Member States establish the necessary conservation measures for European sites involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans. The NPWS's current priority is to identify site specific conservation objectives; management plans may be considered after this is done. Where Integrated Management Plans are being prepared by the NPWS for European sites (or parts thereof), the NPWS shall be engaged with in order to ensure that plans are fully integrated with the Plan and other plans and programmes, with the intention that such plans are practical, achievable and sustainable and have regard to all relevant ecological, cultural, social and economic considerations, including those of local communities.	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	Policy Objectives: Climate Change **CC 1 Climate Change** Support and facilitate the implementation of European, National and Regional objectives for climate adaptation and mitigation taking into account other provisions of the Plan (including those relating to land use planning, energy, sustainable mobility, flood risk management and drainage) and having regard to the Climate mitigation and adaptation measures. **CC 2 Transition to a low carbon, climate-resilient society** It is a policy objective of the Planning Authority to support the transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, by way of reducing greenhouse gases, increasing renewable energy, and improving energy efficiency. **CC 4 Local Authority Climate Action Plan** Support the preparation of a Climate Action Plan for County Galway. **CC 5 Climate Adaptation and Mitigation** To promote, support and direct effective climate action policies and objectives that seek to improve climate outcomes across County Galway through the encouragement and integration of appropriate mitigation and adaptation considerations and measures into all development and decision-making processes. **CC 6 Local Authority Renewable Energy Strategy (LARES)** To support the implementation of the Renewable Energy Strategy contained in Appendix 1 of the Galway County Development Plan to facilitate the transition to a low carbon county. **CC 7 Climate Action Fund**	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	Support the delivery of sustainable development projects under the European Green Deal and utilise the Climate Action Fund/ Just Transition Fund established under the National Development Plan to encourage public and private climate mitigation and adaptation projects in line with criteria set out by the Fund at that time. **CC 8 Climate Action and Development** Location To implement, through the plan and future local areas plans, policies that support and encourage sustainable compact growth and settlement patterns, integrate land use and transportation, and maximise opportunities through development location, form, layout and design to secure climate resilience and reduce carbon dioxide and greenhouse emissions. **CC 9 Mainstreaming Climate Change Adaptation** Galway County Council shall incorporate climate change adaptation into land use planning, building layouts, energy, transport, natural resource management, forestry, agriculture and marine waters. **CC 10 Green Infrastructure** Galway County Council shall promote the benefit of open spaces and implement the integration of green infrastructure/networks (e.g. interconnected network of green spaces (including aquatic ecosystems) and other physical features on land) into new development and regeneration proposals in order to mitigate and adapt to climate change **Policy Objectives Renewable Energy** **RE1 Renewable Energy Generation and ancillary facilities** To facilitate and support appropriate levels of renewable energy generation and ancillary facilities in the county to meet national, regional and county renewable energy targets, to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy.	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	RE 2 Local Authority Renewable Energy Strategy The policy objectives and Development Management Standards set out in the Local Authority Renewable Energy Strategy for County Galway shall be deemed the policy objectives and development management standards for the purpose of the Galway County Development Plan 2022-2028. **RE 3 Wind Energy Developments** Promote and facilitate wind farm developments in suitable locations, having regard to areas of the County designated for this purpose in the Local Authority Renewable Energy Strategy. The Planning Authority will assess any planning application proposals for wind energy production in accordance with the Local Authority Renewable Energy Strategy, the DoEHLG Guidelines for Planning Authorities on Wind Energy Development, 2006 (or any updated/superseded documents), having due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy. **RE 5 Renewable Energy Strategy** Support and facilitate the sustainable development and the use of appropriate renewable energy resources and associated infrastructure within the County having due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy as follows: • Renewable Energy Transmission • Renewable Energy Generation • 'Strategic Areas' for renewable energy development • Onshore Wind Energy • Solar Energy Bioenergy/Anaerobic Digestion • Micro-renewables • Marine Renewables • Hydro Energy • Geothermal Energy • Alternative Technologies	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	• Energy Efficiency & Conservation • Sustainable Transport • Auto production • Battery Storage • Repowering/Renewing Wind Energy Developments • Community Ownership **RE 6 Oileáin Árann an Energy Transition Community** The Planning Authority shall continue to support Comharchumann Fuinnimh Oileáin Árann (Aran Islands Energy Cooperative), SEAI and Údarás na Gaeltachta in their objective to develop the Islands as being energy independent and becoming Ireland's first energy transition community. **Policy Objective Pollinators** **PO 1** To facilitate the delivery of the All Ireland Pollinator Plan where possible. In the interest of preserving and enhancing biodiversity and working in conjunction with the All Ireland Pollinator Plan - It shall be the policy objective of the Planning Authority to ensure that at least 20% of the green space on all housing estates being built will have to be dedicated, developed and maintained as a pollinator zone. The area dedicated can be confined to one single lot or various lots around the site providing that the total area of the lots meets the minimum requirement of 20%. The pollinator zones should be planted with a mix of pollinator friendly-bulbs, self seeding annuals and biennials, perennials, shrubs, trees, fruit trees and fruit bushes and the majority of this planting should consist of native plants. **Policy Objective Invasive Species** **IS 1** Control of Invasive and Alien Invasive Species It is a policy objective of the Planning Authority to support measures for the prevention and eradication of invasive species. **Policy Objectives Rural Development** **EG 4** Ireland's Grid Development Strategy Support the implementation of Ireland's Grid Development Strategy, while taking into account landscape, residential, amenity and environmental considerations.	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	Policy Objective Wetlands, Turloughs, Watercourses and Fens **WTWF 1 Wetland Sites** Protect and conserve the ecological and biodiversity heritage of the wetland sites in the County. Ensure that an appropriate level of assessment is completed in relation to wetland habitats that are subject to proposals which would involve drainage or reclamation that might destroy, fragment or degrade any wetland in the county. This includes lakes and ponds, turloughs, watercourses, springs and swamps, marshes, fens, heath, peatlands, some woodlands as well as some coastal and marine habitats. Protect Ramsar sites under The Convention on Wetlands of International Importance (especially as Waterfowl Habitat). **Policy Objectives Trees, Woodlands, Hedgerows and Stone Walls** **TWHS 1 Trees, Hedgerows, Natural Boundaries and Stone Walls** Protect and seek to retain important trees, tree clusters and tree boundaries, ancient woodland, natural boundaries including stonewalls, existing hedgerows particularly species rich roadside and townland boundary hedgerows, where possible and replace with a boundary type similar to the existing boundary. Ensure that new development proposals take cognisance of significant trees/tree stands and that all planting schemes developed are suitable for the specific site and use suitable native variety of trees of Irish provenance and hedgerows of native species. Seek Tree Management Plans to ensure that trees are adequately protected during development and incorporated into the design of new developments. **TWHS 3 Protection of Forestry** Protect all substantial areas of deciduous forest, other than areas of commercial forestry. Proposals for development in these areas should seek to interact with the landscape character of the forested areas and its limits while also enhancing the forested areas so as to increase biodiversity value. **Policy Objectives Green and Blue Infrastructure**	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	GBI 1 New Developments Require all proposals for large scale development to contribute to the protection, management and enhancement of the existing green/blue infrastructure of the County and the delivery of new green/blue infrastructure, where appropriate by including a green/ blue infrastructure plan as an integral part of any planning application. This plan should identify environmental and ecological assets, constraints and opportunities and shall include proposals which protect, manage, and enhance the development of green infrastructure resources in a sustainable manner. **GBI 2 Green/Blue Infrastructure Network** Facilitate the ongoing development and improvement of a green/blue infrastructure network for urban and rural areas, connecting both natural and semi-natural corridors such as including green spaces, open spaces, green amenities, residual land, rivers and canals. Enhancements along natural features may include the provision of riparian buffers, community food programmes (allotments) and wild areas for pollination thus ensuring the provision of natural areas for the benefit of biodiversity, wildlife and climate adaptation.	
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 areas. 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. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.
4th National Biodiversity Action Plan 2023-2030	Irelands 4th National Biodiversity Action Plan 2023-2030 (Department of Housing, Local Government and Heritage, 2024) (the "NBAP"). 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.	No cumulative impacts were identified upon review of the Plan in conjunction with the Proposed Project. The Proposed Project will not contravene the proposed objectives of the NBAP.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	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. › 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.	

