

6. BIODIVERSITY

6.1 Introduction

This chapter assesses the likely significant effects (both alone and cumulatively with other plans and projects) that the Proposed Development may have on Biodiversity, Flora and Fauna and sets out the mitigation measures proposed to avoid, reduce, or offset any potential significant effects that are identified. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Act 1976 (as amended) (the 'Wildlife Act'), Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as amended) (the 'Habitats Directive'). Impacts on avian receptors are considered in Chapter 7 of this EIAR. The full description of the Proposed Development 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, Flora and Fauna.
- 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 fully assessed.
- Proposed mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of predicted effects on Biodiversity, Flora, and Fauna.

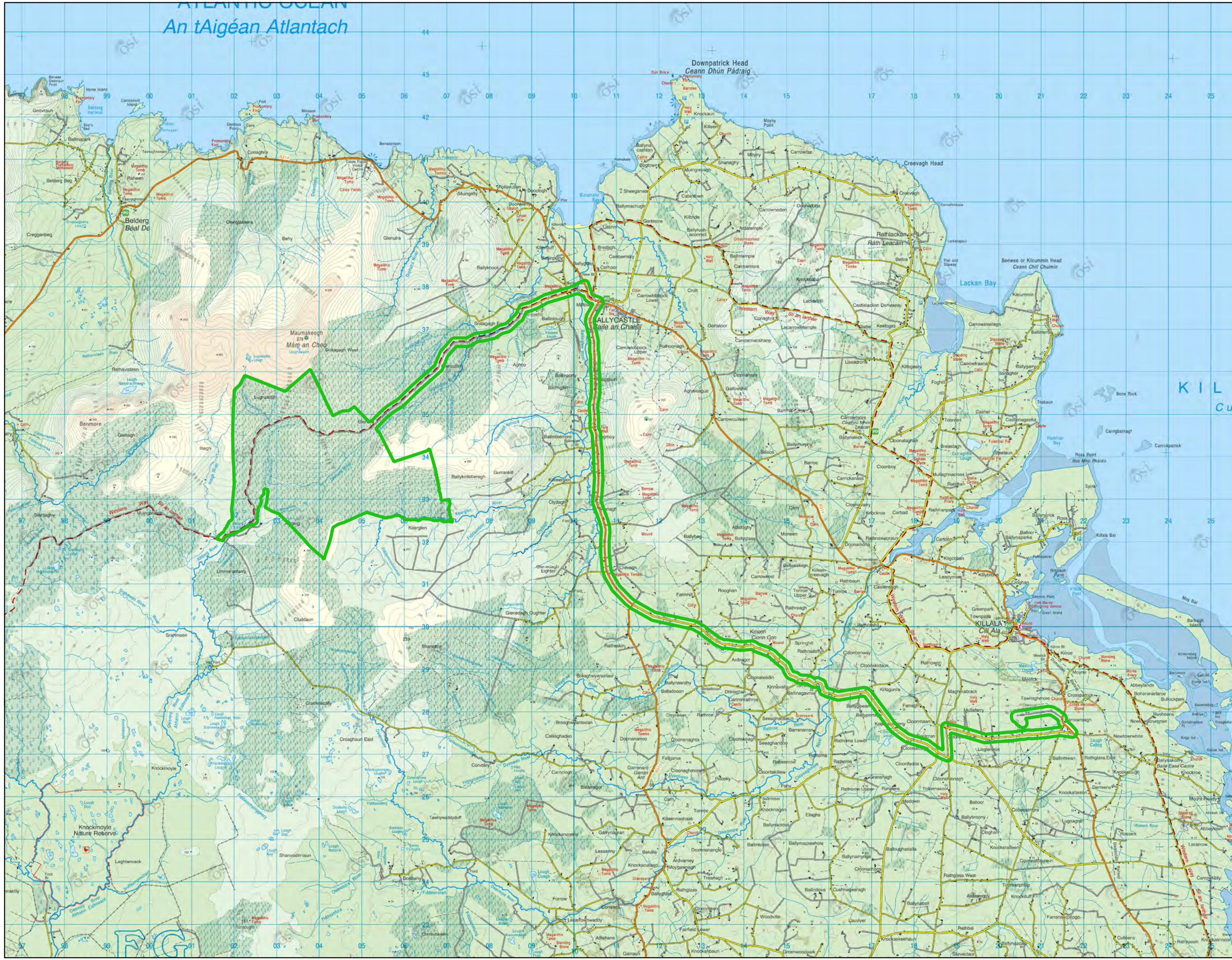
The following defined terms are utilised in this chapter:

- For the purposes of this EIAR, the entire project is referred to as the 'Proposed Development'.
- For the purpose of this EIAR chapter, the term 'EIAR Site Boundary'/'Site Boundary' refers to the site boundary as shown in Figure 6-1.
- The term 'development footprint' is used to describe the lands that will be subject to the proposed infrastructure and associated construction works.
- "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.
- "Zone 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.

An tAigéan Atlantach

Map Legend

EIAR Site Boundary



Drawing Title
EIAR Site Boundary

Project Title
Glencaraun Windfarm

Drawn By
RM

Checked By
CM

Project No.
201120

Drawing No.
Figure 6.1

Scale
1:78,421

Date
01/12/2023



MKO
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 V8B4
+353 (0) 91 735611
email: info@mkofireland.ie
Website:
www.mkofireland.ie

Requirements for Ecological Impact Assessment

National Legislation

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

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

The Flora (Protection) Order 2022 S.I. No. 235 lists the species, hybrids and/or subspecies of flora protected under Section 21 of the Wildlife Act. It provides protection to a wide variety of protected plant species in Ireland including vascular plants, mosses, liverworts, lichens, and stoneworts. 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

The National Biodiversity Action Plan 2017-2021 (Department of Culture, Heritage, and the Gaeltacht, 2017) (the "Plan") demonstrates Ireland's continuing commitment to meeting and acting on its obligations to protect Ireland's biodiversity for the benefit of future generations through a series of targeted strategies and actions. The main objective of the Plan is to bring biodiversity into the mainstream of policy and decision-making. Objective 1 (*Mainstream biodiversity into decision-making across all sectors*) of the Plan identifies the following relevant measures in relation to future developments:

- "Incorporate into legislation the requirement for consideration of impacts on biodiversity to ensure that conservation and sustainable use of biodiversity are taken into account in all relevant plans and programmes and relevant new legislation.
- Public and Private Sector relevant policies will use best practice in SEA, AA and other assessment tools to ensure proper consideration of biodiversity in policies and plans.
- All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue Green infrastructure.
- Strengthen ecological expertise in local authorities and relevant Government Departments and agencies.
- Local Authorities will review and update their Biodiversity and Heritage Action Plans.
- Local Authorities will review and update their Development Plans and policies to include policies and objectives for the protection and restoration of biodiversity.
- Develop Green Infrastructure at local, regional, and national levels and promote the use of nature-based solutions for the delivery of a coherent and integrated network.

¹ <https://www.npws.ie/protected-sites/nha> (Accessed May 2021).

- Continue to produce guidance on the protection of biodiversity in designated areas, marine and the wider countryside for Local Authorities and relevant sectors.
- Integrate Natura 2000 and Biodiversity financial expenditure tracking into Government Programmes internal paying agency management procedures including linkage to the Prioritised Action Framework and this NBAP.
- Develop a Natural Capital Asset Register and national natural capital accounts by 2020 and integrate these accounts into economic policy and decision-making.
- Initiate natural capital accounting through sectoral and small-scale pilot studies, including the integration of environmental and economic statistics using the framework of the UN System of Experimental-Ecosystem Accounting (SEEA).
- Establish a national Business and Biodiversity Platform under the CBD's Global Business Partnership.
- Ensure Origin Green produces tangible benefits for biodiversity with increased emphasis on conservation and restoration of biodiversity.
- Implement actions from Ireland's Biodiversity Climate Change Sectoral Adaptation Plan.
- Identify and take measures to minimise the impact of incentives and subsidies on biodiversity loss, and develop positive incentive measures, where necessary, to assist the conservation of biodiversity.
- Establish and implement mechanisms for the payments of ecosystem services including carbon stocks, to generate increased revenue for biodiversity conservation and restoration.
- Develop and implement a National Biodiversity Finance Plan to set out in detail how the actions and targets of this NBAP will be delivered from 2017 and beyond; and
- Monitor the implementation of the Plan”.

Such policies have informed the evaluation of ecological features recorded within the study area and the ecological assessment process.

European Legislation

The EU Habitats Directive (92/43/EEC) (together with the Birds Directive (79/409/EEC), as subsequently codified by Council Directive 2009/147/EC on the conservation of wild birds (the “Birds Directive”) forms the cornerstone of Europe's nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. The Habitats Directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g., special types of forests, meadows, wetlands, etc.), which are of European importance. The Habitats Directive and Birds Directive, which were transposed into Irish law through Part XAB of the Planning and Development Acts 2000-2020 (from a land use planning perspective) recognise the significance of protecting rare and endangered species of flora and fauna, and more importantly, their habitats.

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 Habitats 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 in both Annex II and Annex IV.

The disturbance of species under Article 12 of the Habitats Directive (and in particular avoidance of deliberate disturbance of Annex IV species, particularly during the period of breeding, rearing, hibernation and migration and avoidance of deterioration or destruction of breeding sites or resting places) has been specifically assessed in this EIAR.

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

In summary, the species and habitats provided national and international protection under these legislative and policy documents have been considered in this Ecological Impact Assessment. A detailed assessment of the likelihood of the Proposed Development having either a significant effect or an adverse impact on any relevant European Sites (i.e., SACs, cSACs, SPAs or cSPAs) has been carried out in the Appropriate Assessment 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.

6.3 Relevant Guidance

The assessment methodology is based primarily upon Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine Version 1.2 (CIEEM, 2022) and the Transport Infrastructure Ireland (TII)'s *Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2* (TII, 2009a) (referred to hereafter as the TII Ecological Impact Assessment Guidelines). The survey methodology is based on the TII guidelines on *Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (TII, 2009b). 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 adhered to in the preparation of this document to provide the scope, structure and content of the assessment:

- Bats and onshore wind turbines: survey, Assessment and mitigation (NatureScot August 2021)
- NIEA, Natural Environment Division - Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland (May 2022).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA), 2022).
- Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment. (Department of the Environment, Community and Local Government (DoEHLG), 2013).
- Guidelines for assessment of Ecological Impacts of National Road Schemes, (TII, 2009a).
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (TII, 2008a).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA, 2003).
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).
- Guidance on the preparation of the Environmental Impact Assessment Report (European Commission (EC), 2017)

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

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

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

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).

This assessment has taken into account the various planning policies and strategy guidance documents listed below:

- Adopted Mayo County Development Plan 2022 – 2028
- Adopted Natura Impact Report on the Mayo County Development Plan, Mayo County Council, (2020).
- National Biodiversity Action Plan 2017-2021
- The Regional Planning Guidelines for the West 2010-2022

6.3.1 Statement of Authority

This report has been prepared by Inga Reich (B.Sc., Ph.D (Applied Ecology)), Colin Murphy (B.Sc (Ecology), M.Sc) and Pat Roberts (B.Sc.(Env.) MCIEEM. Inga Reich has over 5 years' postdoctoral experience in ecology and professional ecological consultancy. Colin is an experienced ecologist with over three years professional consulting experience. Both Inga and Colin have previous experience in preparing Biodiversity Chapters for EIARs. Pat has over 15 years' experience in ecological management and assessment. The baseline ecological surveys were undertaken by Inga Reich, Sarah Mullen (B.Sc., M.Sc. Ph.D.) and Kevin McElduff (B.Sc. Env) across multiple dates in 2021 and 2022. Additional ecological surveys were undertaken by Colin Murphy, and Rachel Minogue (B.Sc Env) on the 20/04/2023, and 03/05/2023.

6.4 Methodology

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).

The following sections outline the methodologies utilised to establish the baseline ecological condition of the Proposed Development site.

6.4.1 Desk Study

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

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA (Envision), Water Framework Directive (WFD), Geological Survey of Ireland (GSI) & Inland Fisheries Ireland (IFI).
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper.
- Data on potential occurrence of protected bryophytes – as per NPWS online map viewer; Flora Protection Order Map Viewer – Bryophytes².
- IFI Reports.
- Review of specially requested records from the NPWS Rare and Protected Species Database for the hectad in which the EIAR Site Boundary is located.
- Review of NPWS Article 17 Metadata and GIS Database Files

All online data sources listed above were most recently accessed in July 2023.

6.4.1.1 Zone of Influence

Given the nature and scale of the Proposed Development, the zone of influence for the Proposed Development, in relation to potential for significant impacts on habitats and species, was considered to be the EIAR Site boundary and the grid connection route.

In relational to European and Nationally Designated Sites, as well as non-designated sites of national importance, the zone of influence was determined using a source-pathway-receptor model as outlined below: 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) on the 30/05/2023. The datasets were utilised to identify Designated Sites which could feasibly be affected by the Proposed Development.

- All Designated Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European and National Sites surrounding the development site are shown on Figures 6-3 and 6-4 respectively. Information on these sites according to the site-specific conservation objectives is provided in Table 6-3. Sites that were further away from the Proposed Development were also considered and no potential for impact was identified due to the absence of indirect and direct hydrological connections (e.g., without the Atlantic Ocean as a buffer).
- Table 6-6 provides details of all relevant designated sites as identified in the preceding steps and assesses which are within the likely Zone of Influence All relevant European Designated Sites are also 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 30/05/2023.

Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required.

² NPWS, 2021, Online map viewer; Flora Protection Order Map Viewer – Bryophytes. Online, Available at: <http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e>, Accessed: May 2021.

6.4.2 Scoping and Consultation

MKO undertook a scoping exercise during preparation of this EIAR, as described in Chapter 2, Section 2.6 of this EIAR.

Copies of all scoping responses are included in Appendix 2-1 of this EIAR. Although no formal scoping opinion was requested from An Bord Pleanála under s37D of the Planning and Development Act 2000 (as amended), the recommendations of the consultees have informed the EIAR preparation process and the contents of this chapter. Table 2.4 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 Organisations consulted with regard to provides a list of the organisations consulted with regard to biodiversity during the scoping process and their response.

Table 6-1 Organisations consulted with regard to biodiversity.

Consultee	Response
Department of Tourism, Culture, Arts, Gaeltacht, Sport, and Media	<p>The scoping response provides a number of recommendations, and a summary of the main points is provided below:</p> <ul style="list-style-type: none"> ➤ The EIAR must demonstrate that the proposed wind farm development will not pose any threat to surface waters and associated species (e.g., Salmon). ➤ The impacts of tree felling on wildlife, habitats, and surface waters (e.g., water quality) should be assessed fully, including the risk of Phosphate mobilisation from peat soils as a result of tree clearance and ground disturbance. ➤ The EIAR should include a detailed plan to show the location, nature, and area of habitat to be reinstated, and provide details of how such areas will be reinstated, managed, and improved for habitats and/or species, together with proposals for monitoring and reporting. ➤ The likely impacts of grid connection, particularly for birds, sensitive habitats, and surface waters, should be given due consideration at the EIA stage. ➤ Impacts of lighting on-site should be assessed. ➤ An assessment of the impact of the proposed windfarm on bat species should be carried out noting recent guidance available. ➤ 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. ➤ The EIAR should also address the issue of invasive alien plant and animal species such as <i>Rhododendron ponticum</i> and Japanese Knotweed, and detail the methods required to ensure they are not accidentally introduced or spread during survey and/or construction. <p>Recommendations for the preparation of a Construction Management Plan were also provided along with guidance on impact and appropriate assessments, ecological surveys, cumulative impacts and post-construction monitoring.</p>
Inland Fisheries Ireland - Shannon Region & Western Region	<p>The scoping response provides a number of recommendations and in summary, Inland Fisheries Ireland want the following to be addressed:</p> <ul style="list-style-type: none"> ➤ Water quality ➤ Surface water hydrology ➤ Fish spawning and nursing areas ➤ Passage of migratory fish ➤ Areas of natural heritage importance ➤ Biological diversity ➤ Ecosystem structure and functioning

	<ul style="list-style-type: none"> ➤ Sport and commercial fishing and angling ➤ Sediment transport
Irish Peatland Conservation Council	<p>The scoping response provides a number of recommendations, and a summary of the main points is provided below:</p> <ul style="list-style-type: none"> ➤ Properly assess and screen for any adverse impacts on the habitat or species utilising them that may occur during the construction of any infrastructural development such as wind farms. ➤ Have proper plans in place for the habitat regarding after-use rehabilitation/restoration. ➤ Ensure that the project in no way affects the integrity of the habitats and qualifying interests including species of the designated sites. ➤ Account for nitrogen within pre-planning coupled with a nitrogen monitoring agenda which could highlight possible pathways of nutrient enrichment. ➤ Monitor the movement of soils and machinery in and out of construction sites to ensure that best practice in relation to biosecurity is adhered to. ➤ Carry out ornithological surveys within the recommended survey times for breeding Curlew to ascertain as to whether they are present and if they utilise the site for any other purposes such as foraging. ➤ Ensure that the Proposed Development will not adversely impact on the water quality. ➤ Review the location of some of the proposed turbines which are within zones graded to be of a “Moderately High” chance of a landslide event. ➤ Assess the cumulative effects of windfarms, afforestation, peat extraction, drainage, overgrazing on the environment - specifically including the designated sites - and assess the implications of impacts on annexed species and biodiversity.
Irish Wildlife Trust	<p>The response states that the Irish Wildlife Trust does not have the capacity to consider or respond to all scoping requests.</p>
Mayo County Council	<p>The scoping response provides a number of recommendations, however, the only one related to the Biodiversity Chapter concerns the consideration of the impact of the proposed development on downstream waterbodies.</p>

A data request was sent to the National Parks and Wildlife Service, scientific data unit, and a response was received on the 27th of May 2021. The feedback is provided in Section 6.5.1 of the EIAR.

In addition to the above, two meetings were held with the with the National Parks and Wildlife Service to discuss the Ecological and Ornithological aspects of the Proposed Development.

The first meeting with NPWS was held on 24th September 2022 via a MS Teams call with representatives from MKO, SSE and NPWS to introduce the project.

Matters discussed included:

- Site Location and habitat maps
- Surveys – flora and fauna observations on site, habitats, surveys undertaken, surveys ongoing and surveys upcoming.
- Main ecological considerations
- Scoping
- Construction Environmental Management Plan (CEMP)

A second meeting was held on 26th January 2022 via a MS Teams call with representatives from MKO, SSE, MWP and NPWS. The meeting commenced with a run-through of the previous meetings by MKO

which was held on 24th September 2021 and the follow up items which were issued to NPWS post meeting.

Matters discussed included:

- Bio enhancement plans including bog rehabilitation and species mortality
- Ornithological matters
- The proposed grid connection and the consideration for loss of habitat due to clearfelling.

6.4.3 Field Surveys

A comprehensive survey of the biodiversity of the entire site was undertaken on various dates in 2021, 2022, and 2023. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies, dates of survey and guidance followed.

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

Multidisciplinary walkover surveys were undertaken within the EIAR Site Boundary on the following dates:

- 2nd July 2021
- 9th July 2021
- 18th August 2021
- 2nd September 2021
- 24th September 2021
- 18th January 2022
- 25th January 2022
- 20th of April 2023
- 3rd May 2023

All surveys of vegetation were completed within the optimum period for vegetation surveys/habitat mapping, i.e., April to September (Smith *et al.*, 2011). A comprehensive walkover of the entire EIAR Site Boundary was completed. Surveys undertaken outside of this period were not used to evaluate habitats.

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 badger setts and areas of suitable habitat, 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 Development (e.g., otter etc.). In addition, an inventory of other species of local biodiversity interest was compiled including invertebrates (butterflies, dragonflies, damselflies, beetles), plants, fungi etc.

The multi-disciplinary walkover surveys comprehensively covered the entire EIAR Site Boundary for features and locations of ecological significance. Based on the multi-disciplinary walkover survey findings, further detailed targeted surveys were carried out during follow-up species specific survey visits. These are described in detail below. These surveys were carried out in accordance with NRA *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (NRA, 2009).

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (as amended) was conducted.

Other targeted survey methodologies undertaken at the site are described in the following subsections.

6.4.3.2 Dedicated Habitat and Vegetation Composition Surveys

Habitats within the site were classified according to the guidelines set out in ‘A Guide to Habitats in Ireland’ (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. Vegetation was sampled by taking botanical quadrats/relevés within representative habitat areas of the site. This allowed for accurate habitat classification. The location of each of the quadrats and the quadrat data is provided in the Botanical Survey Report available in appendix 6-1 of the EIAR. The extent of each habitat on site was mapped on site using aerial photography, hand-held GPS, and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site, including all relevés.

Habitats, such as peatlands recorded within the site, likely to correspond to EU Habitats Directive Annex I habitat types have been described and assessed in accordance with NPWS guidance from the relevant national Annex I habitat surveys/Irish Wildlife Manuals. Where applicable, vegetation communities were also classified for habitats, in particular Annex I habitats, according to the Irish Vegetation Classification (IVC) system (Perrin, 2015³).

