Planning and Environmental Consultants

Appropriate Assessment Screening Report and Natura Impact Statement

Cunlaghfadda Green Energy Project, Co. Mayo



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1. INTRODUCTION

1.1 Background

MKO has been appointed by Cunlaghfadda Green Energy Ltd to provide the information necessary to allow the competent authority to conduct an Appropriate Assessment Screening and Appropriate Assessment of a renewable energy development comprising 7 no. wind turbines, and associated infrastructure at Cunlaghfadda and adjacent townlands, near Claremorris in Co. Mayo, including an on-site 110kV substation and underground cabling connecting to the Castlebar to Cloon 110kV overhead line.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site. Consequently, the project has been subject to the Appropriate Assessment Screening process.

1.2 References to Proposed Project

The Proposed Project, which will be known as the 'Cunlagfadda Green Energy Project', is referenced within this NIS as follows:

- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hardstanding areas, including access tracks, underground cabling, permanent meteorological mast, temporary construction compound, peat and spoil management, biodiversity enhancement, tree felling, site drainage, operational stage signage, turbine delivery route and junction accommodation works, and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Section 2.3.1 below.
- Where the 'Proposed Grid Connection' is referred to, this refers to the proposed 110kV onsite substation, underground 110kV cabling and end masts connecting the proposed 110kV substation to the 110kV Castlebar to Cloon overhead line, access tracks and all ancillary works and apparatus. The Proposed Grid Connection Route is described in detail in Section 2.2.2 below.
- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project (Proposed Wind Farm and Proposed Grid Connection) for the purposes of this NIS and the Environmental Impact Assessment (EIA) in accordance with the EIA Directive. The Proposed Project is described in detail in Section 2.2.3 below.
- Where 'the Site' is referred to, this relates to the primary study area for the NIS, as delineated by the NIS Site Boundary in green as shown on Figure 2-1 of the NIS and encompasses an area of approximately 165 hectares.

1.3 Statement of Authority

This NIS has been prepared by Cuan Feely (B.Sc.), Chandra Walter (B.Sc., M.Sc.) and Katy Beckett (B.A., M.Sc.) of MKO. This report has been reviewed by Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM). Sarah has over ten years' experience in ecological consultancy. She is a skilled ecologist having authored and/reviewed numerous EcIAs, EIAR Biodiversity Chapters and Habitats Directive Assessment Reports for a variety of projects across a range of sectors. She is also an experienced field ecologist with experience in botanical, habitat and faunal surveys.

The baseline terrestrial ecological surveys were conducted by MKO ecologists Amy McDermott (B.Sc.), Caití Farren (B.A.), Chandra Walter (B.Sc.), Ciara Lynn Sheehan (B.Sc.), Deepali Mooloo (M.Sc.), Ellen Tuck (B.Sc.), Fiona Killeen (B.Sc.), Kate O'Donnell (B.Sc., ACIEEM), Katy Beckett (B.A., M.Sc.), Mairead Kavanagh (B.Sc.), Patrick O'Boyle (B.Sc., M.Sc.), Rudraksh Gupta (B.Sc., M.Sc., ACIEEM), Ryan Connors (B.Sc., M.Sc.) and Sarah Mullen (B.Sc., M.Sc., Ph.D., ACIEEM). Aquatic surveys and otter surveys were undertaken by Triturus Environmental Ltd, as outlined in the Aquatic Baseline Report, included as Appendix 3 of this NIS.

With regard to ornithological surveys, the ornithological scope of works and survey methodology was devised by Patrick Manley and is fully compliant with NatureScot guidance (SNH [2017], which was revised in NatureScot [2025a]). Field surveys were undertaken by Bridin Foster, Cian Cahalin, Conor Geoghegan, Fionn O'Donoghue, John Downes, Jonah Gaine, Jack Kennedy, Jennifer Snook, Katie Grice, Louis de Vries, Laura Goherty, Luke Lambert, Louise McDowell, Marcus Hogan, Nessa Lee, Niamh Scanlon, Oisin Cassasin, Peter Capsey, Patrick Joyce, Patrick Manley, Piaras O'Guibin, Susan Doran and Shay Fennelly. All of the aforementioned surveyors are suitably qualified and competent in the field of ornithological and/or ecological surveying as relevant.