6.6.3 Overall Assessment of Cumulative Effects

The Proposed Project has been considered cumulatively with other plans and projects as described in the section above. Particular focus has been placed on those plans and projects that are in closest proximity to the Proposed Project and those that could be potentially affected via downstream surface water, groundwater effects, loss of habitat or disturbance to fauna as well as the loss of peatland habitats, all of which are identified in Section 6.4.3 as KERs.

Following the detailed surveys undertaken and impact assessment provided in Section 6.5, it is concluded that there will be no significant residual disturbance, deterioration of water quality, faunal habitat loss associated with the Proposed Project and therefore it cannot contribute to any cumulative effect when considered in combination with other plans and projects. The other wind farms in the area were considered (among other projects) but the Proposed Project has been deliberately designed to minimise the effects on biodiversity through the siting of the Proposed Project on habitats of low ecological value.

No significant residual effects as a result of the Proposed Project in relation to disturbance, displacement or mortality of faunal species has been identified. Therefore, there is no potential for the Proposed Project to contribute to any cumulative effect in this regard.

However, it has been concluded that there is a potential for a cumulative effect as a result of the loss cutover bog (PB4) habitats within the wider area, as well as the loss of this habitat within the Proposed Project. As such, there is a potential for cumulative impact at the local scale when considered in-combination with adjacent land uses., such as continued cutting of peat. Significant effects not anticipated at the County scale in relation to cumulative effects.

6.7 Conclusion

Following consideration of the residual effects (post mitigation) it is concluded that the Proposed Project will result in a residual significant effect on the KER Raised Bog (PB1) *Degraded Raised Bogs Still Capable of Natural Regeneration (7120)* in the form of the direct loss of approximately 0.18ha of this habitat as a result of the proposed new floating access road between T7 and T9, which amounts to approximately 0.54% of the total raised bog habitat area within the Proposed Project. This floating road structure, although designed to minimize impacts on the hydrology of the underlying habitats and avoiding the need for any excavations, will result in likely significant effects on thy underlying hydrology of this habitat in an area of approximately 50-100m of the proposed new floating road. This identified significant residual effects will be on a receptor of County Importance.

No further significant residual effects on features of International, National, County Importance or Local importance (higher value) were identified.

The potential for effects on the European Designated Sites is fully described in the Natura Impact Statement 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.

It has been concluded that there is a potential for a cumulative effect as a result of the loss cutover bog (PB4) habitats within the wider area. Therefore, there is a potential for cumulative impact at the local scale when considered in-combination with adjacent land uses.