The habitat assessment surveys described in this report, including EU Habitats Directive Annex I classification and condition assessment, have been undertaken in accordance with the following guidelines and interpretation documents:

- Perrin, P.M, Martin, J.R., Barron, J.R., Roche & O’Hanrahan, B. (2014) Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. Irish Wildlife Manuals, No. 79. National Parks and Wildlife Service.
- 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.
- 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.
- 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
- NPWS (2013), The Status of EU Protected Habitats and Species in Ireland. Habitat Assessments Volume 2. Version 1.1. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Commission of the European Communities (2007) Interpretation manual of European Union habitats. Eur 27. European Commission DG Environment.

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

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

³ Perrin, P.M., (2015) *The Irish Vegetation Classification – Technical Progress Report No. 1*, Online, Available at: http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Irish-Vegetation-Classification_Technical-Progress-Report-No.1-1.pdf Accessed January 2022.

6.4.3.3 Terrestrial Fauna Surveys

The results of the desk study, scoping replies and incidental records of protected species recorded during multidisciplinary walkover surveys were all used to inform the scope of targeted ecological surveys required. Based on these findings dedicated surveys for bats, otter and badger were undertaken at the times set out below following the methodologies also provided below. During the multidisciplinary walkover surveys, records of invertebrates including butterflies, damselflies, dragonflies, moths, beetles etc. were recorded. As suitable marsh fritillary habitat was identified following initial site visits and based on records in the wider area following the desk study, dedicated marsh fritillary butterfly surveys were deemed necessary.

6.4.3.3.1 Badger Survey

Dedicated badger surveys were conducted on the 2nd of July 2021, 9th July 2021, 18th August 2021, 2nd September 2021, and 3rd of May 2023. Camera trap surveys were carried out in August 2021. In addition, records of any badger activity within the study area were also recorded during other faunal and habitat surveys of the site. The badger surveys covered the entire development footprint and surrounding boundary hedgerows/treelines. The site was systematically searched for signs of badger, incidental setts, prints, latrines, foraging signs, or sightings. If encountered, setts were classified as per the convention set out in NRA (2009) (i.e., main, annexe, subsidiary, outlier). The badger survey was not constrained by vegetation given the nature of the habitats within the EIAR site boundary (NRA 2006a).

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 following CIEEM best practice competencies for species surveys (CIEEM, 2013⁴).

6.4.3.3.2 Otter Survey

Following a review of the initial site walkover ecological surveys for constraints identification and the results of the multi-disciplinary walkover survey; areas identified as providing potential habitat for otter were subject to specialist targeted survey. The otter survey of watercourses was conducted on the 18th of January 2022 and 25th of January 2022. In addition, records of any otter activity within the study area were also recorded during other faunal and habitat surveys of the EIAR Site Boundary.

Additional otter surveys were undertaken during a fisheries assessment of the watercourses both within and downstream of the study area in September 2021, and on the 20th of April 2023.

The otter surveys were conducted as per NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved a search for all otter signs e.g., spraints, scat, prints, slides, trails, couches, and holts. In addition to the width of the rivers/watercourses, a 10m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS 2009). The dedicated otter surveys 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).

⁴ CIEEM, 2013, *Technical Guidance Series – Competencies for Species Survey*, Online, Available at: <https://cieem.net/resource/competencies-for-species-survey-css/> Accessed: May 2021

6.4.3.3.3 Bats

A detailed bat survey report is provided in Appendix 6-2 of this EIAR. This document provides a detailed description of survey methodologies within the EIAR Site Boundary during the survey period 2021-2023. Full details of the survey times and dates and the methodologies followed are provided in Appendix 6-2 along with details of all the surveyors.

Bat Habitat Suitability Appraisal

Bat walkover surveys were carried out throughout 2021. During these surveys, habitats within the EIAR Study Area were assessed for their suitability to support roosting, foraging and commuting bats. Connectivity with the wider landscape was also considered. Suitability was assessed according to Collins (2016) which provides a grading protocol for roosting habitats and for commuting and foraging areas. Suitability categories are divided into High, Moderate, Low and Negligible, and are described fully in Appendix 6-2.

Roost Surveys

A search for roosts was undertaken within 200m plus the rotor radius (i.e. 63m) of the Proposed Development footprint (NatureScot, 2021). The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. The site was visited in May, July and September 2021. A walkover was carried out and all structures and trees were assessed for their potential to support roosting bats (see Appendix 6-2 for criteria in assessing roosting habitats).

Any potential tree roosts were examined for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other potential roost features (i.e. PRFs) identified by Andrews (2018).

No potential roosting sites were identified within 263m of the boundary of the Proposed Development footprint.

Manual Transects

Manual activity surveys comprised walked transects at dusk. A series of representative transect routes were selected throughout the Proposed Development site. The aim of these surveys was to identify bat species using the site and gather any information on bat behaviour and important features used by bats. Transect routes were prepared with reference to the proposed layout, desktop and walkover survey results as well as any health and safety considerations and access limitations. As such, transect routes generally followed existing roads and tracks. Transect routes are presented in Figures 3-1 - 3-3 in Appendix 6-2.

Transects were walked by two surveyors, recording bats in real time. Dusk surveys commenced 30 minutes before sunset and were completed for 3 hours after sunset. Surveyors were equipped with active full spectrum bat detectors, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland), and all bat activity was recorded for subsequent analysis to confirm species identifications. Transect surveys were undertaken in Spring, Summer and Autumn 2021. Table 6-2 summarises survey effort in relation to walked manual transects.

Table 6-2. 2021 Survey Effort - Manual Transects

Date	Surveyors	Sunrise/ Sunset	Type	Weather	Walked (km)
19 th May 2021	Tim Murphy & Neil Campbell	21:42	Dusk	10° C, dry, calm/light air	11.4km
12 th July 2021	Tim Murphy & Laura McEntegart	22:05	Dusk	18° C, dry, 90% cloud cover, calm/light air	15.8km
21 st September 2021	Keith Costello & Neil Campbell	19:40	Dusk	15° C dry, 80-100% cloud cover, calm/ light air	10.5km
Total Survey Effort					37.7km

Ground Level Statics

Where developments have more than 10 turbines, NatureScot requires 1 detector per turbine up to 10 plus 1 detector for every 3 additional turbines.

The scope of bat work was designed in 2021, prior to the finalising of the Proposed Development layout (i.e. 22 turbines). The surveys were designed for a potential layout of up to 24 turbines. Given that 24 turbines were initially proposed, 15 detectors were deployed to ensure compliance with NatureScot guidance. The extent of the Proposed Development changed through the design process, and the number of turbines reduced to 22 turbines. Detector locations achieved a representative spatial spread in relation to proposed turbines and sampled the range of available habitats.

Automated bat detectors were deployed at 15 no. locations for at least 10 nights in each of spring (April-May), summer (June-mid August) and autumn (mid-August-October) (NatureScot, 2021). Detector locations were based on indicative turbine locations and differ slightly to the final proposed layout. Figure 3-4 presents static detector locations in relation to the final proposed layout. Static detector locations are described in Table 6-3.

Table 6-3. Ground-level Static Detector Locations

ID	Location (ITM)	Habitat	Linear Feature within 50m	Corresponding/ Nearest Turbine(s)
D01	502036 833371	Conifer plantation (WD4)	Conifer plantation (WD4)	T03 & T04
D02	502084 834024	Conifer plantation (WD4)	Conifer plantation (WD4)	T02
D03	502287 834555	Conifer plantation (WD4)	Conifer plantation (WD4)	T01
D04	503052 834565	Wet Heath (HH3)	Conifer plantation (WD4) & Spoil and bare ground (ED2)	T06 & T07
D05	503830 834424	Upland Blanket Bog (PB2)	Conifer plantation (WD4)	T08 & T11
D06	504469 833541	Recently-felled woodland (WS5)	Conifer plantation (WD4)	T05
D07	504537 832851	Recently-felled woodland (WS5)	Conifer plantation (WD4)	T17
D08	502748 833075	Conifer plantation (WD4)	Conifer plantation (WD4)	T10
D09	504871 834297	Buildings and Artificial Surfaces (BL3)	Conifer plantation (WD4)	T15 & T18
D10	503417 833554	Upland Blanket Bog (PB2)	Conifer plantation (WD4)	T09 & T12
D11	503867 833157	Conifer plantation (WD4)	Conifer plantation (WD4)	T13
D12	505673 833265	Buildings and Artificial Surfaces (BL3)	Conifer plantation (WD4) & Buildings and Artificial Surfaces (BL3)	T19 & T21

D13	506439 833211	Recently-felled woodland (WS5)	Conifer plantation (WD4)	T16 & T22
D14	504060 832681	Conifer plantation (WD4)	Conifer plantation (WD4)	T14
D15	505276 833526	Conifer plantation (WD4)	Conifer plantation (WD4)	T20

Full spectrum bat detectors, Song Meter SM4BAT (Wildlife Acoustics, Maynard, MA, USA), were employed using settings recommended for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

Onsite weather monitoring was undertaken concurrently with static detector deployments. One Vantage Pro 2 (Davis Instruments, CA, UCS) was deployed each season and night-time hourly data was tracked remotely to ensure a sufficient number of nights (i.e. minimum 10 no.) with appropriate weather conditions were captured (i.e. dusk temperatures above 8 °C, wind speeds less than 5m/s and no or only very light rainfall). Table 6-4 summarises survey effort achieved in 2021 for each of the 15 no. detector locations.

Table 6-4. Survey Effort - Ground-level Static Surveys.

Season	Survey Period	Total Survey Nights per Detector Location	Nights with Appropriate Weather
Spring	19 th May – 1 st June 2021	14	10
Summer	12 th July – 26 th July 2021	15	14
Autumn	21 st September – 6 th October 2021	15	11
Total Survey Effort		44	35

*Two detectors (D02 & D04) were redeployed on 8th October 2021 following technical difficulties with original SD cards. They were collected on 18th October 2021

Survey design and effort was undertaken in strict accordance with those prescribed in SNH (2021) ‘Bats and onshore wind turbines: survey, Assessment and mitigation’. This is in line with standard best practice industry guidelines.

6.4.3.3.4 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 24th September 2021 and 3rd May 2023. 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 proposed infrastructure footprint. Where suitable habitat did occur, detailed surveys to locate larval webs were undertaken.

6.4.3.3.5 Aquatic surveys

Following initial site visits and based on records in the wider area following a desk study, habitat suitability for protected aquatic species of conservation interest, known, or suspected to occur within the ELAR Site Boundary (e.g., fish species, otter etc.), were conducted. Aquatic habitats and species were assessed during the multi-disciplinary walkover surveys and where appropriate dedicated aquatic habitat and fisheries surveys were undertaken. A dedicated fisheries assessment was undertaken at the site for targeted species groups including salmon, trout, and lamprey in September 2021. A full description of the survey methodologies is provided in the standalone report available in Appendix 6-3 of the ELAR. Aquatic plant species protected under the Flora (Protection) Order 2022 S.I. No. 235 were searched for during all aquatic surveys.

6.4.3.3.6 Invasive species survey

During the multi-disciplinary walkover surveys carried out in 2021, 2022, and 2023, 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).

6.4.4 Methodology for Assessment of Impacts and Effects

6.4.4.1 Identification of Target Receptors and Key Ecological Receptors

The methodology for assessment followed a precautionary screening approach with regard to the identification of Key Ecological Receptors (KERs). Following a comprehensive desk study, site visits were undertaken on the dates listed in Section 6.4.3.1 (not including bat surveys and stakeholder consultation), “Target receptors” likely to occur in the zone of influence of the development were identified. The target receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive
- Qualifying Interests (QIs) of SAC, Special Conservation Interests of (SCIs) of SPAs, NHAs and pNHAs within the likely zone of influence
- Species protected under the Wildlife Act.
- Species protected under the Flora (Protection) Order 2022 S.I. No. 235

6.4.4.2 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 (SACs or SPAs) 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 National or International, County or Local importance (Higher Value) 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.

6.4.4.3 Characterisation of Impacts and Effects

The Proposed Development 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). These guidelines are the industry standard for the completion of Ecological Impact Assessment in the UK and Ireland. This chapter has also been prepared in accordance with the corresponding EPA guidance (EPA 2022). 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 Development results in a positive or negative effect on the ecological receptor.
- **Extent.** Description of the spatial area over which the effect has the potential to occur.
- **Magnitude** Refers to size, amount, intensity, and volume. It should be quantified if possible and expressed in absolute or relative terms e.g., the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- **Duration** is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing.** This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- **Reversibility.** This is a consideration of whether an effect is reversible within a ‘reasonable’ timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

6.4.4.4 Determining the Significance of Effects

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

For the purpose of Ecological Impact Assessment (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.

The EPA Guidelines on information to be included in Environmental Impact Assessment Reports (EPA, 2022) and the *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009) were also adhered to when determining significance and the assessment is in accordance with those guidelines.

The terminology used in the determination of significance follows the suggested language set out in the EPA Guidelines (2022) as shown in Table 6-5.

Table 6-5 Criteria for determining significance of effect, based on (EPA, 2022) guidelines.

Effect Magnitude	Definition
No change	No discernible change in the ecology of the affected feature.
Imperceptible effect	An effect capable of measurement but without noticeable consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate effect	An effect that alters the character of the environment that is consistent with existing and emerging trends.
Significant effect	An effect which, by its character, its magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment.
Profound effect	An effect which obliterates sensitive characteristics.

As per TII (NRA, 2009) and CIEEM (2018) best practice guidelines, the following key elements should also be examined when determining the significance of effects:

- The likely effects on ‘integrity’ should be used as a measure to determine whether an impact on a site is likely to be significant (NRA, 2009).
- A ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives (CIEEM, 2018).

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 Habitats Directive 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/CIEEM methodology, 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).

6.4.4.5 Incorporation of Mitigation

Section 6.7 of this EIAR assesses the potential effects of the Proposed Development to ensure that all effects on KERs are adequately addressed. Where significant effects on Key Ecological Receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation.

6.4.4.6 Limitations

The information provided in this assessment accurately and comprehensively describes the baseline ecological environment following surveys on numerous dates during all seasons and over 3 years; provides an accurate prediction of the likely ecological effects of the proposed development; prescribes best practice and mitigation as necessary; and describes the residual ecological impacts.

The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines.

The habitats and species on the site were readily identifiable and comprehensive assessments were made during the field visit. No significant limitations in the scope, scale or context of the assessment have been identified.

6.5 Establishing the Ecological Baseline

6.5.1 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) of the

Department of Culture, Heritage and the Gaeltacht, bird and plant distribution atlases and other research publications.

6.5.1.1 Designated Sites

6.5.1.1.1 Identification of the Designated Sites within the Likely Zone of Influence of the Proposed Development

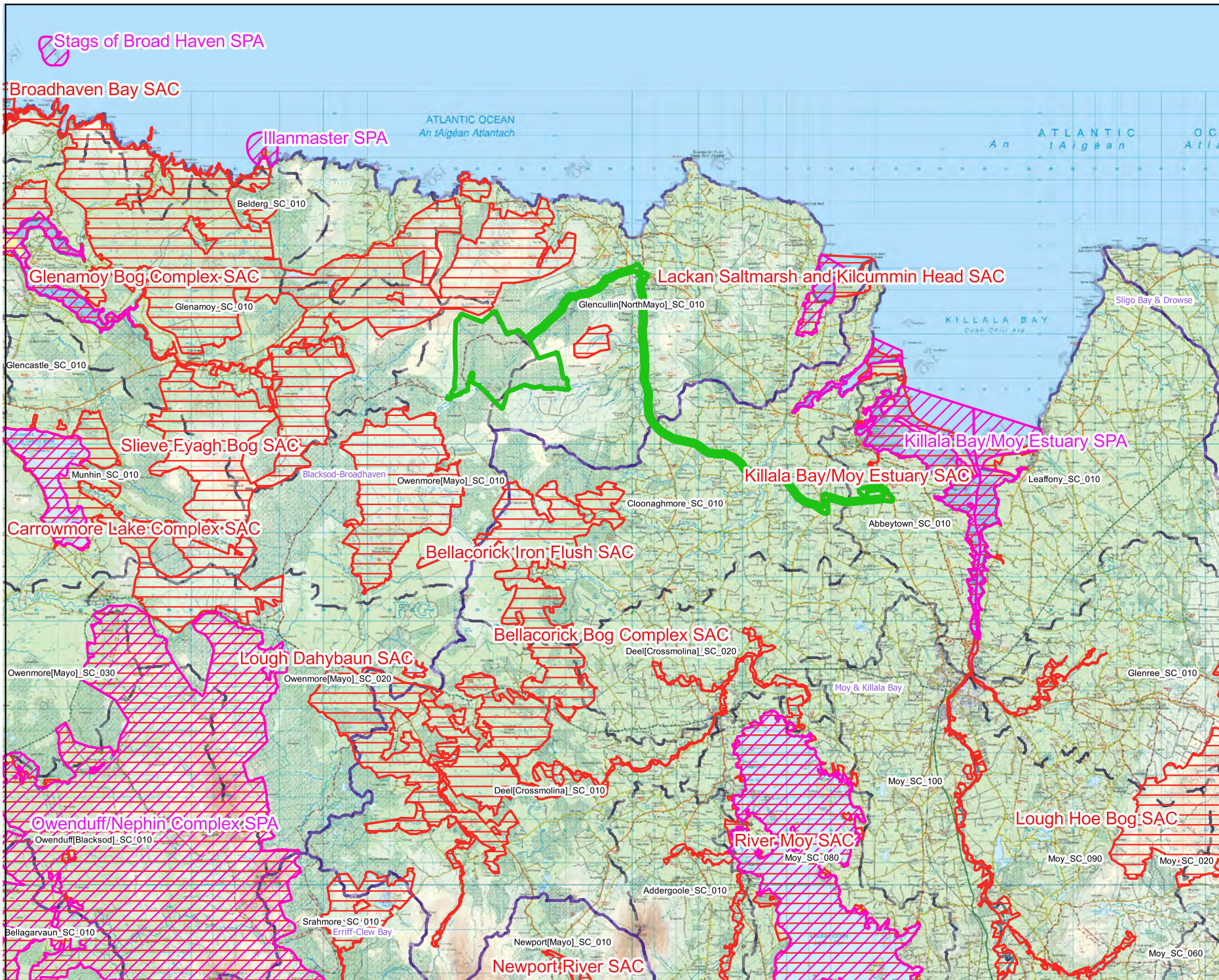
The potential for the Proposed Development to impact on sites that are designated for nature conservation was considered in this Ecological Impact Assessment.

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 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 6.7.2 of this EIAR provides a summary of the key assessment findings with regard to European Designated Sites.

Natural Heritage Areas (NHAs) are designated under Section 18 the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in this EcIA.


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 EcIA.