The CVs of all surveyors and competent experts from the Ecology Project Team have been included in Appendix 12 of this report.

1.4 Methodology

1.4.1 Appropriate Assessment Process

Stage 1 Screening - The purpose of the screening stage is to determine if the plan or project, individually or in combination with other plans or projects, is likely to have a significant effect on any European Site in light of best scientific knowledge and in view of the European Sites' conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the Competent Authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether Appropriate Assessment of a project is required. Therefore, where significant effects are likely, uncertain or unknown at screening stage, an AA of the project will be required.

Stage 2 Appropriate Assessment - This stage of the process is a focused and detailed examination, analysis and evaluation by the Competent Authority of the implications of the plan or project, either alone or in combination with other plans and projects, on a European Site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted must:

(i) identify, in the light of the best scientific knowledge in the field, all aspects of the proposed project which may, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;

(ii) contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and

(iii) may only include a determination that the proposed project will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of potential adverse effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at

this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three (assessment of alternative) and, if necessary, stage four (IROPI[1]).

1.4.1.1 Guidance and Practice Notes

This Appropriate Assessment Screening Report and Natura Impact Statement has been prepared in accordance with the following guidance and practice notes:

- European Commission (EC) (2021) - Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC;
- EC (2019) - Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC;
- EC (2013) - Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.
- EC (2000) - Communication from the Commission on the precautionary principle;
- Office of the Planning Regulator (2021) - Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.
- NPWS (2021) - Strict Protection of Animal Species: Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken on or on behalf of a Public authority;
- NPWS (2010)- Circular NPW 1/10 & PSSP 2/10 - Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities;
- CIEEM (2018) - Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal v1.3. Chartered Institute of Ecology and Environmental Management;
- DoEHLG (2010) - Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.

1.4.1.2 Determining the Likely Zone of Influence (ZoI)

For the purposes of Appropriate Assessment, the Zone of Influence (ZoI) of a proposed development is considered to be the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site (OPR 2021). As per OPR, this should be established on a case-by-case basis using the Source-Pathway-Receptor model.

The identification of relevant European Sites to be included in this report was based on the identification of the ZoI of the Proposed Project using a Source-Pathway-Receptor model where:

- A **'source'** is defined as the individual element of the proposed works that has the potential to impact on a European Site, its qualifying features, and its conservation objectives;
- A **'pathway'** is defined as the means or route (i.e. land, air, hydrological, hydrogeological pathways, etc.) by which a source can affect the ecological receptor; and
- A **'receptor'** is defined as the SCI of SPAs or the QI of SACs for which conservation objectives have been set for the European Sites being assessed.

This Source-Pathway-Receptor approach focuses on identifying potential impact pathways between the project and European Sites, rather than relying on arbitrary distances.

The ZoI for this project was identified through reviewing the project details, the types of impacts and effects that could arise as a result of the Proposed Project in the absence of mitigation, the distance

between the project and European Sites and connectivity between the Proposed Project and any European Sites, considering the qualifying interests and features of conservation interest of those European Sites.

1.4.1.3 Precautionary Principle

The evaluation of likely significant effects should always be based on the best available scientific evidence. Like all EU environmental legislation, the Habitats Directive is based on the precautionary principle, i.e. that absence of scientific evidence on the significant negative effect of an action cannot be used as justification for approval of this action (EC, 2021).

Per CIEEM (2018), the precautionary principle should be implemented in the scenario:

> *"If sufficient information is not available further survey or additional research may be required. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect should be assumed."*

The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by European Court of Justice case law, and is applied within this Appropriate Assessment Screening Report and Natura Impact Statement.

1.4.1.4 Ex-situ Effects

Where a development may have a potential effect on a population of a QI species where they may occur outside of the SAC, these are known as *ex-situ* effects (NPWS, 2010). These effects can include disturbance, habitat loss or collision risk of bird or bat species associated with an SAC or SPA within foraging range of the development site. The potential for such effects are fully considered within this Appropriate Assessment Screening Report and Natura Impact Statement.

1.4.1.5 Consideration of Mitigation Measures

As outlined within European Commission (2021) guidelines for Appropriate Assessment, as regards the assessment of mitigation measures in implementing the Article 6(3) procedure, the European Court of Justice has ruled that *"in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site"* (Case C-323/17 People over Wind v Coillte).