The methodology was used to establish which sites that are designated for nature conservation have the potential to be impacted by the proposed development is fully described in section 6.4.1.1:




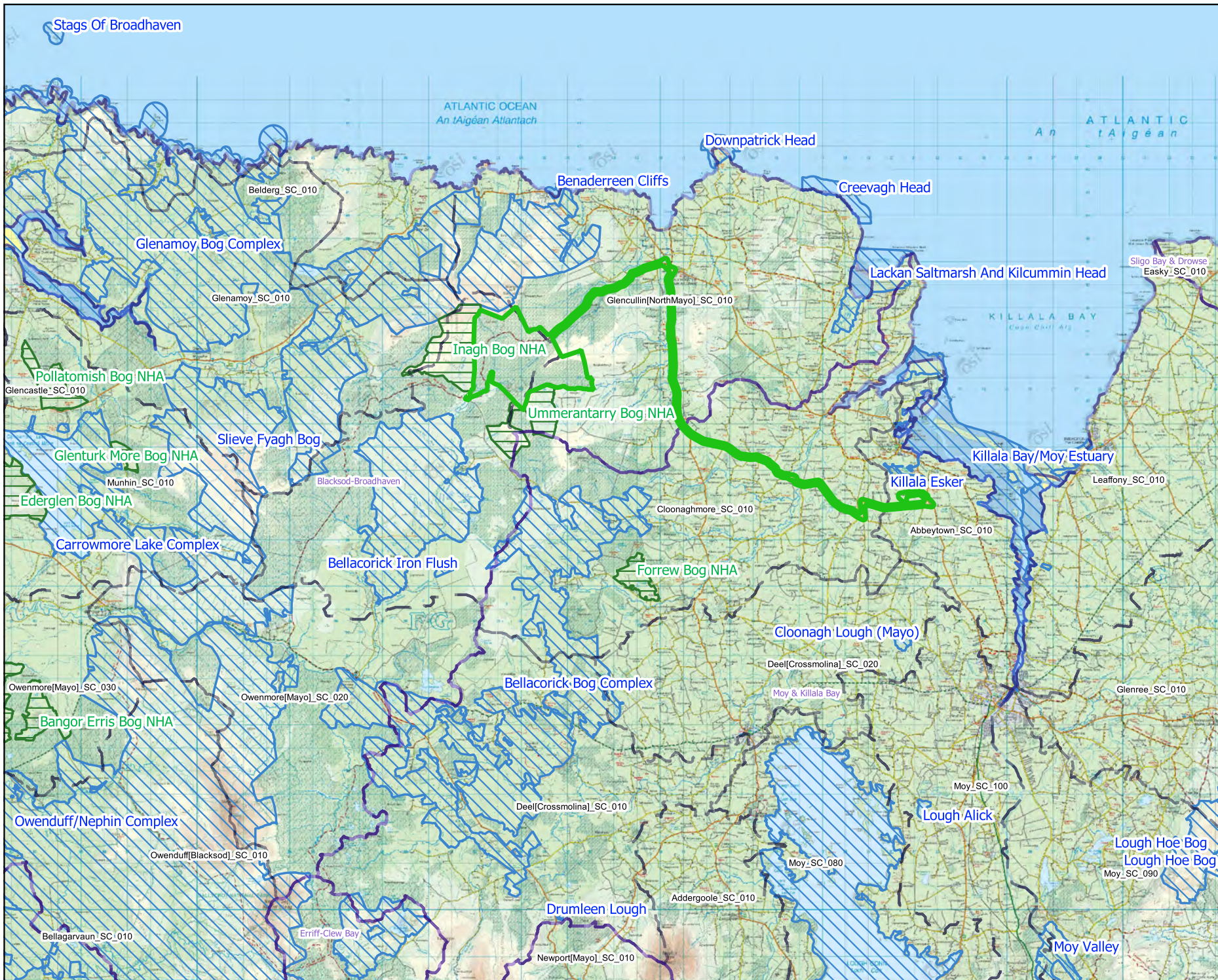
Map Legend

- █ ETAR Site Boundary
- █ Special Area of Conservation (SAC)
- █ Special Protection Area (SPA)
- █ EPA Hydrological Catchments
- █ EPA Hydrological Subcatchments



Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland / Government of Ireland

Drawing Title European Designated Sites Within the Likely Zone of Influence	
Project Title Glenora Wind Farm	
Drawn By RM	Checked By CM
Project No. 201120	Drawing No. Figure 6.2
Scale 1:224,594	Date 01/12/2023
 <p style="font-size: x-small;">MKO Planning Environmental Consultants Tuam Road, Galway Ireland, H91 VV88 +353 (0) 91 735511 email: info@mkofireland.ie Website: www.mkofireland.ie</p>	



Map Legend

- █ EIAR Site Boundary
- EPA Hydrological Catchments
- EPA Hydrological Subcatchments
- Natural Heritage Area (NHA)
- Proposed Natural Heritage Area (pNHA)

Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland/Government of Ireland

Drawing Title	
Nationally Designated Sites Within the Likely Zone of Influence	
Project Title	
Glenora Wind Farm	
Drawn By	Checked By
RM	CM
Project No.	Drawing No.
201120	Figure 6.3
Scale	Date
1:213,899	01/12/2023

MKO
 Planning and Environmental Consultants
 Tuam Road, Galway
 Ireland, H91 VWS8
 +353 (0) 91 735511
 email: info@mkofireland.ie
 Website: ww.mkofireland.ie

Table 6-6 Designated sites in the Zone of Influence

Designated Site	Distance from Proposed Development (km)	Likely Zone of Influence Determination
Special Areas of Conservation (SAC)		
Glenamoy Bog Complex SAC [000500]	0.2km from site boundary 1.2km from grid connection	There will be no direct effects as the ELAR Site Boundary footprint is located entirely outside the designated site. The closest works associated with the Proposed Development are more than 750m away from the SAC. There is no downstream surface water connectivity between the Proposed Development and the Designated Site and no pathway for indirect effects on any of the QI habitats or species was identified. Due to the lack of connectivity and distance between the Proposed Development and the European Site, no complete impact source-pathway-receptor chain exists. The SAC is not in the Likely Zone of Influence and no further assessment is required.
Bellacorick Bog Complex SAC [001922]	0.9km from site boundary 3km from grid connection	There will be no direct effects as the ELAR Site Boundary footprint is located entirely outside the designated site. Downstream surface water connectivity (approximately 2.6km surface water distance) with the SAC has been identified via the watercourses that flow from the western part of the development site into the Owenmore River and there is potential for deterioration of water quality during the construction, operational and decommissioning phases. The SAC is considered to be within the Likely Zone of Influence and further assessment is required.
Bellacorick Iron Flush SAC [000466]	7.3km from site boundary 11.3km from grid connection	There will be no direct effects as the ELAR Site Boundary footprint is located entirely outside the designated site. No pathway for indirect effects on the terrestrial QI species was identified. Due to the lack of connectivity and distance between the Proposed Development and the European Site, no complete impact source-pathway-receptor chain exists. The SAC is not in the Likely Zone of Influence and no further assessment is required.
Slieve Fyagh Bog SAC [000542]	7.8km from site boundary 11.9km from grid connection	There will be no direct effects as the ELAR Site Boundary footprint is located entirely outside the designated site. No pathway for indirect effects on the terrestrial QI habitat was identified. Due to the lack of connectivity and distance between the proposed development and the European Site, no complete impact source-pathway-receptor chain exists. The SAC is not in the Likely Zone of Influence and no further assessment is required.
Lackan Saltmarsh and Kilcummin Head SAC [000516]	10.5km from site boundary 6.2km from grid connection	There will be no direct effects as the ELAR Site Boundary footprint is located entirely outside the designated site. There is no direct downstream surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest downstream connected watercourse by more than 8km of river/estuary channel and 6km of the Atlantic Ocean. Due to the nature, scale, and location of the proposed works along with the buffering properties of the intervening waterbodies, there is no potential for significant effects. There is no potential for significant effect on this SAC and no further assessment is required.

Designated Site	Distance from Proposed Development (km)	Likely Zone of Influence Determination
Carrowmore Lake Complex SAC [000476]	10.9km from site boundary 18.1km from grid connection	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site. No pathway for indirect effects on the terrestrial QI habitats and species was identified. Due to the lack of connectivity and distance between the Proposed Development and the European Site, no complete impact source-pathway-receptor chain exists. The SAC is not in the Likely Zone of Influence and no further assessment is required.
Lough Dahybaun SAC [002177]	11.7km from site boundary 15km from grid connection	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site. There is no downstream surface water connectivity between the Proposed Development and the Designated Site and no pathway for indirect effects on the QI species was identified. Due to the lack of connectivity and distance between the Proposed Development and the European Site, no complete impact source-pathway-receptor chain exists. The SAC is not in the Likely Zone of Influence and no further assessment is required.
River Moy SAC [002298]	12.9km from site boundary 6.3km from grid connection	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site. There is no surface water connectivity between the Proposed Development and the Designated Site and no pathway for indirect effects on any of the QI habitats or species was identified. Due to the lack of connectivity and distance between the Proposed Development and the European Site, no complete impact source-pathway-receptor chain exists. The SAC is not in the Likely Zone of Influence and no further assessment is required.
Owenduff/Nepin Complex SAC [000534]	13.3km from site boundary 19.5km from grid connection	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site. Downstream surface connectivity (approximately 20km surface water distance) with the SAC has been identified via the watercourses that flow from the west of the development site into the Owenmore River. However, due to the nature, scale, and location of the Proposed Development along with the attenuation provided by the intervening 20km of river channel there is no potential for significant effect on water quality. There is no potential for significant effect on this SAC and no further assessment is required.
Special Protection Area (SPA)		
Killala Bay/Moy Estuary SPA [004036]	10.2km from site boundary 1.9km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. Downstream surface connectivity (approximately 3.5km surface water distance) with the SPA has been identified via the watercourses that cross the proposed grid connection route and flow into Killala Bay and there is potential for deterioration of water quality during the construction phase of the grid connection. Following the precautionary principle, there is also potential for <i>ex situ</i> disturbance and displacement of SCI species during the construction phase of the proposed grid connection route and during the construction, operational and decommissioning phases of the proposed development. The SPA is considered to be within the Zone of Influence and further assessment is required.

Designated Site	Distance from Proposed Development (km)	Likely Zone of Influence Determination
Illanmaster SPA [004074]	10.8km from site boundary	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site.
	13.9km from grid connection	There is no direct downstream surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest outlet of a downstream connected watercourse by more than 18km of the Atlantic Ocean. Due to the nature, scale, and location of the proposed works along with the buffering properties of the intervening waterbodies, there is no potential for significant effects arising from water pollution. The Proposed Development site offers no suitable habitat for Storm Petrel and there is no potential for significant effect on this species. Due to the lack of connectivity between the Proposed Development and the European Site, no complete impact source-pathway-receptor chain exists and there is no potential for significant effect on this SPA. There is no potential for significant effect on this SPA and no further assessment is required.
Owenduff/Nephin Complex SPA [004098]	13.3km from site boundary	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site.
	19.5km from grid connection	Downstream surface connectivity (approximately 20km surface water distance) with the SPA has been identified via the watercourses that flow from the west of the development site into the Owenmore River and there is potential for deterioration of water quality during the construction, operational and decommissioning phases. However, due to the nature, scale, and location of the Proposed Development along with the attenuation provided by the intervening 20km of river channel there is no potential for significant effect on water quality. The Proposed Development site is located outside of the maximum range of Golden Plover (11km; SNH 2016) and Merlin (5km; SNH 2016) and there is no potential for significant impact on either of the SCI species. There is no potential for significant effect on this SPA and no further assessment is required.
Blacksod Bay/Broad Haven SPA [004037]	14.5km from site boundary	There will be no direct effects as the EIAR Site Boundary footprint is located entirely outside the designated site.
	17.7km from grid connection	There is no direct surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest outlet of a downstream connected watercourse by more than by more than 40km of the Atlantic Ocean. Due to the nature, scale, and location of the proposed works along with the buffering properties of the intervening waterbodies, there is no potential for significant effects arising from water pollution. The Proposed Development site offers no suitable habitat for any of the SCIs apart from curlew but is located outside of the maximum range of this species (2km; SNH 2016) and there is no potential for significant impact any of the SCI species. There is no potential for significant effect on this SPA and no further assessment is required.
Natural Heritage Areas (NHA)		
Ummerantarry Bog NHA [001570]	0km from site boundary	While there is a small overlap between the EIAR Site Boundary and the NHA, no works are proposed to be carried out within this area and there will be no direct effects.
	2km from grid connection	Downstream surface connectivity (approximately km surface water distance) with the NHA has been identified via the Keerglen River that flows in the south-east of the development site where it overlaps with the designated site and there is potential for deterioration of water quality during the construction, operational and decommissioning phases. In addition, the closest works are a little over 100m away

Designated Site	Distance from Proposed Development (km)	Likely Zone of Influence Determination
		and due to the proximity of the Proposed Development to the designated site, there is potential for indirect effects on this NHA in the form of habitat degradation during the construction, operational and decommissioning phases, e.g., drainage or hydrological changes. The NHA is considered to be within the Likely Zone of Influence and further assessment is required.
Inagh Bog NHA [002391]	0km from site boundary 3.1km from grid connection	While there is a small overlap between the EIAR Site Boundary and the NHA, no works are proposed to be carried out within this area and there will be no direct effects. There is no surface water connection, but works will be carried out directly adjacent to the boundary of this NHA. Due to the proximity of the Proposed Development to the designated site and on a precautionary basis, there is potential for indirect effects on this designated site in the form of habitat degradation during the construction, operational and decommissioning phases, e.g., drainage or hydrological changes. The NHA is considered to be within the Likely Zone of Influence and further assessment is required.
Forrew Bog NHA [002432]	7.3km from site boundary 5.4km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. No surface water connectivity has been identified between the Proposed Development and this pNHA. Due to the lack of connectivity and distance between the Proposed Development and the designated site, no complete impact source-pathway-receptor chain exists. The NHA is not in the Likely Zone of Influence and no further assessment is required.
Glenturk More Bog NHA [002419]	14.5km from site boundary 18.4km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. No downstream surface water connectivity has been identified between the Proposed Development and this pNHA. Due to the lack of connectivity and distance between the Proposed Development and the designated site, no complete impact source-pathway-receptor chain exists. The NHA is not in the Likely Zone of Influence and no further assessment is required.
Proposed Natural Heritage Areas (pNHA)		
Glenamoy Bog Complex [000500]	0.2km from site boundary 1.2km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. The closest works associated with the Proposed Development are more than 750m away from the pNHA. There is no downstream surface water connectivity between the Proposed Development and the Designated Site and no pathway for indirect effects was identified. Due to the lack of connectivity and distance between the Proposed Development and the pNHA, no complete impact source-pathway-receptor chain exists. The pNHA is not in the Likely Zone of Influence and no further assessment is required.
Bellacorick Bog Complex [001922]	0.9km from site boundary 3km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. Downstream surface connectivity (approximately 2.6km surface water distance) with the pNHA has been identified via the watercourses that flow from the western part of the development site into the Owenmore River and there is potential for deterioration of water quality during the construction, operational and

Designated Site	Distance from Proposed Development (km)	Likely Zone of Influence Determination
		decommissioning phases. The pNHA is in the Likely Zone of Influence and further assessment is required.
Benaderreen Cliffs [000467]	4.9km from site boundary 4.2km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. There is no direct downstream surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest downstream connected watercourse by more than 2km of river channel and 7km of the Atlantic Ocean. Due to the nature, scale and location of the proposed works along with the buffering properties of the intervening waterbodies, there is no potential for significant effects arising from water pollution. The Proposed Development site offers no breeding or foraging habitat for any of the seabirds breeding within the pNHA. There is no potential for significant effect on this pNHA and no further assessment is required.
Bellacorick Iron Flush [000466]	7.3km from site boundary 11.3km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. No downstream surface water connectivity has been identified between the Proposed Development and this pNHA. Due to the lack of connectivity and distance between the Proposed Development and the designated site, no complete impact source-pathway-receptor chain exists. The pNHA is not in the Likely Zone of Influence and no further assessment is required.
Slieve Fyagh Bog [000542]	7.8km from site boundary 11.9km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. No downstream surface water connectivity has been identified between the Proposed Development and this pNHA. Due to the lack of connectivity and distance between the Proposed Development and the designated site, no complete impact source-pathway-receptor chain exists. The pNHA is not in the Likely Zone of Influence and no further assessment is required.
Downpatrick Head [000494]	9.7km from site boundary 4.5km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. There is no direct downstream surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest downstream connected watercourse by more than 2km of river channel and 3.5km of the Atlantic Ocean. Due to the nature, scale, and location of the proposed works along with the buffering properties of the intervening waterbodies, there is no potential for significant effects arising from water pollution. The Proposed Development site offers no breeding or foraging habitat for any of the seabirds breeding within the pNHA. There is no potential for significant effect on this pNHA and no further assessment is required.
Lackan Saltmarsh and Kilcummin Head [000516]	10.5km from site boundary 6.2km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. There is no direct downstream surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest downstream connected watercourse by more than 8km of river/estuary channel and 6km of the Atlantic Ocean. Due to the nature, scale and location of the proposed works along with the buffering properties of the intervening waterbodies,

Designated Site	Distance from Proposed Development (km)	Likely Zone of Influence Determination
		there is no potential for significant effects arising from water pollution. There is no potential for significant effect on this pNHA and no further assessment is required.
Carrowmore Lake Complex [000476]	10.9km from site boundary 18.1km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. No downstream surface water connectivity has been identified between the Proposed Development and this pNHA. Due to the lack of connectivity and distance between the Proposed Development and the designated site, no complete impact source-pathway-receptor chain exists. The pNHA is not in the Likely Zone of Influence and no further assessment is required.
Creevagh Head [000482]	11.8km from site boundary 6.4km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. There is no direct downstream surface water connectivity between the Proposed Development and the Designated Site, which is buffered from the closest downstream connected watercourse by more than 2km of river channel and 8km of the Atlantic Ocean. Due to the nature, scale, and location of the proposed works along with the buffering properties of the intervening waterbodies, there is no potential for significant effects arising from water pollution. The Proposed Development site offers no breeding or foraging habitat for any of the seabirds breeding within the pNHA. There is no potential for significant effect on this pNHA and no further assessment is required.
Killala Esker [001517]	12.9km from site boundary 0.8km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. No surface water connectivity has been identified between the Proposed Development and this pNHA. Due to the lack of connectivity and distance between the Proposed Development and the designated site, no complete impact source-pathway-receptor chain exists. The pNHA is not in the Likely Zone of Influence and no further assessment is required.
Killala Bay/Moy Estuary [000458]	13km from site boundary 1.1km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. Downstream surface connectivity (approximately 7km surface water distance) with the pNHA has been identified via the watercourses that cross the proposed grid connection route and flow into Killala Bay and there is potential for deterioration of water quality during the construction phase. The pNHA is considered to be within the Likely Zone of Influence and further assessment is required.
Owenduff/Nepin Complex [000534]	13.3km from site boundary 19.5km from grid connection	There will be no direct effects as the project footprint is located entirely outside the designated site. Downstream surface connectivity (approximately 20km surface water distance) with the pNHA has been identified via the watercourses that flow from the west of the development site into the Owenmore River and there is potential for deterioration of water quality during the construction, operational and decommissioning phases. However, due to the nature, scale, and location of the Proposed Development along with the attenuation provided by the intervening 20km of river channel there is no potential for significant effect on water quality. There is no potential for significant effect on this pNHA and no further assessment is required.

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. Where a nationally designated site (NHA), overlaps with the boundary of a European designated site, i.e. (SAC/cSAC/SPA), the potential for impacts has been considered under the European designation.

The AA Screening that accompanies this application identifies the following European Sites as being within the Likely Zone of Influence :

- > Bellacorick Bog Complex SAC [001922]
- > Killala Bay/Moy Estuary SAC [000458]
- > Killala Bay/Moy Estuary SPA [004036]

In addition, surface water connectivity was identified with four nationally designated sites and as such, are included as KERs. These NHAs and pNHAs have been included within the Likely Zone of Influence for further assessment.

- > Ummerantarry Bog NHA [001570]
- > Inagh Bog NHA [002391]
- > Bellacorick Bog Complex pNHA [001922]
- > Killala Bay/Moy Estuary pNHA [000458]

As the pNHAs have also been designated as SACs and/or SPAs, impacts on these sites are fully considered under the European designation within the NIS. This is further described in Section 6.7.5 of this Chapter.

6.5.1.2 NPWS Article 17 Reporting

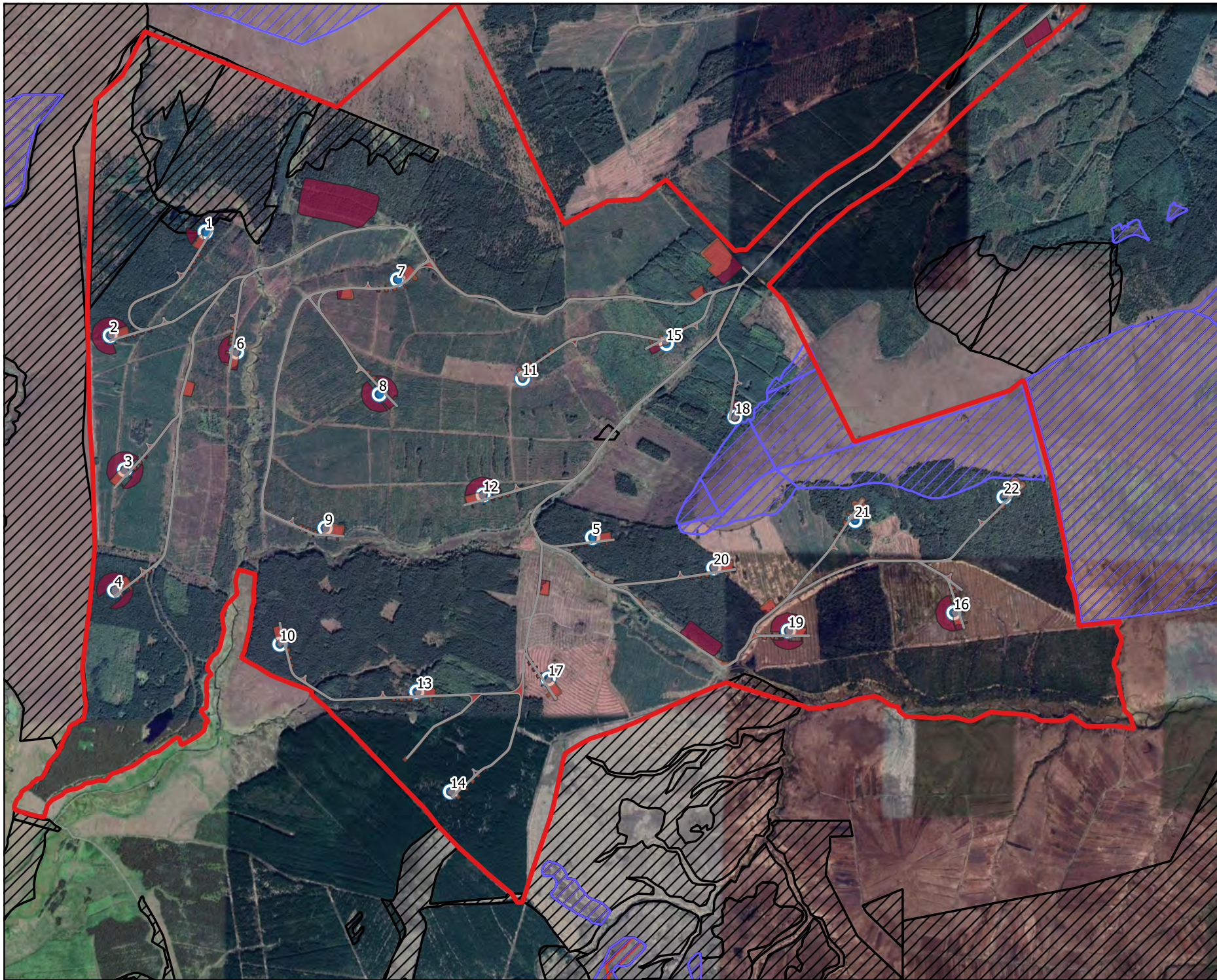
A review of the Irish Reports for Article 17 of the Habitats Directive (92/42/EEC), including the Heath, Bogs and Mires, Irish Semi-Natural Grassland Survey datasets, National Survey of Native Woodlands and Ancient and Long-Established Woodland datasets were conducted prior to undertaking the multi-disciplinary walkover surveys.

A search of the NPWS Article 17 datasets⁵, was undertaken on 25/07/2023 as part of the desk study. An area of Blanket bog [7130] was recorded in the north-west corner, central and south-east of the site and in the surrounding area, including along the western boundary and parts of the southern boundary. Northern Atlantic wet heaths with *Erica tetralix* [4010] was mapped at the north-east corner of the site and in the wider area, see Figure 6-4. European dry heaths [4030] and Alpine and boreal heaths [4060] are mapped outside the west and north of the site boundary.

Following a review of the database, a small area of Dry-humid acid grassland (GS3) and Wet Grassland (GS4), not conforming to any EU Annex I habitat, occurs to the south-west of the ELAR Site Boundary adjacent to an existing road into the site.

As shown in Figure 6-4, only a small fragment of Article 17 mapped Wet Heath, along a proposed alternative road to T22, occurs within the Proposed Development footprint. However, this area, while mapped as Annex I, is now planted with conifers. A small fragment of Article 17 mapped Active Blanket bog occurs within the Proposed Development footprint west of T1. However, this area is now planted with conifers. Where Article 17 datasets occur along the grid connection route, these will not be impacted, as the proposed infrastructure will be located within the existing road.

⁵ Including bog 2012 and 2019 datasets, Online, Available at: <https://www.npws.ie/publications/article-17-reports>



Map Legend

- EIA Site Boundary
- Active Blanket Bog
- Wet Heath
- Proposed Permanent Development Footprint
- Proposed Cut Area
- All Roads
- Turbine Layout

Microsoft product screen shots reprinted with permission from Microsoft Corporation



Drawing Title
Distribution of relevant Article 17 habitat records

Project Title
Glenora Windfarm

Drawn By RM	Checked By CM
Project No. 201120	Drawing No. Figure 6-4
Scale 1:24,500	Date 01/12/2023

MKO
MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 W8W4
+353 (0) 91 735611
email: info@mkofireland.ie
Website: www.mkofireland.ie

6.5.1.3 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 I of the EU Habitats Directive, The Irish Red Data Book, 1, Vascular Plants (Curtis, 1988) or the Flora (Protection) Order (1999, as amended 2015 & 2022) had been recorded in the relevant 10km squares in which the EIAR Site Boundary situated (G03). Each hectad contains 100 whole 1km squares containing terrestrial habitats. No species of conservation concern were recorded within this hectad.

6.5.1.4 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 25/07/2023 with no protected bryophytes recorded within or adjacent to the proposal (NPWS, 2020). No protected bryophytes were recorded from within the site boundary. *Hamatocaulis vernicosus* were recorded in Glenamoy Bog SAC 4.2km to the northwest, *Meesia triquetra* was recorded from Bellacorick Iron Flush SAC, 7.4km south of the site., *Leiocolea rutheana*, *Paludella squarrosa*, and *Hamatocaulis vernicosus* were recorded from Bellacorick Bog SAC 8.9km south of the site, while *Hamatocaulis vernicosus* was recorded in the Carrowmore Lake complex SAC 14km from the site boundary.

6.5.1.5 National Biodiversity Data Centre (NBDC) Records

A search of the National Biodiversity Data Centre (NBDC) records on the 25/07/2023 for the relevant hectad, G03, provided records on a number of fauna species of conservation concern, excluding marine species and bird species. These are provided in Table 6-7.

Table 6-7 NBDC Records for Species of Conservation Interest in hectad G03

Species	Scientific Name	Red List Status	Habitats Directive
Common frog	<i>Rana temporaria</i>	LC	Annex V
Otter	<i>Lutra lutra</i>	LC	Annex II, IV, WA
Pine marten	<i>Martes martes</i>	LC	Annex V, WA
Badger	<i>Meles meles</i>	LC	WA
Daubenton's bat	<i>Myotis daubentonii</i>	LC	Annex IV, WA
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	LC	Annex IV, WA

Annex II, Annex IV, Annex V – Of EU Habitats Directive, WA - Wildlife Act), LC - Least concern, NT - Near threatened, VU - Vulnerable.

Table 6-8 NBDC records for Invasive Species in hectad G03

Common Name	Scientific Name
Himalayan Knotweed	<i>Persicaria wallichii</i>
Giant rhubarb	<i>Gunnera tinctoria</i>
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>
Sycamore	<i>Acer pseudoplatanus</i>

6.5.1.6 NPWS

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 hectad G03. An information request was also sent to the NPWS requesting records from the Rare and Protected Species Database on the 13/04/2023. Table 6-9 lists rare and protected species records obtained from NPWS, as received on the 14/04/2023, as well as those recorded available through the online NPWS map viewer.

Table 6-9 National Parks and Wildlife Service Map Viewer Records

Common name	Scientific name	Red List Status	Flora Protection Order/Red List	Habitats Directive/Birds Directive/Wildlife Act
Cladonia lichen	<i>Cladonia arbuscula s. str.</i>	-	-	Annex V
Cladonia lichen	<i>Cladonia ciliata</i>	-	-	Annex V
Cladonia lichen	<i>Cladonia ciliata var. tenuis</i>	-	-	Annex V
Reindeer moss	<i>Cladonia portentosa</i>	-	-	Annex V
Marsh saxifrage	<i>Saxifraga hirculus</i>	NT	FPO	Annex II, IV
Woolly feathermoss	<i>Tomentypnum nitens</i>	VU	-	-
Common frog	<i>Rana temporaria</i>	LC	-	Annex V
Irish hare	<i>Lepus timidus subsp. hibernicus</i>	LC	-	Annex V, WA
Otter	<i>Lutra lutra</i>	LC	-	Annex II, IV, WA
Pine marten	<i>Martes martes</i>	LC	-	Annex V

6.5.1.7 Marsh fritillary (*Euphydryas aurinia*)

There were no records for this species from Hectad G03.

6.5.1.8 Inland Fisheries Ireland (IFI) Data

The ‘Sampling for the Water Framework Directive’ website from Inland Fisheries Ireland (www.wfdfish.ie) was reviewed in February 2022 and July 2023 for reports covering any of the waterbodies downstream of the ELAR study area boundary. The Proposed Development site is within the Owenmore and Ballingen River catchment. Data for the Owenmore was only available upstream of the proposed development.

Three fish species including Atlantic salmon (*Salmo salar*), brown trout (*Salmo trutta*) and European eel (*Anguilla anguilla*) were caught with electrofishing on the Ballinglen River approximately 3.5km downstream of the Proposed Development site in 2008, 2011 and 2015 (Ballinglen Br._B) (Kelly et al. 2015). In addition, three-spined stickleback (*Gasterosteus aculeatus*) was caught in 2015 (this site was not sampled in 2008 and 2011) at a separate site along this river (New Br._A) about 7.5km downstream of the Proposed Development site. The ecological status for both the sampling sites was classified as ‘moderate’ in 2015, which was a deterioration of the 2011 and 2008 status of ‘good’ for Ballinglen Br._B. Six sites were sampled in the Ballinglen catchment in September 2021, including Ballinglen Br._B, one other site on the Ballinglen river (Kilkeerglen West) in proximity to the proposed roadway expansion, and a site on the Keerglen river downstream from the proposed development site which this watercourse flows through. Kilkeerglen West recorded brown trout (*Salmo trutta*) of 3 age groups, Atlantic salmon (*Salmo salar*) of 2 age groups, European eel (*Anguilla anguilla*) and sea trout (*Salmo trutta trutta*). Ballinglen Br._B recorded Atlantic salmon (*Salmo salar*) of 2 ages groups. The Keerglen site (Kilkeerglen) recorded brown trout (*Salmo trutta*) of 3 age groups and Atlantic salmon (*Salmo salar*) of 2 age groups. Kilkeerglen West recorded a “Good” ecological status, while Ballinglen Br._B recorded a “Poor” ecological status. IFI state that the trend of declining ecological status at Ballinglen Br._B since 2008 is possibly due to nutrient enrichment and habitat modification. The Keerglen river site recorded a “Moderate” ecological status.

6.5.1.9 Local Hydrology and Hydrogeology

The majority of the site is drained by tributaries of the Owenmore River and includes tributaries/headwaters of Altderg River. The south-eastern portion of the site is drained by tributaries of the Ballinglen River such as the Ballykinlettragh and several unnamed watercourses that flow into the Keerglen River which runs to the south-east of the site, and which drains into the Ballinglen.

The entire site is located within the Blacksod-Broadhaven Catchment. Turbines 1-18 with the exception of T16 are located within the Owenmore (Mayo)_SC_010 while T16 and T19-22 are located within the Glencullin(North Mayo)_SC_010.

6.5.1.10 Water Quality

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The online EPA Envision map viewer provides access to water quality information at individual waterbody status for all the River Basin Districts in Ireland. The EPA Envision map viewer was consulted, most recently, on the 26th of July 2023 regarding the water quality status of the rivers which run within and directly adjacent to the Study Area. The WFD 3rd cycle River Waterbody Status 2016 – 2021 for the watercourses which flow through the site have been assessed in Table 6-10.

Table 6-10 Watercourses on site with relevant water quality statuses

Name	Location	Status	Risk
Owenmore (Mayo)_010 system including the Altderg and Glenora rivers and their tributaries.	Flow in a southerly direction from the centre and western half of the site. Drains into the Oweniny which is a tributary of the Owenmore River.	High	Not at risk

Name	Location	Status	Risk
Keerglen_010 system including the Keerglen River and tributaries.	Flows in an easterly direction from south-eastern corner of the site into the Ballinglen River (Ballinglen_010).	Moderate	In review
Ballinglen_010 system including the Ballinglen River and tributaries.	Flows in a northerly direction adjacent (west) to the proposed road expansion.	Poor	At risk
Ballinglen_020 system including the Ballinglen River and tributaries.	Flows in a northerly direction adjacent (west) to the proposed road expansion.	Moderate	In review
Glencullin_010 System including the Glencullin and Sralagagh rivers and tributaries.	Flows in a northeasterly direction through the proposed road expansion works.	Good	Not at Risk

Status– WFD River Waterbody Status 2016-2021 Risk – WFD River Waterbodies Risk

6.5.2 Conclusions of the Desk Study

The desktop study has provided information about the existing environment in hectad G03, within which the EIAR site boundary is located. 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, 2009⁶). Bat records within 10km of the EIAR Site Boundary revealed that the wider area has been studied for bats. This suggests that the area offers potential for foraging and commuting bat species.

As part of the desk study, Habitats Directive Annex I habitats Northern Atlantic wet heaths with *Erica tetralix* [4010] and Blanket bog [7130] were mapped within and bordering the EIAR site boundary, while European dry heaths [4030] and Alpine and boreal heaths [4060] were recorded in proximity to the EIAR Site Boundary While a small fragment of Article 17 mapped Wet Heath is located along a proposed alternative road to T22, this area is now planted with mature conifers and no longer qualifies as Annex I.

A number of watercourses that drain the Proposed Development Site, lead to the following downstream EU Designated Sites, and are further considered in the Natura Impact Statement prepared for the proposed development:

- Bellacorick Bog Complex SAC [001922]
- Killala Bay/Moy Estuary SAC [000458]
- Killala Bay/Moy Estuary SPA [004036]

Following a precautionary approach, the construction phase of the proposed development may result in deterioration of peatland habitats in Ummentary Bog NHA and Inagh Bog NHA through increased drainage and the construction and operational phase of the proposed development might also result in the deterioration of water quality in the downstream connected Inagh Bog NHA. Surface water connectivity has been identified between the proposed development and Bellacorick Bog Complex pNHA [001922] and Killala Bay/Moy Estuary pNHA [000458] and there is potential for deterioration of water quality during the construction, operational and decommissioning phase.

⁶Marnell, 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.

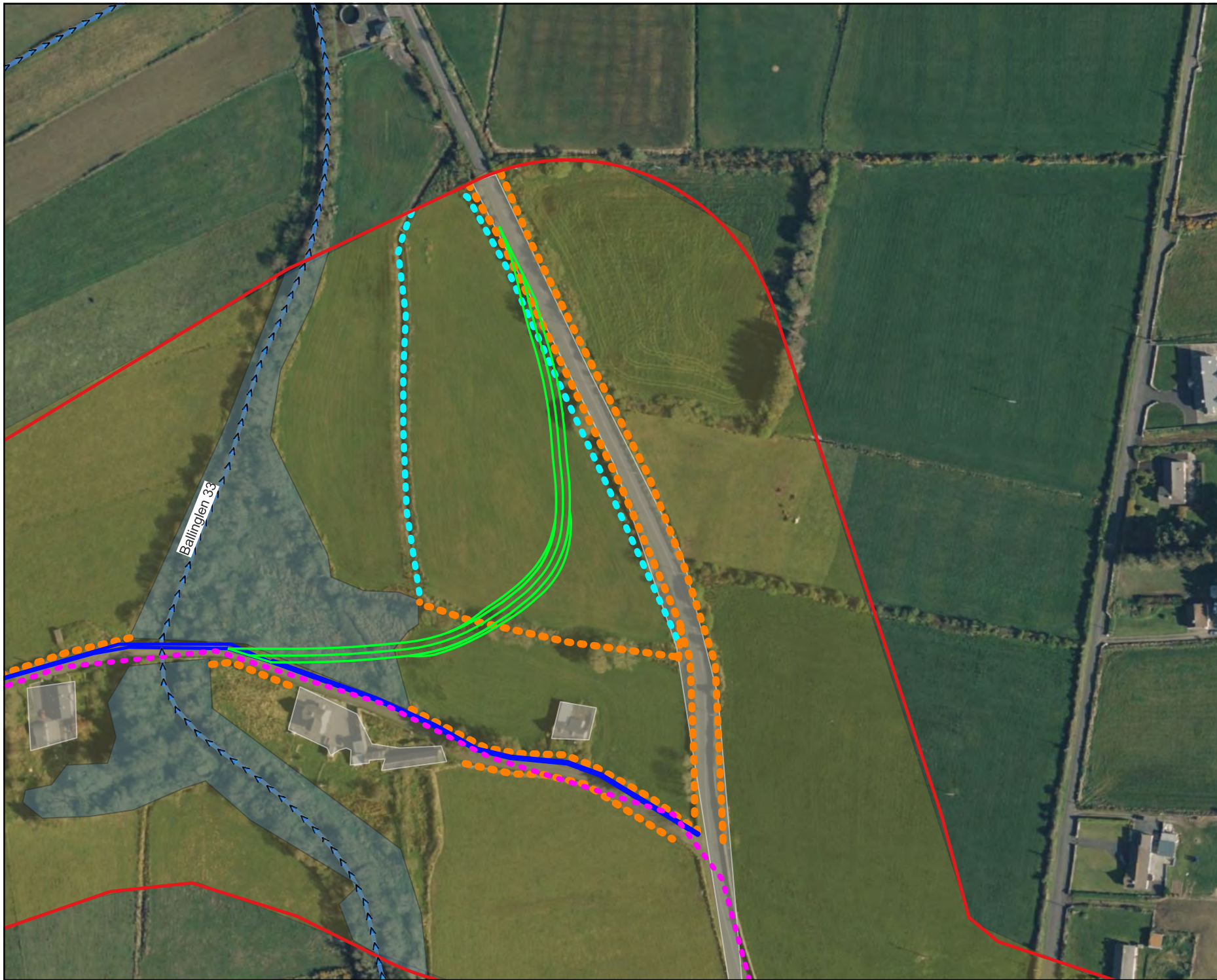
The desk study identified that a variety of protected floral and faunal species are known to occur within the study area, including bats, otter, badger, pine marten and marsh saxifrage. The desk study informed the survey methodologies undertaken during the site visits. The desk study also provided useful information to inform the ecological surveys undertaken on site as well as the identification of pathways for potential impact on sensitive ecological receptors.

6.6 Description of the Existing Environment

The habitat classifications and codes correspond to those described in ‘A Guide to Habitats in Ireland’ (Fossitt 2000). A total of fourteen habitats were recorded within the development site (Table 6-11). Peatland habitats have also been categorised to plant communities from the National Survey of Upland Habitats (Perrin et al. 2014) and the Irish Vegetation Classification. A habitat map of the EIAR Site Boundary is provided in Figure 6-5. A habitat map is also provided with the proposed infrastructure footprint overlain in Figure 6-6. A map of the proposed road widening works along the Ballyglass local road is shown in Figure 6-7.

Table 6-11 Habitats recorded within the EIAR Site Boundary .

Habitat Name	Fossitt Code
Conifer plantation	WD4
Recently felled woodland	WS5
Upland blanket bog	PB2
Wet heath	HH3
Eroding/upland rivers	FW1
Dystrophic lakes	FL1
Hedgerow	WL1
Drainage ditches	FW4
Spoil and bare ground	ED2
Recolonising bare ground	ED3
Dry meadows and grassy verges	GS2
Wet grassland	GS4
Scrub	WS1
Buildings and artificial surfaces	BL3
Agricultural grassland	GA1



Map Legend

Site Layout	
Improved Agricultural Grassland (GA1)	
Immature Woodland (WS2)	
Buildings and Artificial Surfaced (BL3)	
Drainage Ditch (FW4)	
Hedgerow (WL1)	
Proposed New Road	
Temporary Road Widening Works	
Proposed Grid Connection Route	
River Flow Direction	
River Waterbodies	

Microsoft product screen shots reprinted with permission from Microsoft Corporation

 Drawing Title Habitat Map Within Proposed Works Area Along the Grid Connection Route Project Title <h3 style="text-align: center;">Glenora Wf</h3>	
Drawn By RM	Checked By CM
Project No. 201120	Drawing No. Figure 6.6
Scale 1:2,166.081	Date 31/05/2023

MKO
 Planning and
 Environmental
 Consultants
 Tuam Road, Galway
 Ireland, H91 VWS4
 +353 (0) 91 735511
 email: info@mkofireland.ie
 Website: ww.mkofireland.ie

6.6.1 Habitats within the EIAR Site Boundary

The majority of the EIAR Site Boundary (1,810ha) is dominated by plantation forestry (including clear fells), comprising mainly of Lodgepole pine (*Pinus contorta*) and Sitka spruce (*Picea sitchensis*) planted on blanket bog. Remnants of this habitat are still found on the site in various forms of degradation. The site is accessible via the Western Way and a network of existing forestry access tracks and forestry rides.

Waterbodies within the Proposed Development site including drainage ditches and small streams classified as upland eroding rivers provide hydrological connectivity with downstream designated sites and are further described in this section. Watercourses within the NIS primary study area is mapped on Figure 3-1 of the Screening for Appropriate Assessment, indicating hydrological connectivity with downstream EU Sites.

Conifer plantation (WD4) and recently felled woodland (WS5)

In total, approximately 1,157ha of the EIAR Site Boundary comprises of coniferous plantation forestry (Plate 6-1 and Plate 6-2). This includes forestry of various ages including clear-felled areas, semi-mature and mature stands, along with immature pre-thicket areas of both first and second rotation (Plate 6-1). The main species are Lodgepole pine (*Pinus contorta*) and Sitka spruce (*Picea sitchensis*), other trees that are very occasionally included particularly in immature areas are larch (*Larix decidua*), alder (*Alnus* sp.) and birch (*Betula* spp.) Mature conifer plantation is interspersed with immature stands.

The understorey is typically species-poor in forestry plantations and covered with needles (Plate 6-2). Vegetation is usually restricted to a few bryophytes and ferns which include hard fern (*Blechnum spicant*), bracken (*Pteridium aquilinum*), *Sphagnum* spp., *Rhytidadelphus loreus*, *Hypnum jutlandicum* and *Thuidium tamariscum*. Occasionally, lesser twayblade (*Listera cordata*) was found growing within the plantation.

The ground vegetation in clear fells and immature stands was frequently dominated by soft rush (*J. effusus*) or by brash and stumps overgrown with bracken, bramble (*Rubus fruticosus* agg.), foxglove (*Digitalis purpurea*), and *Polytrichum* spp. interspersed with peatland plants such as purple moor grass (*Molinia caerulea*) and ling heather (*Calluna vulgaris*).

As the forestry was originally planted on peatland habitats, forestry rides or areas where forestry failed to achieve closed canopy are frequently dominated by purple moor grass, ling heather and *Sphagnum* spp (Plate 6-3). Several rides had areas of exposed peat and standing water, supporting a wide variety of species such as bog cotton (*Eriophorum angustifolium*), hare's tail cottongrass (*Eriophorum vaginatum*), heath star moss (*Campylobus introflexus*), tormentil (*Potentilla erecta*), deergrass (*Trichophorum, cespositum*), cross-leaved heather (*Erica tetralix*), rushes (*Juncus inflexus, J. effusus, J. conglomeratus*) and carnation sedge (*Carex pancicea*) (Plate 6-4). Occasionally, round-leaved sundew (*Drosera rotundifolia*), heath milkwort (*Polygala serpyllifolia*), devil's bit scabious (*Succisa pratensis*) and marsh orchids (*Dactylorhiza* spp.) were found as well. These areas are small and only make up a fraction of the overall forestry plantation.



Plate 6-1 View of the eastern area of the Proposed Development site with extensively clear-felled area partially overgrown with rushes and mature plantation.



Plate 6-2 Open area dominated with purple moor grass within the plantation in the vicinity of proposed Turbine 1



Plate 6-3 Typical ground cover within the plantation



Plate 6-4 Typical forestry ride in the west of the Proposed Development site

Upland Blanket Bog (PB2) and Wet Heath (HH3)

Areas of upland blanket bog and wet heath are generally restricted to the periphery of the site where they connect to larger peatlands, partially designated as NHAs or SACs. Two small sections can be found in the south-west and south-east of the Proposed Development site and larger sections occur in the north-east and north-western corners. The larger sections are mapped as Annex I Wet Heath and Active Blanket Bog respectively. In addition, two small areas of blanket bog, marked as Coillte Biodiversity Areas, can be found within the centre of the site, one of which is also mapped as Annex I Active Blanket Bog. All areas mapped as either habitat in Figures 6-5 and 6-6 qualify as Annex I Blanket Bog [7130] or Northern Atlantic wet heaths with *Erica tetralix* [4010] respectively.

None of this habitat will be impacted by the proposed development.

Areas in the south were on flat ground and vegetation was dominated by bog cotton, ling heather, *Cladonia portentosa*, hare’s tail cottongrass and *Sphagnum* (Plate 6-5). They were classified as ‘*Calluna vulgaris*–*Eriophorum* spp. Bog’ using the Irish Vegetation Classification (IVC) following analysis with ERICA⁷. This is described as a community of deep, ombrogenous, wet and acidic peat soils in the

⁷ Engine for Relevés to Irish Communities Assignment (ERICA)

uplands (mean altitude = 371 m). The relevé data from this habitat is shown in the Botanical Survey Report available in appendix 6-1.



Plate 6-5 Area of blanket bog in the south-western corner of the site

The area in the north-east was gently sloping and dominated by purple moor grass and ling heather and had a high *Sphagnum* cover (about 75%). It was classified as ‘*Calluna vulgaris* – *Molinia caerulea* – *Erica cinerea* Heath’ using the IVC. This is described as a community of the lower to middle slopes of hills and mountains (mean altitude = 227 m), primarily wet heathland where soils are rather poorly drained, acidic and infertile. As the peat depths in this area were well in excess of 50cm, the habitat was categorised as Upland Blanket Bog (PB2). The majority of the area was fenced off by a deer fence from the plantation and showed only few signs of disturbance and degradation resulting from trampling or grazing. The relevé data from this habitat is shown in the Botanical Survey Report available in appendix 6-1.



Plate 6-6 Upland Blanket Bog in the north-east of the site

The peatland in the north-west of the site is generally located on gentle and steeply sloping ground and forms a mosaic of upland blanket bog and wet heath. Vegetation is dominated by purple moor grass or ling heather with variable, but generally low (<10%) *Sphagnum* cover.

The area surrounding the river valley in the vicinity of proposed Turbine 1 was dominated by purple moor grass, other plants recorded were ling heather, tormentil, cross-leaved heather, heath milkwort, hare's tail cottongrass and *Dactylorhiza* spp. Bracken and conifer saplings were frequent in patches (Plate 6-7). Following IVC, the community was classified as '*Molinia caerulea* – *Calluna vulgaris* – *Erica tetralix* Heath', which is described as a community of lower and middle slopes of hills and mountains (mean altitude = 224m) on wet, acidic and infertile peaty soils. The relevé data from this habitat is shown in the Botanical Survey Report available in appendix 6-1



Plate 6-7 Wet Heath on either side of the river valley north-west of proposed Turbine 1

Further north, the vegetation was dominated by ling heather with some purple moor grass and was very dry underfoot (Plate 6-8). Following the IVC, it was classified as ‘*Calluna vulgaris* – *Molinia caerulea* – *Erica cinerea* Heath’ as described above.



Plate 6-8 Heath in the north-west of the site.

Dystrophic lakes (FL1)

Several small, potential Dystrophic lakes/ponds (FL1) can be found in the south-west of the EIAR Site Boundary, which are usually more or less covered with *Sphagnum cuspidatum* (Plate 6-10). Vegetation surrounding the ponds generally consisted of purple moor grass, ling heather, *S. cuspidatum* and *S. magellanicum* and margins were quaking in parts. As these ponds are part of the blanket bog system present within the site, they qualify as Annex I Blanket bog [7130].



Plate 6-9 Sphagnum-covered, potential dystrophic pond in the west of the EIAR Site Boundary

Altderg Lough is noticeably larger, and the majority of the lake is free of vegetation bar occasional bog bean (*Menyanthes trifoliata*) and white-water lily (*Nymphaea alba*) (Plate 6-11). Due to its nature and size, this lake qualifies as Annex I Natural Dystrophic Lakes and Ponds [3160]. To the north and south-west of the lake are large, quaking areas dominated by *S. cuspidatum* and *S. magellanicum* and occasional ling heather, bog cotton and bog bean (Plate 6-12) which qualify as Annex I Blanket bog [7130].



Plate 6-10 View of Altderg Lough from the south-eastern shoreline



Plate 6-11 Quaking bog area on the northern shore of Altderg Lough

Spoil and bare ground (ED2) and Recolonising bare ground (ED3)

Unbound forestry tracks throughout the site were categorised as Spoil and bare ground (ED2) (Plate 6-13) or Recolonising bare ground (ED3) in parts where tracks have not been regularly used. The verges or recolonising vegetation across much of the site contained species typical of grassy verges, wet grassland or surrounding peatland habitats such as ragged robin (*Silene flos-cuculi*), meadow buttercup (*Ranunculus acris*), birds-foot trefoil (*Lotus cornicatus*), oxeye daisy (*Leucanthemum vulgare*), cuckooflower (*Cardamine pratensis*), Yorkshire fog (*Holcus lanatus*), ribwort plantain (*Plantago lanceolata*), devil’s bit scabious, soft rush, horsetails (*Equisetum* spp.), heath bedstraw (*Galium saxatile*), ling heather or bracken. Willow (*Salix* sp.) and other broadleaves such as rowan (*Sorbus aucuparia*) or birch can be occasionally found along the roads as well, generally where they run parallel to the riparian zones which are also marked as Coillte Biodiversity Areas. Upgrading of existing forestry tracks is proposed across the site, as shown in Figure 6-6.



Plate 6-12 Forestry Road in the west of the EIAR Site Boundary

Eroding/upland rivers (FW1)

A number of watercourses drain the site with the majority of the watercourses being headwaters of the Altderg River which eventually flows into the Owenmore River, while the south-eastern portion of the site is drained by tributaries of the Ballinglen River. The streams within the site were generally small, up to a metre wide, high-energy and with boulder and cobble substrate (Plate 6-14). The streams did

not contain aquatic macrophytes due to their fast flow and were mostly bordered by forestry, usually separated by a buffer of heath or wet grassland vegetation such as ling, soft rush, bracken, heath bedstraw and Yorkshire fog. Willow and gorse scrub as well as stands of willow, rowan or birch bordered some stretches of watercourses.

Apart from the existing water crossings, there will be up to two potential river crossings of Altderg River tributaries in the south of the EIAR Site Boundary to facilitate access to proposed Turbine 10 (Plate 6-15).



Plate 6-13 Unnamed headwater of the Altderg River where it flows underneath an existing crossing of the forestry road in the north-west of the site.



Plate 6-14 Unnamed headwater of the Altderg River which will be potentially crossed to connect proposed Turbines 9 and 10

Drainage ditches (FW4)

Drainage ditches are frequently present along the existing roads (Plate 6-16). Most carried water and had a flow depending on the gradient of the terrain. It is assumed that they connect to watercourses which eventually flow to the Owenmore or Ballinglen Rivers.



Plate 6-15 Drainage feature along the forestry road in the north of the site.

6.6.1.1 Grid Connection and Site Access Route

A connection between the Proposed Development site and the national electricity grid will be necessary to export electricity from the Proposed Development. This underground cable connection will originate at the proposed onsite substation to the existing 110kV Tawnaghmore substation in townland of Tawnaghmore Upper. The grid connection cabling route measures approximately 26.1 kilometres in length. This connection route further detailed in Chapter 4, Section 4.9.6 and is illustrated in Chapter 4, Figure 4-1a.

As per the onsite 110kV substation, the grid connection cabling route is not included in the planning application for the Proposed Development, however, it is assessed in this EIAR as part of the overall project. The grid route will be primarily confined to proposed and existing road networks.

The grid route will cross 10 no. bridge crossings, 9 no. of which will require Horizontal Directional Drilling method (HDD) due to the insufficient deck cover within the bridge. No impact on bats is anticipated.

6.6.12 Habitats recorded along Grid Connection Route

The underground cable will leave the on-site substation north-east, following existing forestry roads categorised as Spoil and Bare Ground (ED2) through conifer plantation (WD4) and past adjacent to areas of upland blanket bog (PB2) and scrub (WS1). The section of upland blanket bog, which is located just to the east of the conifer plantation after about 3.5km is mapped as Annex I Blanket bog [7310] and Annex I Northern Atlantic wet heaths with *Erica tetralix* [4010]. After about 5km, it will turn east onto a local road categorised as buildings and artificial surfaces (BL3) which ends at the R314 after 2.5km and the grid connection route will follow this regional road west until Ballycastle, when it turns south onto the R315 which it follows for 7.5km until Kilfian. Here the grid connection will run east for 12km along other local roads until Killala Business Park where it connects to the substation. Habitats along the regional and local roads are mostly agricultural grassland (GA1), scrub (WS1), conifer plantation (WS4) and degraded blanket bog (PB2/3) which has been partially cutover for domestic turf extraction. No Annex I habitats are mapped directly adjacent to this part of the grid connection route. The grid connection route crosses 10 watercourses within the Glencullin (NorthMayo)_SC_010 sub catchment (Plate 6-17).

The site access road is the same as the grid connection route.



Plate 6-16 Existing Road (BL3) into which the cable is going to be laid.



Plate 6-17. Cloonaghmore River along the Grid connection route

6.6.1.3 Habitats at the site of the Met Mast

The proposed met mast is located within Conifer plantation forestry (WD4) within the site boundary, located south of proposed Turbine 13 and north-west of proposed Turbine 14. The area is dominated by lodgepole pine and is generally of low ecological significance and subject to ongoing forestry activity.

6.6.1.4 Habitats at the site of the Proposed Borrow Pits

There are three borrow pits proposed for the development site. The proposed borrow pits are located to the northeast of T7, to the south of T20 and west of T19, and along the local road accessing the site. The locations of the proposed borrow pits are shown in figure 6.6.

The first borrow pit is located along the local road accessing the site. The borrow pit is located on a highly degraded peatland habitat that has been subject to peat extraction in the past. Conifer plantation surrounds the borrow pit location and as a result, the area has been extensively drained. Three relevés were taken from this area and are fully described in the botanical report available in appendix 6-1. Through ERICA, and following the IVC classification system, no dominant IVC habitat was described. Based on the peat depths recorded within this area (ranging from 30-220cm), this area is classified as a mosaic habitat of **BG2C/HE2E/BG2B**: Annex I: 4010 Wet heath / 7130 Blanket bog (active). (See plate 6.18).

Species recorded within this area include Ling heather (*Calluna vulgaris*), Purple moor grass (*Molinia caerulea*), Common cotton grass (*Eriophorum angustifolium*), Deer grass (*Trichophorum cespitosum*), Scots pine sapling (*Pinus sylvestris*), Reindeer lichen (*Cladonia portentosa*), Tormentil (*Potentilla erecta*), Cross leaved heath (*Erica tetralix*), *Sphagnum capillifolium*, Heath Milkwort (*Polygala serpyllifolia*), Brook Fork Moss (*Rhytidiadelphus loreus*), Red Stem feathermoss (*Pleurozium schreberi*), Marsh lousewort (*Pedicularis palustris*), and Bog asphodel (*Narthecium ossifragum*).



Plate 6-18 The first Proposed Borrow Pit located along the existing access track, to the south of the road.

The second proposed borrow pit located to the south of T20, and southwest of T19. The majority of the borrow pit is located within conifer plantation forestry. A small strip of highly degraded peatland habitat (0.3ha) is located along the eastern boundary of the borrow pit and is adjoining the existing forestry road. As with the borrow pit along the access road, the remaining peatland in this location is highly degraded and has been subject to extensive drainage resulting from forestry activity. Three relevés were taken from this area and are fully described in the botanical report available in appendix 6-1.

Through ERICA, and following the IVC classification system, is described as **HE4E** Annex I: 4010 Wet heath. This IVC habitat conforms to the following Fossitt (2000) habitat code: Wet Heath (**HH3**) (See **Plate 6.19**). Species recorded within the proposed borrow pit location to the south of T20 include Ling Heather (*Calluna vulgaris*), Purple Moor-Grass (*Molinia caerulea*), Cross-leaved Heather (*Erica tetralix*), Tormentil (*Potentilla erecta*), Cotton Grass (*Eriophorum angustifolium*), Red Bog Moss (*Sphagnum capillifolium*), Red-Stemmed Feathermoss (*Pleurozium schreberi*), Reindeer Lichen (*Cladonia portentosa*), Little Shaggy Moss (*Rhytidiadelphus loreus*), Soft Rush (*Juncus effusus*), Deergrass (*Trichophorum cespitosum*), Broom Forkmoss (*Dicranum scoparium*), and Bell Heather (*Erica cinerea*).



Plate 6-19 The second Proposed Borrow Pit located to the south of T20, and southwest of T19.

The third proposed borrow pit located to the northeast of T7 is located, within a Conifer Plantation (WD4) dominated by Sikta Spruce (*Picea sitchensis*), and Lodgepole pine (*Pinus contorta*). To the north and east of the plantation, is an existing quarry/ extraction area (See Plate 6.20).



Plate 6-20 The third Proposed Borrow Pit located to the northeast of T7.

6.6.15 Habitats at the site of the Proposed Local Road Widening

In order to accommodate the construction of the Proposed Development and the delivery of turbine components and other abnormal loads, road widening works will be required along the existing local access road into the site and the main entrance just off the R314. The proposed road widening to the northern margins of the Ballyglass local road has an approximate length of 1.3km. The road widening works will extend slightly into Hedgerow (WL1), Treeline (WL2), Scrub (WS1), and Improved Agricultural Grassland (GA1) habitats (See Plates 6.21-6.23). Species recorded within these habitats include Gorse (*Ilex spp*), Bramble (*Rubus spp*), Holly (*Ilex aquifolium*), Yellow Iris (*Iris pseudacorus*), Dandelion (*Taraxacum vulgaria*), Willow (*Salix spp*), Pine (*Pinus spp*), and Hawthorn (*Crataegus monogyna*).



Plate 6-21 Hedgerow (WL1) dominated by Bramble (*Rubus spp*) location within the proposed road widening area.



Plate 6-22 Treeline (WL2) and Scrub (WS1) habitats located within the proposed road widening, with species of Bramble (*Rubus spp.*), Pine (*Pinus spp.*), and Willow (*Salix spp.*).



Plate 6-23 Improved Agricultural Grassland (GA1) located within the proposed road widening area, dominated by grass species (*Poa spp.*), and Soft Rush (*Juncus effusus*).

6.6.16 Habitats at the site of the Proposed New Road along the Grid Connection Route

It is proposed to construct a new road at the junction of the R314 and the main local road accessing the site. The new road has a length of 278m and will be constructed to facilitate the delivery of turbine to accommodate the delivery of turbine components and other abnormal loads. The new road will be located primarily in Improved Agricultural Grassland (GA1), which is currently subject to grazing by livestock (Plate 6-24). A Drainage Ditch (FW4) runs along the field boundary parallel to the R314 (Plate 6-25). The western section of the proposed road intersects a small area of commercial planted broadleaf Immature Woodland (WS2), 40m in length. Ground Flora recorded here included Yellow iris (*Iris pseudacorus*) and Soft rush (*Juncus effusus*) (Plate 6-26).



Plate 6-24. Proposed new road location within an Improved Agricultural Grassland (GA1)



Plate 6-25. Drainage Ditch located along the agricultural grassland adjacent to the R134.



Plate 6-26. Commercial planted broadleaf Immature Woodland (WS2) that has been recently planted to the western section of the proposed new road.

6.6.17 Habitats within the Coillte Biodiversity Areas

The Coillte Biodiversity Areas are located to the west of T11, and to the east of T12, and west of T15. Both areas are surrounded by Conifer Plantation (WD4). This habitat was categorised as HE4E-Annex I: 4010 Wet heath- *Molinia caerulea* – *Calluna vulgaris* – *Erica tetralix* heath using the IVC classification. (See Plate (6-27). Species recorded within these areas include Purple Moor-Grass (*Molinia caerulea*), Ling heather (*Calluna vulgaris*), *Rhytidiadelphus triquetrus*, Deer grass (*Trichophorum germanicum*), Devil’s bit scabious (*Succisa pratensis*), Bilberry (*Vaccinium myrtillus*), Cross leaved heath (*Erica tetralix*), *Sphagnum capillifolium*, Tormentil (*Potentilla erecta*), Bog cotton (*Eriophorum angustifolium*), and Soft Rush (*Juncus effusus*).

There is no infrastructure proposed in either of the Coillte designated biodiversity areas.



Plate 6-27 Coillte Biodiversity Area west of T11.



Plate 6-28 Coillte Biodiversity Area located to the east of T12, and southwest of T15.

6.6.1.8 Habitats within the Biodiversity Management Enhancement Plan (BMEP) Area

The area for the proposed biodiversity management enhancement plan (BMEP) is located to the northern margin of the EIAR Site Boundary, north of T7. This habitat was categorised as **HE2D**: Annex I: 4010 Wet heath- *Calluna vulgaris* – *Molinia caerulea* – *Erica cinerea* heath using the IVC classification. Species recorded in this area include Ling Heather (*Calluna vulgaris*), Purple Moor Grass (*Molinia caerulea*), Cross Leaved Heath (*Erica tetralix*), Tormentil (*Potentilla erecta*), Cotton Grass (*Eriophorum angustifolium*), *Sphagnum capillifolium*, Red Stem feathermoss (*Pleurozium schreberi*), Reindeer lichen (*Cladonia portentosa*), Woolly Fringe-moss (*Racomitrium lanuginosum*), and Little Shaggy-Moss (*Rhytidiadelphus loreus*). Self-seeded conifers have established in the southern and eastern sections of the proposed BMEP area (Plate 6-29).

A full description of this habitat is provided in the Biodiversity Management and Enhancement Plan available in appendix 6-6.



Plate 6-29 Biodiversity Management Enhancement Plan (BMEP) Area located to the northern margin of the development site.

6.6.2 Protected Flora

No botanical species listed under the Flora (protection) Order (1999, as amended 2015 and 2022), listed in the Habitats Directive or listed in the Irish Red Data Books were recorded within the EIAR Site Boundary. 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 (see Table 6-9), were recorded within the study area.

6.6.3 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. Rhododendron was recorded from two areas within the site, in the vicinity of T12 and between T8 and T11. Best practice invasive species management measures have been incorporated into the Biodiversity Management Plan, available in Appendix 6-6. The implementation of these measures will ensure that there is no potential for impact on downstream ecological receptors.

No additional species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) were recorded during the survey.

6.6.4 Fauna in the Existing Environment

Dedicated faunal walkover surveys were undertaken at the site on the following dates:

- > 2nd July 2021
- > 9th July 2021
- > 18th August 2021
- > 2nd September 2021
- > 24th September 2021
- > 18th January 2022
- > 25th January 2022
- > 20th April 2023
- > 3rd May 2023.

In addition to the above targeted surveys, additional faunal signs/sightings were also recorded during other surveys including habitat assessments, bat, and bird surveys.

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species, including 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 EIAR Site Boundary during the site visit and assessment.

6.6.4.1 Badger

Dedicated surveys for this species were undertaken on the above dates, in addition to incidental records recorded during other species-specific surveys. During dedicated badger surveys of the site, signs of badger i.e., badger foraging signs, latrines etc. were searched for. Several signs of badger were recorded throughout the site, including snuffle holes and paths. One overgrown entrance to an outlier sett was recorded in the west of the EIAR Site Boundary. As this was located in proximity to proposed T2, a camera trap was left in place during August 2021, but no badger activity was recorded. A further study of this area by T2 was undertaken in May 2023. Although potential snuffle holes were identified,

the previously located badger sett entrance showed no signs of recent activity (See Plate 6.30). The location of the badger sett is shown on Figure 6-7, Confidential Appendix 6-4⁸ of this EIAR.



Plate 6-30 In-active badger sett entrance by T2.

6.6.4.2 Otter

Otter spraints were recorded in the vicinity of the Keerglen River in the south-east of the EAIR Site Boundary and underneath a bridge crossing a tributary of the Altderg River in the north-west of the EIAR Site Boundary. More spraints, couches, feeding remains and a holt were identified along the western shoreline of Altderg Lough in the south-west of the site, located at a distance of more than 700m away from the nearest turbine (T4). The main watercourses were assessed as providing suitable commuting and foraging habitat for the species and otter may occur within the study area, at least on occasion. Based on the fisheries assessment available in appendix 6-1, the fisheries potential of the upper reaches of watercourses within the site is categorised as moderate to poor and therefore otters are more likely to utilise the lower reaches of the watercourses, downstream of the Proposed Development site.

⁸ Following standard best practice, the location of breeding or resting places of protected species should be provided as a confidential appendix for review by the competent authority and not made available to the public in order to avoid potential for persecution.

No signs of otter activity were recorded along the Cloonaghmore River at the location where horizontal directional drilling is proposed along the R134.

The location of the otter holt is shown on Figure 6-7, Confidential Appendix 6-5⁹ of this EIAR.

6.6.4.3 Bats

The results of the bat survey effort are fully described in section 4.4 of the Bat Survey report available in appendix 6-2 and are not repeated in full here. The results are summarized below.

Roost surveys

Following a search for roosts in 2021, no structures containing potential suitable bat roost features were identified within 200m plus the rotor radius (63m) of the Proposed Development footprint.

The Proposed Development site was checked for potential tree roosts but no trees with significant roosting features were identified within the site. The Proposed Development site is comprised predominantly of mature and immature conifer forestry, as well as large areas of clearfell. As a result, the surrounding habitats were assessed as largely unsuitable for roosting bats.

Manual transects

Manual transects were undertaken in Spring, Summer and Autumn 2021. Bat activity was recorded on all surveys. Overall, bat activity was low with a total of 25 bat passes recorded. In general, soprano pipistrelle (n=14) was recorded most frequently, followed the common pipistrelle (n=7) and Myotis sp. (n=1).

Ground-level Static Surveys

In total, 11,895 bat passes were recorded across all deployments. In general, soprano pipistrelle (n=7,249) occurred most frequently, followed by common pipistrelle (n=2,883) and Leisler's bat (n=1,026). Instances of Myotis sp. (n=648), and Brown long-eared bat (n=89) were significantly less.

6.6.4.4 Reptiles and Amphibians

Common frog (*Rana temporaria*) was recorded in the north of the EAR Site Boundary and is likely to breed in wet habitats within the study area. One common lizard (*Zootoca vivipara*) and two smooth newts (*Lissotriton vulgaris*), were recorded along drains on the edge of forestry during the site visits.

The Proposed Development 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 EIAR Site Boundary and beyond.

6.6.4.5 Fisheries and Aquatic Fauna

In order to collate baseline fisheries information, Triturus Environmental Ltd. were contracted by MKO to undertake catchment-wide surveys of aquatic habitats in relation to fisheries potential, freshwater pearl mussel (eDNA only), macro-invertebrates (biological water quality), macrophytes and aquatic bryophytes, aquatic invasive species, and fish of conservation value. A detailed *Aquatic and fisheries assessment* has been prepared for the project and is provided in Appendix 6-3 of the EIAR. A total number of n=17 sites were surveyed across the Alderg, Keerglen and Owenmore River and

⁹ Following standard best practice, the location of breeding or resting places of protected species should be provided as a confidential appendix for review by the competent authority and not made available to the public in order to avoid potential for persecution.

numerous unnamed tributaries and including three dystrophic lakes in September 2021. Electrofishing was carried out at n=14 locations and eDNA samples for freshwater pearl mussel were collected from the Keerglen River and Owenmore River (n=2). Water samples were also collected from n=3 lakes and analysed for brown trout, European eel and smooth newt. Biological water quality was analysed (via Q-sampling) at n=14 sites. The location of all survey sites referred to in the below subsections is provided in Figure 2.1 of the Fisheries Assessment Report Appendix 6-3 and in the Aquatic Report in 6-4 of the EIAR.

Atlantic salmon were recorded (via electro-fishing) from a total of n= 5 sites. These were located on the Owenmore River (A8 & A9) and two unnamed tributaries (A5 & A7) as well as a site on the Keerglen River (B5). All of these sites are located outside of the site boundary. Brown trout were also recorded from these sites, in addition to sites A2, A3, A4, A6 and B1 which are located within the site boundary (n = 10 no sites in total). Most of the watercourses surveyed only supported brown trout given their narrow, shallow and high-gradient, upland nature. The sites on the Owenmore River (A8 & A9), unnamed river (A7) and Keerglen River (B5) provided the best overall salmonid habitat, with good-quality nursery habitat present at all three sites.

Whilst suitability was largely absent throughout the survey sites given the upland, eroding nature of the watercourses, *Lampetra* sp. ammocoetes were recorded from a single site on the Owenmore River (A9). A moderate density of ammocoetes (11 per m²) was recorded from marginal sand/silt accumulations. This site also provided the only suitable lamprey spawning habitat within the survey area.

European eel habitat was typically poor to moderate, at best, across the riverine survey sites due to high flows, gradients and naturally compacted substrata. Eel were only recorded (via electro-fishing) from sites A5, A7, A8 (Owenmore River) and B1 & B5 (Keerglen River). Environmental DNA analysis also detected eel in lake sites L1 and L3.

The riverine survey sites were typically unsuitable for freshwater pearl mussel given that many were located in the upper extent of river catchments, in addition to sub-optimal substrata and siltation pressures (primarily from peat escapement). Analysis of water samples collected from the Owenmore River and Keerglen River did not detect pearl mussel eDNA and there are no known records of the species in the vicinity of the Proposed Development or in the downstream hydrologically connected catchments.

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples taken from n=14 riverine sites. With the exception of sites B2 (Q3, poor status, tentative rating), all survey sites achieved \geq Q4 (good status) water quality and, thus, met the good status (\geq Q4) requirements of the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 and the Water Framework Directive (2000/60/EC). Site A9 (Owenmore River) achieved Q4-5 (high status) water quality.

6.6.4.6 Marsh Fritillary

The desk study identified that Marsh Fritillary (*Euphydryas aurinia*) is known to occur in the wider area surrounding the proposed development.

Dedicated surveys were undertaken within the study area to identify areas of suitable marsh fritillary habitat. Suitable habitat was recorded along forestry rides and tracks where stone material has been brought into the site. Devil's- Bit-Scabious (*Succisa pratensis*) was recorded in abundance within the Coillte Biodiversity Area to the west of T11 in May 2023.

During dedicated larval web surveys of the study area in September 2021, no marsh fritillary larval webs were recorded. None of the potentially suitable marsh fritillary habitat recorded within the EIAR Site Boundary occur within the proposed infrastructure footprint.



Plate 6-31 Devil's- Bit-Scabious (*Succisa pratensis*) recorded in abundance within the Coillte Biodiversity Area to the west of T11.

6.6.4.7 Other species

Irish hare (*Lepus timidus ssp. hibernicus*) and Fox (*Vulpes vulpes*) were observed on occasion within the site boundary and Pine Marten (*Martes martes*) was recorded on the camera trap set out to monitor the badger sett entrance. Mustelid scats were recorded within the forestry and are likely to be pine marten. The scats of a Fox (*Vulpes vulpes*) were also recorded in a number of areas within the site. Numerous Deer (*Cervidae spp*) droppings were found throughout the site.

No significant areas of suitable habitat for other taxa, 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 development site.

6.6.5 Importance of Ecological Receptors

Table 6-12 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 6.7 of this report and mitigation/ measures will be incorporated into the proposed development where required, to avoid potential significant impacts on the features, that are located partially within, adjacent to or ecologically connected the EIAR Site Boundary. In addition, Ummerantarry Bog [001570] is hydrologically connected to the site. These NHAs have been included within the Likely Zone of Influence for further assessment.

Table 6-12 Key Ecological Receptors identified during the assessment.

Ecological feature or species	Reason for inclusion as a KER	KER
Designated sites	<p>Nationally Designated Sites</p> <p>The following nationally designated sites have been identified as being within the likely Zone of Impact:</p> <ul style="list-style-type: none"> ➤ Ummerantarry Bog NHA [001570] ➤ Inagh Bog NHA [002391] ➤ Bellacorick Bog Complex pNHA [001922] ➤ Killala Bay/Moy Estuary pNHA [000458] <p>These sites are assigned National Importance and included as a KER as there is potential for indirect effects on them via habitat degradation and water pollution.</p>	Yes
	<p>European Designated Sites</p> <p>The following Special Areas of Conservation are identified in the AA Screening as being within the Likely Zone of Impact and are assessed fully in the NIS that accompanies this application:</p> <ul style="list-style-type: none"> ➤ Bellacorick Bog Complex SAC [001922] ➤ Killala Bay/Moy Estuary SAC [000458] ➤ Killala Bay/Moy Estuary SPA [004036] <p>These sites are assigned International Importance and included as a KER as there is potential for indirect effects on them via water pollution.</p>	Yes

Ecological feature or species	Reason for inclusion as a KER	KER
	<p>Note: SPAs within the Likely Zone of Influence are considered in Chapter 7, Ornithology and in the NIS.</p>	
<p>Aquatic Habitats and related species</p>	<p>Eroding/upland rivers (FW1)</p> <p>A number of natural watercourses and large rivers were located within EIAR Site Boundary. These watercourses include:</p> <ul style="list-style-type: none"> ➤ Altderg River and tributaries ➤ Keerglen River and tributaries (e.g., Ballykinlettragh) <p>These Rivers and Streams have been assigned Local Importance (Higher Value) as they are of high biodiversity value and connect to downstream waterbodies in the local area. One watercourse (Ballykinlettragh) was assigned Local Importance (Lower Value) due to poor water quality. They also provide a conduit to downstream designated sites of national and international importance.</p> <p>In addition to the above, several watercourses were identified along the grid connection route within the Glencullin (NorthMayo)_SC_010 sub catchment.</p>	<p>Yes</p>
	<p>Dystrophic lakes (FL1)</p> <p>The site of the proposed development includes some small and one larger (Altderg Lough) dystrophic lake (FL1). These have been assigned County Importance as they conform to EU Habitats Directive habitats that are of high biodiversity, although small in scale.</p>	<p>Yes</p>
	<p>Aquatic and Fisheries Species</p> <p>The aquatic species that are associated with the rivers that are located within and surrounding the site assigned Local Importance (Higher Value) in that they have a high biodiversity value in the local context. The downstream watercourses and fauna within them have been assigned as of Local Importance (Higher Value) due to the known populations of salmon, trout, and lamprey species along with otter. Some of the downstream watercourses and the associated fauna have also been assigned International Importance due to them being located within SACs. There is potential for indirect effect on these features as a result of impacts on water quality. These species include salmonid, trout, lamprey species, white clawed crayfish, European eel, and other aquatic species. Fish and other aquatic species are therefore included as a KER for further assessment along with Upland eroding rivers.</p>	<p>Yes</p>
<p>Conifer plantation (WD4)</p>	<p>The majority of the proposed windfarm infrastructure is located within Conifer Plantation (WD4). This is a highly modified habitat with a low biodiversity value. This is classified as Local Importance (Lower Value). For these reasons, this habitat has not been identified as a KER.</p>	<p>No</p>
<p>Recently cleared woodland (WS5)</p>	<p>This is a highly modified habitat with a low biodiversity value and is classified as Local Importance (Lower Value). For these reasons, this habitat has not been identified as a KER.</p>	<p>No</p>

Ecological feature or species	Reason for inclusion as a KER	KER
Peatlands and associated habitats	<p>Upland Blanket Bog (PB2) / Wet Heath (HH3)</p> <p>This habitat is assigned County Importance as, although the habitat occurring within and adjacent to the site has been degraded as a result of forestry, the areas of lowland blanket bog conform to EU Habitats Directive Annex I habitat Blanket Bog [7130].</p> <p>Two of the proposed borrow pits are located on degraded lowland blanket bog/wet heath habitat. Although the habitats are highly degraded, they are still classified as Annex I habitats and assigned County Importance. The construction of the Proposed Development will result in direct loss of 1.3ha of peatland habitat and as such, they have been included as a KER for further assessment.</p>	Yes
Spoil and bare ground (ED2)	This is a highly modified habitat with a low biodiversity value and is classified as Local Importance (Lower Value) . For these reasons, this habitat has not been identified as a KER.	No
Recolonising bare ground (ED3)	This is a highly modified habitat with a low biodiversity value and is classified as Local Importance (Lower Value) . For these reasons, this habitat has not been identified as a KER.	No
Hedgerow (WL1)	<p>This habitat has been assigned a value of Local Importance (Higher Value), as it provides ecological connectivity to the wider landscape.</p> <p>In order to accommodate the delivery of turbine components and other abnormal loads between the R314 and the main site entrance, a bypass road will be constructed south of the R314 across agricultural land to the existing Ballyglass local road in the townland of Ballycastle. This will result in the loss of approximately 1.3km of hedgerow habitat, as described in section 6.6.1.5 of this report.</p> <p>Although the existing hedgerow habitat is of relative low species diversity and is gappy in nature, it provides some ecological connectivity and supporting nesting and foraging habitat for local biodiversity. As such, it has been included as a KER for further assessment.</p>	Yes
Dry meadows and grassy verges (GS2)	This habitat has been assessed as of Local Importance (Lower Value) as where it occurs within the proposed development footprint, it is generally of low biodiversity value primarily due to fragmentation, abandonment and scrub encroachment associated with the surrounding afforestation of the landscape. For this reason, it has not been identified for further assessment and is not a KER.	No
Wet grassland (GS4)	This habitat has been assessed as of Local Importance (Lower Value) as where it occurs within the proposed development footprint, it is generally of low biodiversity value primarily due to fragmentation, abandonment and scrub encroachment associated with the surrounding afforestation of the landscape. For this reason, it has not been identified for further assessment and is not a KER.	No
Immature Woodland (WS2)	A very small section of commercially planted immature woodland will be lost to facilitate the construction of the new turbine delivery road at the junction for the R134 and the main local access road. This habitat has not been identified	No

Ecological feature or species	Reason for inclusion as a KER	KER
	as a KER as only a small area of the overall habitat will be lost and it is of low ecological diversity.	
Scrub (WS1)	This habitat is of some local importance to local wildlife (NRA, 2009). However, it is common and widespread in the wider area and as such, the habitat has been assessed as of Local Importance (Lower Value) . For this reason, it has not been identified for further assessment and is not a KER.	No
(Improved) Agricultural Grassland (GA1)	This is a highly modified habitat with a low biodiversity value and is classified as Local Importance (Lower Value) . For these reasons, this habitat has not been identified as a KER.	No
Badger	Badger as an ecological receptor has been assigned Local Importance (Higher value) on the basis that the habitats within and adjacent to the EIAR Site Boundary are likely to be utilised by a locally occurring badger population of Local Importance. One disused badger sett was identified in close proximity to T2, however further surveys found no badgers are actively using this sett. Therefore, direct impacts on badger are not anticipated. However, there will be loss of foraging habitat and the proposed development has the potential to result in indirect effects on the receptor as a result of disturbance during construction and operation. Badger is therefore included as a KER and requires further assessment.	Yes
Otter	<p>Evidence of otter (spraints, couches, slides, feeding remains, holt) were recorded from several areas within the red line boundary and the species has been assessed as of Local Importance (Higher Value). No otter holts were recorded within any of the proposed infrastructure associated with the Proposed Development during the surveys carried out. As such, there is no potential for direct effects on otter</p> <p>The proposed development has the potential to result in indirect effects on the receptor (as a result of deterioration in habitat or disturbance during construction/ decommissioning) and it is therefore included as a KER and requires further assessment.</p>	Yes
Marsh fritillary	Based on the desk study, no marsh fritillary has been recorded from this hectad. Small areas of suitable habitat for the species occur within the site boundary, but no evidence of the species was recorded during dedicated surveys for the species undertaken in 2021. In addition, the proposed development footprint avoids areas identified as potentially suitable for the species and as such, no potential for impact on the species is predicted. For this reason, the species has not been considered for further assessment in this report.	No
Bats	<p>The habitats within the EIAR Site Boundary are likely to be utilised by a bat population of Local Importance (higher value). All bat species in Ireland are protected under both national legislation – (Wildlife Act,) and European legislation – (Habitats Directive). Bats are likely to forage and commute within the vicinity of the proposed development.</p> <p>No bat roosts were identified within the footprint of the Proposed Development. Bats as an Ecological Receptor have been assigned Local Importance (Higher value) on the basis that the habitats within the study area are utilized by a regularly occurring bat population of Local Importance.</p>	Yes

Ecological feature or species	Reason for inclusion as a KER	KER
	No roosting site of National Importance (i.e. site greater than 100 individuals) was recorded within the site. The Proposed Development site does not support a roosting site of ecological significance Therefore, bats are included as a KER for further assessment.	
Reptiles and Amphibians	It is considered that the proposed development will not result in a significant loss of suitable habitat for reptiles and 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 low number of amphibian records for the site and the highly afforested nature of the study area, amphibians have been assessed as of Local Importance (Lower Value) .	No
Invasive species	Rhododendron was recorded from two areas within the site and along the access route. Therefore, invasive species are included as a KER for further assessment.	Yes
Additional protected fauna (e.g. red squirrel, Irish hare, pine marten, fox etc).	The recorded evidence suggests that the study area is not utilised by populations of higher than local significance and no potential for significantly effects have been identified at the population level. Due to the small footprint and nature of the proposed development, they are unlikely to be significantly affected by the proposed development. For this reason, other faunal species are not considered further in this EIAR. Significant effects are not anticipated.	No

6.7 Ecological Impact Assessment

6.7.1 Do-Nothing Effect

If the proposed development were not to proceed, the majority of the lands within the site would continue to be managed as commercial forestry. This would continue to involve the harvesting of timber as it matures, followed by the coniferous forestry replanting. The other habitats identified within the EIAR study area, including peatlands and associated habitats, would likely remain in a similar condition. In some drier areas of the peatland habitat, scrub is likely to develop and in time, this may undergo succession to small areas of woodland. The general biodiversity on the site, as described in this chapter, would likely remain similar to its current state as activity levels and land use would not change significantly.

6.7.2 Likely Significant Effects During Construction Phase

6.7.2.1 Effects on Habitats

Table 6-13 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 development and the percentage of the total area of that habitat in the EIAR study area that it represents. The habitats detailed in the table below are included as the Proposed Development will result in substantial areas of these habitats (conifer plantation) being lost or the habitats are ecological sensitive (i.e Degraded Heath/blanket bog mosaic, Hedgerow). Other habitats assessed as of local importance (lower value) include Wet grassland (GS4), Scrub (WS1), Immature woodland (WS2) and Spoil and bare ground (ED2). While small amounts of these habitats may be lost along the road verges, this will be negligible and as such, are not included in the table below. Any direct or indirect impacts on these habitats are not significant.

Table 6-13 Extent of habitat lost to the proposed development and the percentage of the total area of that habitat on EIAR Boundary.

Habitat	Area to be lost to development footprint	Total area on the site	Percentage of total to be lost
Conifer plantation (WD4)	116ha	1,157ha	10%
Degraded Heath/blanket bog mosaic (PB2/HH3)	1.3ha	136ha	0.9%
Hedgerow (WL1)	1.3km	3.4km (Along Ballyglass local road)	79%

The proposed development 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 clear fell (WS5) which has been assessed as being of low ecological value. The loss of these habitat is not significant at any scale.

The effects on habitats that are identified as KERs are described in the below tables.

6.7.2.2 Effects on identified Ecological Receptors

6.7.2.2.1 Assessment of Potential Effects on Rivers and Streams, Open Waterbodies and Sensitive Aquatic Faunal Species

Table 6-14 Potential for impact on rivers, streams, Open Waterbodies and Sensitive Aquatic Species

<p>Description of Effect</p>	<p>The footprint of the proposed development has been specifically designed to avoid the large waterbodies and watercourses within the site boundary, see Chapter 4, Section 4.7 of the EIAR. The location of new watercourse crossings has been specifically chosen to facilitate the use of clear-span bridges, see Section 4.9.3 of the EIAR, thereby minimising potential for impact on the receiving environment. However, the proposed internal road network and proposed grid connection route cross a number of watercourses. In some locations, site access tracks will utilise existing bridges with no instream works proposed. As no instream works are proposed, there will be no direct effects on these habitats or the species that are associated with them. There is no potential for the proposed development to result in any barrier to the movement of aquatic species.</p> <p>There is potential for the construction activity to result in the runoff of silt, nutrients, and other pollutants such as hydrocarbons and cementitious material into these watercourses. This could result from the removal of scrub and conifer plantation, movement of peat or the use of concrete and other construction materials. The proposed development will cross a number of small drainage ditches, which are not themselves ecologically sensitive but do provide connectivity to the larger watercourses that surround the site.</p> <p>The construction phase of the proposed watercourse crossings represents a potential indirect effect on the identified aquatic receptors in the form of habitat degradation through water pollution.</p> <p>These effects on water quality are fully described in Chapter 9 ‘Water’ of this EIAR and are described here in relation specifically to ecology.</p> <p>Note: Whilst this impact assessment is in the habitats section, it also assesses the impact on the proposed development on aquatic species including salmonids, lamprey, white-clawed crayfish, European eel, aquatic invertebrates, and other aquatic species. The proposed development will have no direct impact on the aquatic habitat of these species and there is no potential for disturbance. The only pathway for effect to occur is as a result of water pollution and this is discussed in this section in relation to habitats and species.</p>
<p>Characterisation of unmitigated effect</p>	<p>In the absence of mitigation, the indirect effect of water pollution on aquatic receptors during construction has the potential be a short-term reversible impact on watercourses which act as a conduit to downstream habitats. The magnitude of any such impact is likely to be at worst moderate, given that all major infrastructure such as turbine bases, site compound etc. are located over 50 metres from any significant watercourse, as shown in figure 6.6.</p>
<p>Assessment of Significance prior to mitigation</p>	<p>In the absence of mitigation and following the precautionary principle, there is potential for the proposed development to result in significant indirect effects on the identified aquatic habitats and species at a local geographic scale in the form of pollution during the construction phase of the proposed development.</p>
<p>Mitigation</p>	<p>A detailed drainage maintenance plan for the Proposed Development is provided in Section 4.7.6 of this EIAR. This plan provides details of how water quality will be protected during the construction of the Proposed Development. In addition to this, specific mitigation is provided in relation to water quality in Chapter 9: ‘Water’ of this EIAR. The Construction Environmental Management Plan (CEMP) that is provided as</p>

	<p>Appendix 4-3 of the EIAR, provides the details of exactly how the measures will be implemented during construction.</p> <p>In relation to new watercourse crossings, Inland Fisheries Ireland (IFI) will be consulted a minimum of four weeks in advance of the installation of pre-cast concrete bottomless box culverts. The Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters; and the Scottish Natural Heritage (SNH) Good Practice During Wind Farm Construction (SNH, 2019, 4th Edition) will also be adhered to. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI).</p>
Residual Effect following Mitigation	<p>Following the implementation of mitigation, there will be no significant residual effect on aquatic habitats or species as a result of the proposed development.</p>

6.7.2.2.2 Assessment of Potential Effects on Peatlands and Associated Habitats

Table 6-15 Loss of peatlands and associated habitats

Description of Effect	<p>The Proposed Development has been deliberately designed to avoid most of the peatland habitats within the EIAR site.</p> <p>However, two of the borrow pit locations (southern borrow pit and the borrow pit on the grid connection route) are located on peatland habitat. The borrow pit located in the southern section of the site is comprised primarily of conifer plantation. A narrow strip of highly degraded lowland Blanket Bog/ Wet Heath (0.3ha) mosaic habitat is present between the conifer plantation and the forestry road. The borrow pit within the grid route is located on a previously cutover and highly degraded habitat of Blanket Bog/ Wet Heath (1ha).</p> <p>The construction of the borrow pits will result in the direct loss of approximately 1.3ha of degraded peatland for the construction of the proposed borrow pits</p> <p>The peatland habitats located within the borrow pits are highly degraded and have been subjected to cutting and drainage for forestry activity. They also represent very isolated habitats surrounded by conifer plantation and do not provide connectivity to other peatlands habitats. Although these habitats areas are highly degraded, they habitats qualify as Annex I Blanket Bog/Wet heath mosaic habitat</p>
Characterisation of unmitigated effect	<p>The direct loss of 1.3ha of bog habitat will result in an irreversible impact on a habitat of County Importance. The magnitude of this a Permanent slight negative effect considering the very small fraction of loss that will occur in the overall landscape.</p> <p>The potential for indirect effects will result in a reversible impact on habitats of County Importance. The magnitude of this impact is slight as it only affects a small percentage of the overall habitat type, which is widespread in the surrounding landscape.</p>
Assessment of Significance prior to mitigation	<p>The direct loss and degradation of Wet heath/Blanket bog habitat has been assessed as a permanent slight negative effect on a very small area of a receptor of County importance, in the absence of mitigation and is not significant at any geographic level. This impact is restricted to a small percentage of the overall habitat within the site.</p>
Mitigation	<p>While the construction of the borrow pits will result in the loss of approximately 1.3ha of highly degraded peatland habitat, the Proposed Development provides for the restoration of approximately of 40ha of peatland habitat in the northern section of the site, through drain blocking measures and the removal of removal of encroaching conifers (establishing as a result of natural seed dispersal). This is fully described in the Biodiversity Management and Enhancement Plan (BMEP). The BMEP will improve the ecological condition of the existing degraded peatland habitat in the northern section of</p>

	<p>the site. The location and extent of the habitat enhancement area is mapped in the BMEP, available in Appendix 6-6 of the ELAR.</p>
<p>Residual Effect following Mitigation</p>	<p>Following the implementation of BMEP, the restoration of approximately 40ha of peatland habitat through conifer removal and drain blocking will significantly increase the abundance and quality of existing peatland habitats within the ELAR boundary. The restoration of this area will connect with the Glenamoy Bog Complex SAC.</p> <p>The implementation of the BMEP will result in a significant positive effect on a receptor of County Importance.</p>

6.7.2.2.3 Assessment of the Potential Impact on Hedgerow habitat

Table 6-16: Assessment of the Potential Impacts on Hedgerow Habitat

<p>Description of Effect</p>	<p>The Proposed Development will result in the loss of approximately 1.3km of hedgerow habitat along the existing local access road into the site and the main entrance just off the R314.</p> <p>The hedgerow habitat present here is mostly dominated by bramble with individual shrub tree species such as hawthorn, blackthorn and Salix. spp also present. Although the hedgerow habitat has relatively low species diversity, it still provides foraging, commuting and nesting habitat for biodiversity at a local level.</p>
<p>Characterisation of unmitigated effect</p>	<p>The direct loss of 1.3km of hedgerow habitat will result in a reversible impact on a habitat of Local Importance Higher Value. The magnitude of this a Permanent Moderate negative effect considering how common and abundant this habitat is in the landscape.</p>
<p>Assessment of Significance prior to mitigation</p>	<p>The direct loss of Hedgerow habitat has been assessed as a reversible Moderate negative effect on a of a receptor of Local Importance Higher Value, in the absence of mitigation and is not significant at any geographic level. This impact is restricted to a small percentage of the overall habitat within the site.</p>
<p>Mitigation</p>	<p>In order to mitigate the loss of hedgerow, it is proposed to reinstate the 1.3km proposed to be cleared to facilitate the temporary road widening works. The hedgerow will be reinstated with native hedgerow species such as Hawthorn, Blackthorn and Guelder rose.</p>
<p>Residual Effect following Mitigation</p>	<p>Following the implementation of the mitigation, no significant effect on hedgerow habitat will remain.</p>

6.7.2.3 Effects on Protected Fauna During Construction

The proposed development has the potential to result in habitat loss and disturbance impacts on faunal species that were recorded on the site but were not included as KERs, see Table 6-12. Given the extensive area of habitat that will remain undisturbed throughout the site and the avoidance of the most significant areas of faunal habitat (wetlands, natural woodlands and watercourses), no significant effects on non-KER faunal biodiversity is anticipated as a result of the proposed development. Therefore, these species were excluded from further assessment.

The potential for significant effects on aquatic species is restricted to indirect effects on their habitat resulting from water pollution. This has been assessed in Section 6.7.2.2.1 above and is not repeated below.

6.7.2.3.1 Assessment of Potential Effects on Badger

Table 6-17 Assessment of Potential Impacts on Badger

<p>Description of Effect</p>	<p>Whilst a badger sett and foraging activity were recorded within the study area, the sett entrance identified close to the proposed turbine was overgrown and a camera trap installed in August 2021 showed no activity. A follow up survey in 2023 showed no sign of recent activity.</p> <p>However, badgers are clearly present within the site and there is some potential for small scale loss of foraging habitat to facilitate the construction footprint and potential of disturbance and displacement during the construction and decommissioning phases.</p>
<p>Characterisation of unmitigated effect</p>	<p>Given the small scale of the development footprint in comparison to the size of the site, the loss of foraging habitat to the footprint of the proposed development constitutes a Permanent Negligible Negative Effect. This would not be reversible as it is within the construction footprint. The proposed development will not result in any fragmentation of badger habitat, as there will be no barriers to movement throughout the site as a result of the proposed works. Disturbance to badger is classified as short-term, significant and negative.</p>
<p>Assessment of Significance prior to mitigation</p>	<p>There is no potential for significant loss of badger habitat as a result of the proposed development at any geographic scale.</p> <p>In the absence of mitigation, there is potential for significant disturbance/displacement on the local badger population as a result of the proposed development.</p> <p>There is no potential for significant effects at a county, national or international scale.</p>
<p>Mitigation</p>	<p>The following measures will be undertaken for the avoidance of disturbance/displacement and direct mortality and will be implemented during the construction phase of the Proposed Development.</p> <ul style="list-style-type: none"> ➤ A pre-construction badger survey will be undertaken at the location of the identified sett by a qualified ecologist prior to the commencement of any works to determine if the setts are in use and to identify any additional sett entrances that may have been excavated in the intervening period. ➤ The sett will be monitored for 2 weeks prior to construction using a camera trap to determine if it is in use. ➤ If the sett is found to be in use exclusion measures will be put in place prior to construction in line with NRA (2005b) Guidelines to ensure that the sett is evacuated. ➤ As per NRA guidelines exclusion from an active sett will only be carried out during the period of July to November inclusive in order to avoid the badger breeding season.

	<ul style="list-style-type: none"> ➤ During the breeding season (December to June inclusive) no works will be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts. ➤ Exclusion zone fencing and appropriate signage will be put in place around the main sett to the south of the substation which lies outside the construction footprint. This will ensure that there will be no vehicles tracking in the area and no temporary storage of construction materials that could impact the sett.
Residual Effect following Mitigation	Following the implementation of the mitigation as described above, there is no potential for any significant negative effect on badger at any geographic scale.

6.7.2.3.2 Assessment of Potential Effects on Otter

Table 6-18 Assessment of Potential Impacts on Otter

Description of Effect	<p>As described above in relation to aquatic habitats and species, the proposed development has been deliberately designed such that all major infrastructure, i.e., turbine bases and hardstands, avoid significant watercourses and wetland habitats. No instream works are proposed within watercourses that occur. There is therefore no potential for direct effect on habitat that is significant for otter.</p> <p>The dystrophic lakes recorded on site have been entirely avoided by the proposed site infrastructure.</p> <p>Infrastructure such as the haul roads and site access tracks will require a number of watercourse crossings. The construction of these watercourse crossings has the potential for indirect effects in the form of disturbance to otter.</p> <p>The proposed development also has the potential to result in indirect effects on otter habitat in the form of water pollution resulting from construction activity as described above.</p>
Characterisation of unmitigated effect	<p>There is no potential for direct loss or fragmentation of significant otter habitat.</p> <p>Given that the site is at present in active afforestation of different ages and all major proposed infrastructure is located over 50 metres from any significant watercourse, any potential disturbance to otter will be a short-term, slight negative effect associated with the installation of the proposed watercourse crossings.</p> <p>In the absence of mitigation, the indirect effect of water pollution on otter during construction has the potential to be a short-term reversible impact. The magnitude of any such impact is likely to be at worst moderate, given that all major infrastructure such as turbine bases and construction compounds are located over 50 metres from any significant watercourse.</p>
Assessment of Significance prior to mitigation	<p>There is no potential for the construction phase of the proposed development to result in significant disturbance, displacement or habitat fragmentation for otter.</p> <p>In the absence of mitigation and following the precautionary principle, there is potential for the proposed development to result in significant indirect effects on otter at a local geographic scale in the form of habitat deterioration resulting from pollution.</p>

<p>Mitigation</p>	<p>A detailed drainage maintenance plan for the Proposed Development is provided in Section 4.7 of this ELAR. This plan provides details of how water quality will be protected during the construction of the Proposed Development. In addition to this, specific mitigation is provided in relation to water quality in Chapter 9: 'Water' of this ELAR. In addition, the Construction Environmental Management Plan (CEMP) that is provided as Appendix 4-4 of the ELAR provides the details of exactly how the measures will be implemented during construction.</p> <p>Whilst no otter were recorded at the locations of the proposed water crossings during the surveys undertaken, it is noted that this is a mobile species and could potential migrate into the site. As such, 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, 2008b):</p> <ul style="list-style-type: none"> ➤ From a precautionary basis, a pre-commencement confirmatory otter survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works. Should the surveys identify the presence of an otter holt, the following measures will be undertaken: a National Parks and Wildlife Service and a derogation licence will be applied for (although compliance with such a licence has not been relied on in this assessment). ➤ 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 also not take place within 15m of such holts, except under licence (TII, 2008b). <p>All of the above works will be undertaken or supervised by an appropriately qualified ecologist.</p>
<p>Residual Effect following Mitigation</p>	<p>Following the implementation of mitigation, there will be no significant residual effect on otter as a result of the proposed development.</p>

6.7.2.3.3 Assessment of Potential Effects on Bats

Table 6-19 Assessment of Potential Impacts on Bats

<p>Description of Effect</p>	<p>Whilst the EIAR Site Boundary was utilised by foraging and commuting bats, the proposed development will not result in any significant reduction or loss of the available habitat on the site given the size of the site and nature and small scale of the habitats that will be lost.</p> <p>No bat roosts were identified in close proximity to the construction footprint of the proposed development and there is no potential for significant bat roosts to be disturbed by increased human presence and increased noise during construction. No built structures within the site were identified as being, within 200m of a turbine location, or as providing roosting bat features and thus further surveys were not deemed necessary.</p> <p>The potential for bats to be killed during removal of trees or structures was considered in this assessment. However, no buildings or other structures with the potential to support bat roosts will be demolished to facilitate the proposed development. In addition, the trees occurring within the development footprint were assessed as not providing suitable cavities to support any significant bat roosts. The coniferous woodland does not provide suitable cavities due to the nature and age of the species recorded, while the scrub habitat occurring within the infrastructure footprint comprises largely of immature downy birch and willows.</p>
<p>Characterisation of unmitigated effect</p>	<p>The construction of the proposed development has the potential to result in Short-Term Imperceptible Negative effects on the local bat populations in the form of habitat loss, disturbance or direct mortality.</p>
<p>Assessment of Significance prior to mitigation</p>	<p>There is no potential for the construction of the proposed development to result in Significant effects on the local bat population at any geographic scale as no roosts were recorded close to the infrastructure, habitat loss and disturbance are only likely to result in imperceptible effects on the local population. The bat survey report, which is included in Appendix 6-2 provides further detail and analysis with regard to the effects on bat species.</p>
<p>Mitigation</p>	<p>Whilst no significant effects on bat species have been identified, the following potential positive effects are noted. The felling of forestry will have a positive effect by opening up large areas of former closed canopy commercial forestry i.e. there will be more linear forestry edge habitat created. This will have a positive impact on bats as it will provide more commuting and foraging opportunities. Overall, the proposed works will retain areas of linear forestry edge habitats. A full description of the mitigation measures proposed during construction are described in section 6.1 of the Bat report, available in appendix 6-2. These measures are summarised below.</p> <ul style="list-style-type: none"> • 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 (SI 359/1996). • Exterior lighting, during construction, will be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands.
<p>Residual Effect following Mitigation</p>	<p>There is no potential for the construction of the proposed development to result in Significant effects on the local bat population at any geographic scale. There will be no significant effect on the conservation status of any bat species as defined in ‘<i>The Status of Protected Habitats and Species in Ireland</i>’ (NPWS, 2019)</p>

6.7.2.4 Potential Introduction or Spread of Invasive Alien Plant Species

6.7.2.4.1 Pre-Mitigation Impacts

The Third Schedule invasive species *Rhododendron ponticum* was recorded within two areas of the site. From a precautionary perspective, a pre-construction invasive species survey will be undertaken as part of the proposed project. This will provide updated data in advance of any construction given the intervention time period between the original survey work and any future grant of permission/construction. While there is no danger of spreading *R. ponticum* during any proposed works, general measures to prevent the introduction of invasive species to the site from elsewhere will be adhered to.

6.7.2.4.2 Mitigation Measures

The management of *Rhododendron* within the Proposed Development site has been fully described in the Biodiversity Management and Enhancement Plan (BMEP), available in appendix 6-6. Best practice measures in relation to invasive species are described below:

- Good construction site hygiene will be employed to prevent introduction of problematic invasive alien plant species (e.g., Japanese knotweed, *Rhododendron*, Giant Rhubarb etc.) by thoroughly washing vehicles prior to entering the site.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.
- The treatment and control of invasive alien species will follow guidelines issued by the National Roads Authority – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010).

6.7.2.4.3 Residual Impact

No impact.

6.7.2.4.4 Significance of Effects

With the above mitigation in place there will be no significant effect with regard to Third Schedule invasive species as a result of the proposed works.

6.7.3 Likely Significant Effects During Operational Phase

6.7.3.1 Effects on Habitats and Species During Operational Phase

The operation of the proposed development 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 development. However, the proposed development has the potential to result in enhancement of the surrounding areas through habitat rehabilitation management (as described in the Biodiversity Management and Enhancement Plan (BMEP) that will be implemented during the construction phase of the proposed development and maintained during the operational phase. Details of the management that will be undertaken are provided in the BMEP in Appendix 6-6.

Potential for effects on rivers, streams, open waterbodies, and sensitive aquatic species remains a KER during operation and is assessed in detail in the following subsection.

6.7.3.1.1 Effects on Rivers and Streams, open waterbodies, and sensitive aquatic faunal species.

Table 6-20 Assessment of Potential Impacts on Rivers, Streams, Open Waterbodies and Sensitive Aquatic Faunal Species

<p>Description of Effect</p>	<p>The increased amount of hard standing associated with the windfarm infrastructure has the potential to result in faster run off of water 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.</p> <p>These impacts on water quality are fully described in Chapter 9: ‘Water’ of this EIAR and are described here in relation specifically to biodiversity.</p> <p>Note: Whilst this impact assessment is in the habitats section, it also assesses the impact on the proposed development on aquatic species including salmonids, lamprey, white-clawed crayfish, European eel, aquatic invertebrates, and other aquatic species. The proposed development will have no direct impact on the aquatic habitat of these species and there is no potential for disturbance. The only pathway for effect to occur is as a result of water pollution and this is discussed in this section in relation to habitats and species.</p>
<p>Characterisation of unmitigated effect</p>	<p>Impact on water quality during the operational phase of the proposed development has been assessed as a permanent negative effect in the absence of mitigation. The magnitude of this impact is slight because all major infrastructure will be located over 50 metres from any significant watercourse (those mapped by the EPA¹⁰ and downloaded to GIS) and the footprint of the proposed development will be minimal when compared to the overall size of the site. The closest turbine to an EPA mapped watercourse is Turbine no. 13, located approx. 70metres to the south of the watercourse.</p>
<p>Assessment of Significance prior to mitigation</p>	<p>Significant effects on water quality are not anticipated at any geographic scale during the operation of the proposed development.</p>
<p>Mitigation</p>	<p>Whilst no significant effects on water quality are anticipated, potential for effects on water quality associated with the operational phase drainage of the site has been fully mitigated through appropriate design and mitigation as fully described in the Surface Water Management Plan available in Appendix 4-4 of this EIAR. In Section 9.5.3 of Chapter 9 ‘Water’, the assessment concludes that with the implementation of mitigation, ‘no significant effects on the surface water quality will occur’ during the operational phase. The detailed mitigation measures are not repeated here to reduce repetition throughout the document, but are described in Section 9.5.3, Chapter 9; the measures used to mitigate the risk of release of hydrocarbons and other pollutants and for sediment control during the construction phase will also be employed as required during the operational phase. Drainage management measures employed during the construction phase will ensure that runoff from the operational development will be effectively mitigated</p>
<p>Residual Effect following Mitigation</p>	<p>Following the implementation of the mitigation measures outlined above, no potential for significant effect has been identified at any geographic scale as a result of the proposed development.</p>

¹⁰ EPA, 2020, Online Map viewer. Available at: <https://gis.epa.ie/EPAMaps/>

6.7.3.2 Effects on Fauna during Operation

The implementation of the Biodiversity Management and Enhancement Plan (BMEP) will ensure that any peatland habitat that is lost to facilitate the proposed infrastructure will be replaced within the site. The BMEP will also incorporate drain blocking and the removal of encroaching conifers from an existing area of Lowland blanket bog, as fully described in Appendix 6-6, and will result in the establishment of habitats of higher value for local faunal species. As such the operation of the proposed development 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 development. There is no potential for significant negative effects on non-volant terrestrial fauna including badger and otter that were identified as KERs during the construction phase of the development.

It should be noted that no significant habitat for salmonids, lamprey, white-clawed crayfish, European eel, aquatic invertebrates or other aquatic species was recorded within the footprint of the proposed development and all major infrastructure such as turbine bases are located over 50 metres from the watercourses and wetlands within the 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 6.7.4.1.1 and is not repeated below.

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

6.7.3.2.1 Assessment of Potential Effects on Bats during operation

Table 6-21 Assessment of Potential Impacts on Bats

<p>Description of Effect</p>	<p>There is no potential for loss or fragmentation of foraging or roosting habitat for bat species during the operational phase of the proposed windfarm as there will be no additional loss of any habitats following construction.</p> <p>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 afforested upland nature of the site.</p>
<p>Characterisation of unmitigated effect</p>	<p>Collision Risk</p> <p>Activity levels for low-risk species at the site including Myotis species and brown long eared bat (lesser horseshoe bat were not recorded during dedicated bat surveys) were low. As per SNH guidance, these species are not identified as being particularly vulnerable to collision mortality. Given the low levels of activity recorded, no significant effects on these species are anticipated.</p> <p>The following high-risk species were recorded during the dedicated surveys: Leisler’s bat Common pipistrelle Soprano pipistrelle</p> <p>Overall Risk for each high risk species was determined, in accordance with Table 3b of NatureScot guidance (Tables 5-2 – 5-4, ‘Bat Report’, Appendix 6-2), by a cross-tablature of the site risk level (i.e., Medium) and Ecobat bat activity outputs for each species (see Section 5.1.2 of Appendix 6.2 - Bat Report).</p> <p>Site-level collision risk for high collision risk bat species was typically Low to Medium. Overall bat activity levels were typical of the nature of the site, which is predominantly commercial forestry, cutover bog, tracks and scrub with low levels of bat activity recorded during the static detector surveys as well as the walked transects undertaken.</p> <p>The operation of the proposed wind farm has the potential to result in a long-term effect on Pipistrelle and Leisler’s bat species as a result of mortality due to collision. The</p>

	<p>magnitude of this effect in the absence of mitigation is moderate on the basis that no significant roosts were identified in the immediate vicinity of the turbines and the median level of activity is considered moderate (on a precautionary basis).</p> <p>It is noted in the SNH (2019) guidelines that bat activity on windfarm sites is highly liable to change following construction of a wind farm due to the changes in habitat that occur to facilitate construction. Therefore, continued monitoring of operational wind farms for three years' post construction is recommended in the guidelines and will be undertaken at this site, to determine the actual, post construction effects on the local bat populations.</p>
<p>Assessment of Significance prior to mitigation</p>	<p>Death may occur through collision with turbine blades or as a result of barotrauma. Fatalities may negatively affect local bat populations. Significant effects are not anticipated at the county or national scale.</p> <p>To date, no studies have conclusively linked pre-construction activity surveys to post-construction fatality rates (Hein et al. 2013). However, there is a strong positive correlation between post-construction activity and fatality at wind farms (Kunz et al. 2007, Baerwald and Barclay 2009, Amorim et al. 2012, Korner-Nievergelt et al. 2013).</p> <p>The magnitude of this effect, in respect of local bat populations, in the absence of mitigation is Moderate at the local scale.</p>
<p>Mitigation</p>	<p>In order to reduce the value of the habitat for bat species in the areas surrounding the turbines, a buffer of at least 50m between the tip of the blade and any trees or other tall vegetation that could provide high quality foraging habitat for bat species will be implemented. A full description of the mitigation measures proposed during operational phase are described in section 6.1 of the Bat report. Details of this mitigation and how it is calculated is provided in Appendix 6-2.</p> <p>Blade Feathering</p> <p>On a precautionary basis, and in addition to buffers applied to habitat features, it is proposed that all wind turbines are subject to 'feathering' of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021).</p> <p>Bat Mitigation and Monitoring Plan</p> <p>Full details of the proposed operational bat monitoring programme for the Proposed Development are provided in Section 6.2.1 of the Bat Report (Appendix 6-2)</p> <ul style="list-style-type: none"> • The post-construction surveys will be carried out as per the pre-construction survey effort. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision. • Static monitoring shall take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). • Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NIEA Guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be applied in relation to determining an accurate estimate of collision mortality.

Residual Effect following Mitigation	<ul style="list-style-type: none"> Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s).
Residual Effect following Mitigation	Following the implementation of the monitoring and mitigation described above, there is no potential for significant residual effects on bat species.

6.7.4 Likely Significant Effects During Decommissioning phase

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

The same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase. An outline decommissioning plan is contained in the CEMP, Appendix 4-4 of the EIAR. The CEMP for the project provides the details of the mitigation and best practice that will be employed to avoid any potential for significant residual effects on biodiversity during decommissioning of the Proposed Development. In addition, the measures incorporated into the construction phase, in Section 4.7.11 of this EIAR, including specific mitigation provided in relation to water quality in Chapter 9: ‘Water’, will be implemented during decommissioning.

6.7.5 Effects on Designated Sites

None of the elements of the proposed development are located within the boundaries of any Nationally or European designated sites. There will be no direct effects on any designated site as a result of the construction, operation and decommissioning the wind farm project including the grid connection.

Four nationally designated sites were identified as being within the Likely Zone of Influence and as KERs. These are listed below:

- > Ummerantarry Bog NHA [001570]
- > Inagh Bog NHA [002391]
- > Bellacorick Bog Complex pNHA [001922]
- > Killala Bay/Moy Estuary pNHA [000458]

The two pNHAs are also designated as European Sites and have been assessed as those designations within the Appropriate Assessment Screening Report and NIS, with the relevant conclusions are recorded and referenced in this chapter.

Following a precautionary approach, the construction phase of the proposed development may result in deterioration of peatland habitats in Ummentary Bog NHA and Inagh Bog NHA through increased drainage and the construction and operational phase of the proposed development might also result in the deterioration of water quality in the downstream connected Inagh Bog NHA. Surface water connectivity has been identified between the proposed development and Bellacorick Bog Complex

[001922] and Killala Bay/Moy Estuary [000458] and there is potential for deterioration of water quality during the construction, operational and decommissioning phase.

The potential pathways for effect during the construction phase are blocked via the mitigation outlined in sections 6.7.2 and 6.7.3 above. Following the implication of these mitigation measures, no significant residual effect is expected.

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 development in compliance with Article 6(3) of the Habitats Directive.

As per the aforementioned 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”. This section provides a summary of the key assessment findings with regard to Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

The Screening for Appropriate 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 development, individually or in combination with other plans and projects, would be likely to have a significant effect on the following sites:

- *Bellacorick Bog Complex SAC [001922]*
- *Killala Bay/Moy Estuary SAC [000458]*
- *Killala Bay/Moy Estuary SPA [004036]*

As a result, an Appropriate Assessment is required, and a Natura Impact Statement has been prepared in respect of the proposed development in order to assess whether the proposed development will adversely impact the integrity of these European Sites’.

The findings presented in the NIS are that ‘*in the light of the best scientific knowledge in the field, all aspects of the proposed development which, by itself, or in combination with other plans or projects, which may affect the relevant European Sites have been considered. The NIS contains information which the competent authority, may consider in making its own complete, precise, and definitive findings and conclusions and upon which it is capable of determining that all reasonable scientific doubt has been removed as to the effects of the proposed development on the integrity of the relevant Natura 2000 site*

6.8 Cumulative impact

The proposed development was considered in combination with other plans and projects in the area that could result in cumulative impacts on the Key Ecological Receptors (KERs) identified in Section 6.6.5 of this report, including European Sites, Nationally designated sites. This included a review of online Planning Registers (Mayo County Council and An Bord Pleanála's online planning portal) 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 Development.

6.8.1 Assessment of Plans

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

- > Adopted Mayo County Development Plan 2022 – 2028
- > National Biodiversity Action Plan 2017-2021
- > Draft 4th National Biodiversity Action Plan 2023-2027
- > The Regional Planning Guidelines for the West 2010-2022

The review focused on policies and objectives that relate to designated sites for nature conservation, biodiversity and protected species. Policies and objectives relating to the conservation of peatlands and sustainable land use were also reviewed, particularly where the policies relate to the preservation of surface water quality. An overview of the search results with regard to plans is provided in Table 6-22.

European Sites are considered in the Natura Impact Statement that accompanies this application.

Table 6-22. Plans considered in Cumulative Assessment

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
<p>Adopted Mayo County Development Plan 2022 – 2028</p>	<p><u>Peatlands</u></p> <p>Objective 15: As part of the implementation of Climate Ready Mayo, Climate Adaption Strategy, to develop and implement a Peatland Management Strategy for County Mayo that will: (a) Identify damaged Peatlands in the county and those at risk from climate change and becoming carbon emitters. (b) Initiate conservation and management of Mayo’s peatlands, particularly those sites nominated for designation as Special Areas of Conservation and Natural Heritage Areas, to preserve the habitat and their unique ecosystems, managing flood risk and other environmental benefits.</p> <p>Objective 16: To actively increase public awareness of the importance of peatlands as carbon sinks to combat climate change.</p> <p><u>Biodiversity, Designated and Non-Designated Sites</u></p> <p>Objective 1: To support the protection, conservation, and enhancement of the natural heritage of County Mayo, 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 and Wild Fowl Sanctuaries (and other designated sites including any future designations)</p> <p>Objective 4: To protect and enhance biodiversity and ecological connectivity in County Mayo, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife, where these form part of the ecological network.</p> <p>Objective 6: To protect surface waters, aquatic and wetland habitats and freshwater and water dependent species through the implementation of all appropriate and relevant Directives and transposed legislation and seek to protect and conserve the quality, character, and features of inland waterways by controlling developments close to navigable and non-navigable waterways.</p> <p>Objective 8: To maintain, protect and where possible enhance bogs, fens and turloughs, where appropriate, in County Mayo.</p>	<p>The Development Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites.</p> <p>The proposed development has been designed in order to avoid peatland habitats and the Biodiversity Management Plan includes for the improvement of existing and the creation of new peatland habitat.</p> <p>The proposed development is located outside of any Designated sites, as described in Section 6.5.1.</p> <p>No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>No developments or projects identified within the Development Plan were found to occur in the wider area surrounding the proposed development.</p>

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
<p>Draft 4th National Biodiversity Action Plan 2023-2027</p>	<p>Objective 2 - Meet Urgent Conservation and Restoration Needs</p> <p>Outcome 2A: The protection of existing designated areas and species is strengthened and conservation and restoration within the existing protected area network are enhanced 29</p> <p>Outcome 2B: Biodiversity and ecosystem services in the wider countryside are conserved 32 18 27 Navigation</p> <p>Outcome 2C: All freshwater bodies are of at least ‘Good Ecological Status’ as defined under the EU Water Framework Directive 36</p> <p>Outcome 2D: Genetic diversity of wild and domesticated species is safeguarded 39 Outcome 2E: A National Restoration Plan is in place to meet EU Biodiversity Strategy 2030 nature restoration targets 41</p> <p>Outcome 2F: Biodiversity and ecosystem services in the marine environment are conserved and restored 42</p> <p>Outcome 2G: Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment</p>	<p>There will be no adverse effects on designated sites or biodiversity as a result of the Proposed Development.</p> <p>The Proposed Development will not impact on connectivity within the wider area and will maintain watercourses within and adjacent to the development site in good condition.</p> <p>A detailed management plan to treat invasives species present on site is fully described in the BMEP available in appendix 6-6.</p>
<p>National Biodiversity Action Plan 2017-2021</p>	<p>Objective 1 Mainstream biodiversity into decision-making across all sectors</p> <p>Developments in the area of Green Infrastructure are being initiated at the local and regional level. Green Infrastructure is a strategically planned network of natural and semi natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation.</p> <p>Objective 4 - Conserve and restore biodiversity and ecosystem services in the wider countryside.</p> <p>Target 6.2 - Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.</p>	<p>The Proposed Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites. The proposed development has been designed in order to avoid any potential fragmentation of habitats or commuting corridors.</p> <p>No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified.</p>

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
<p>The Regional Planning Guidelines for the West 2010-2022</p>	<p>EAP13: To support the protection of Natural Heritage Areas, Special Protection Areas, Special Areas of Conservation, Nature Reserves, Ramsar Sites (Wetlands), Wildfowl Sanctuaries, National Parks, Nature Reserves and the biodiversity designated under the Habitats Directive, Birds Directive, Wildlife Act, Flora Protection Order and other designated or future designated sites.</p> <p>EAO18: Support the achievement of favourable conservation status of Annex I habitats, Annex II species, Annex I bird species and other regularly occurring migratory bird species and their habitats in the region.</p>	<p>The proposed development will not result in significant effects on habitat and features of ecological importance.</p> <p>The proposed development has been designed in order to avoid and minimise impacts on sensitive habitats and species.</p> <p>No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified</p>

6.8.2 Assessment of Projects

As described in Section 2.8 of Chapter 2 of the EIAR, relevant projects have been assessed in combination with the Proposed Development and include planning applications in the vicinity of the site, within the zone of influence of all habitats and species considered in this report, and other wind energy applications within the wider area.

For the purposes of this cumulative assessment, all wind farms within the same catchments of the Proposed Development area were considered in further detail and are listed in Table 6-23 below.

Table 6-23: Wind Energy Applications within the same catchments of the Proposed Development

Pl. Ref	Description	Decision
Bellacorick Wind Farm		
20834 (ABP 311157)	10-year permission to develop an electricity service, entailing the laying of approximately 10.4 kilometres of 38kv underground cable from the granted Sheskin wind farm to connect the wind farm to the national grid at the existing Bellacorick 110kv ESB station. the proposed grid connection will be installed along existing private tracks, the public roadway and a short section of private agricultural land	Granted by ABP 31/08/2022 subject to 7 conditions.
Oweninny Wind Farm		
ABP: PA0029	Proposed Oweninny Wind Farm and associated works, Bellacorick,	Granted by ABP 02/06/2016 subject to 20 conditions
ABP: 307261	Section 146B Planning application for amendments to An Bord Pleanála case reference PA0029 for Oweninny Wind Farm	Alter decision - Not a material Alteration (No EIS) (27/07/2020)
ABP: 309375	Pre-App Consultation - Oweninny Wind Farm Phase 3. Between 10 and 20 wind turbines (including tower sections, nacelle, hub, rotor blades) with an approximate capacity of 90 MW and a maximum blade tip height of 200 metres.	Determined it is an SID – 04/04/2022
ABP: 316178	Proposed development of Oweninny Wind Farm Phase 3 consisting of 18 wind turbines.	Decision due by 29/09/2023
Killala Community Wind Farm		
17619	10 Year planning permission for 5 turbine wind farm. Proposed Development will be located in the townlands of Magherabrack, Mullafarry, Tawnaghmore Lower, Meelick and Tawnaghmore Upper, Killala approx. 1.3km south of Killala. development is an updated application to the consented 6 turbine wind farm p09/780. proposal is for a wind energy development comprising 5 electricity generating wind turbines, each with a rotor diameter not exceeding 103.2m a hub height not exceeding 73.5m and a blade tip height of not exceeding 126m. the development will include a meteorological mast not exceed 82m in height, internal underground electrical cabling, a substation building, an external underground grid connection cable and ducting to the existing 110kv Tawnaghmore substation, associated grid substation works, associated site access roads and ancillary site works including upgrades to existing site access, a temporary construction compound and haulage route	Granted by MCC 15/02/2018 subject to 19 conditions

	works. the max output capacity of the wind farm will be up to 18mw and has an intended operation life of 25 years	
19260	25 Year permission for a single electricity generating wind turbine with an overall maximum height of up to 125m. The development will also consist of a turbine hardstand, access track of c.394m, internal cable trench of c.1,775m and ancillary site works. The planning application is accompanied by a Natura Impact Statement	Granted by MCC 15/10/2019 subject to 12 conditions
Dooleg More Single Turbine		
20467	Single wind turbine generator and 20kV grid connection to Bellacorick 110kV substation	Granted by MCC 25/03/2021 subject to 15 conditions
Bunnahowen Wind Farm		
18873	Permission to modify the existing permission, p08/1997, to erect three (3) 1mw turbines, control house and ancillary associated works	Granted by MCC 10/03/2019 subject to 6 conditions
Kilsallagh Wind Farm		
ABP: 312282	Proposed Kilsallagh Wind Farm consisting of 13 wind turbines and ancillary equipment including 110kV substation infrastructure.	Pre-App consultation request lodged 21/12/2021
Sheskin South Wind Farm		
ABP: 315933	Proposed development of 21 no. wind turbines and all associated works.	Lodged on 28 th February 2023
Tirawley Wind Farm		
ABP: 315864	Construction of up to 31 wind turbines (Tirawley Wind Farm), a permanent 110kV substation, 110kV underground cable and grid connection to the existing 110kV substation at Tawnaghmore Co. Mayo.	Pre-App consultation request lodged 21/02/2023
Keerglen Wind Farm		
Not yet lodged	Proposed Keerglen Wind Farm consisting of approximately 14 No. wind turbines and all other associated works.	Project is still in the design process.

Consented ABO Sheskin Wind Farm

ABO Wind Ireland Ltd. lodged a planning application under PI Ref. 15/825 to the Planning Authority on the 21st December 2015 for 8 no. wind turbines with an overall blade tip height of up to 150m and ancillary site development works. Within the lodged application documentation, ABO emphasised the development's proximity to the larger Oweninny Wind Farm and the site's predominantly Tier 1 designation in arguing that ABO Sheskin Wind Farm should be read in conjunction with Oweninny rather than as a separate visually obstructive development. The applicant also emphasised the use of varying turbine heights between the two wind farm in order to compliment the surrounding topography.

The Planning Authority (MCC) did not raise any concerns with regard to potentially significant effects on landscape and visual amenity arising from the Proposed Development nor did they issue any further queries on these matters within the Request for Further Information (RFI) on the project. The RFI (dated 22nd February 2016) comprised 16 no. queries predominantly relating to lodged Natura Impact Statement and its assessment methodology. These issues were adequately resolved by ABO within their RFI response, which included an amended NIS, and have been reviewed by the EIA Project Team in order

to identify any items of relevance in the context of the Sheskin South project. The Planning Authority ultimately granted permission for the development on the 7th December 2016 without appeal proceedings.

ABO lodged a second application on ABO Sheskin Wind Farm (PI Ref. 19/457) to the Planning Authority on the 12th June 2019 for amendments to the extant permission (PI Ref. 15/825), including an increase in the overall maximum height of the turbines from 150m to 176m (turbines 1-3) and from 150m to 165m (turbines 4-8) and increases in height of the permanent met mast from 100m to 120m. Within their assessment of the proposal, the Authority highlights that, while it is reasonable to optimise wind energy infrastructure in Tier 1 and Tier 2 areas, this development should not be detrimental to the visual amenity of the wider area. In this context, the Authority concluded,

“The increased visual impact arising from the increases in turbine heights at 165m and 176m is considered to be relatively indiscernible, and as such, there are no concerns in relation to landscape protection particularly in light of the permitted development on site.”

The Planning Authority granted permission for the development on the 28th January 2020, which was not subject to any subsequent appeal proceedings.

ABO most recently lodged an application to Mayo County Council under PL Ref. 20/834 on the 10th November 2020 in relation to the ABO Sheskin Wind Farm’s proposed national grid connection comprising c. 10.4km of 38 kV underground cable from the consented wind farm to the 110 kV Bellacorick substation. The underground cable route corridor encompasses private track, the public roadway (L52926 and N59) and a s

6.8.3 Existing Habitats and Land Uses

The potential for the proposed development 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.

The windfarm is primarily located in forestry habitats, which generally provide low value habitats for faunal species. In addition, due to the nature of the plantation forestry, this habitat is of low biodiversity value locally. The Proposed Development will result in the loss of 1.3ha of highly degraded peatland habitat (as described in section 6.7.2.2.2). However, with the implementation of the Biodiversity Management and Enhancement Plan there will be a significant increase in the abundance and quality of existing peatland habitats within the EIAR boundary. The windfarm will not contribute to any overall loss of high value habitat, it has been deliberately designed to be located on habitats of low value for faunal species.

6.8.4 Assessment of Cumulative Effects

The residual construction, operational and decommissioning impacts of the proposed development are considered cumulatively with other plans and projects as described in Sections 6.8.1 & 6.8.2 and Sections 2.8 of Chapter 2. Particular focus has been placed on those plans and projects that are in closest proximity to the proposed development and those that could be potentially affected via downstream surface water.

Following the detailed surveys undertaken and impact assessment provided in Section 6.7, it is concluded that there will be no significant residual habitat loss, disturbance, deterioration of water quality etc., associated with the wind farm 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 development has been deliberately designed to minimise the effects on biodiversity through the siting of the wind farm on habitats of low ecological value (conifer plantation). The project also includes a biodiversity management plan, which further minimises / offsets any potential for individual or cumulative negative effects on biodiversity.

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

The proposed development will not result in any significant residual effects on biodiversity and will not contribute to any significant cumulative effect when considered in combination with other plans and projects.

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

6.9 Conclusion

The EIAR Site Boundary is located primarily within a large plantation coniferous forestry (WD4) of varying ages that has been assessed as of low ecological value. Consequently, any potentially significant effects of the project on the Key Ecological Receptors identified in this report have been avoided through their avoidance during the project design or by the implementation of mitigation measures as detailed in Section 6.7 of this chapter; including all references made to mitigation specified in other Chapters and appendices of the EIAR.

The implementation of the Biodiversity Management and Enhancement Plan (as described in appendix 6-5), will result in the restoration of approximately 41ha of peatland habitat through conifer removal and drain blocking will significantly increase the abundance and quality of exiting peatland habitats within the EIAR boundary. The restoration of this area will also provide a connection with the Glenamoy Bog Complex SAC.

The mitigation described in chapter will be implemented in full and it is therefore predicted that there will be no significant individual or cumulative effects on any KERs.