The Stage 1 Appropriate Assessment Screening stage of this report does not include consideration of any mitigation measures, including project design features or Sustainable Urban Drainage Systems (SUDs).

Within the Stage 2 Natura Impact Statement, the assessment of residual effects on the integrity of European Sites takes into account both mitigation which is inherent to the project design as well as mitigation which has been prescribed for the protection of qualifying features of European Sites on which the potential for adverse effects have been identified.

1.4.2 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the screened-in European Sites within the Likely ZoI of the Proposed Project. Sources of data included the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for European Designated Sites,

- Review of National Parks and Wildlife Service (NPWS) Article 17 reporting and mapping 2025, 2019, 2013 and 2007.
- Review of online web-mappers: NPWS[1], Environmental Protection Agency (EPA)[2], Water Framework Directive (WFD) and Inland Fisheries Ireland (IFI)[3].
- Review of relevant Plans, including the NBAP and the All-Ireland Pollinator Plan 2021-2025.
- Review of the relevant chapters of the Environmental Impact Assessment Report (EIAR) accompanying this planning application.

1.4.3 Ecological Survey Methodologies

1.4.3.1 Multi-disciplinary Ecological Walkover Survey

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).

Multidisciplinary ecological walkover surveys were conducted within the Site between 2023 and 2026 by MKO ecologists on the below listed dates:

- 22nd and 28th of June 2023
- 10th of August 2023
- 20th and 28th of September 2023
- 19th of October 2023
- 7th of December 2023
- 31st of July 2024
- 11th of September 2024
- 23rd of April 2025
- 17th of June 2025
- 7th of July 2025
- 25th of February 2026
- 14th of April 2026

The multi-disciplinary ecological walkover surveys were undertaken in line with TII (2008) best practice guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) and were designed to detect the presence, or likely presence, of a range of protected habitats and species. Peatland surveys were carried out in accordance with methods outlined in Fernandez *et al.* (2014) and Smith and Crowley (2020), while grassland surveys were carried out in accordance with methods outlined in Martin *et al.* (2018). Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2019), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010). During the surveys, the site was searched for species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

Other targeted survey methodologies relevant to habitats and species with potential to be associated with European Sites were undertaken at the Site and are described in the following subsections.

[1] *NPWS Maps and Data [online] Available at: https://www.npws.ie/maps-and-data [Accessed 27/04/2026]*
[2] *EPA Maps [online] Available at: https://gis.epa.ie/EPAMaps/ [Accessed 27/04/2026]*
[3] *IFI Open Data Portal [online] Available at: https://opendata-ifigeo.hub.arcgis.com/ [Accessed 27/04/2026]*

A full outline of all ecological survey methodologies, including species and habitats not subject to this Appropriate Assessment Screening Report and Natura Impact Statement, are outlined within Chapter 6 Biodiversity of the EIAR which accompanies this planning application.

1.4.3.2 Otter Surveys

In the south of the Site, the Meander River flows in a southerly direction along the southern boundary of the Site. Drumady Lough is located adjacent to the eastern boundary of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. Additionally, an unmapped watercourse classified as an Eroding/upland river (FW1) was identified along the proposed Turbine Delivery Route and a small pond was recorded in an area of agricultural grassland within the Site.

Otter surveys were carried out by Triturus Environmental Ltd. at locations on the Meander River, an unnamed tributary of the River Robe, and along the shores of Drumady Lough as part of baseline aquatic surveys on the 3rd and 4th of July 2025, as outlined in the Aquatic Baseline Report, included as Appendix 3 of this NIS. Previous otter surveys were also undertaken as part of aquatic baseline surveys in July and October 2023, and the results of these surveys are used to supplement the findings of the 2025 surveys, where relevant. During the walkover surveys, the pond within the Site and the small unmapped stream along the proposed Turbine Delivery Route were also surveyed for signs of otter, and were found have negligible suitability for otter. The survey locations are outlined in Table 1-1 below.

Surveys were undertaken in line with best practice TII (2008) guidelines. Consideration was also given to TII (2006) *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* and TII (2005) *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.* Notes on the age and location of signs (ITM coordinates) were made, in addition to the quantity and visible constituents of spraint (i.e. remains of fish, crustaceans, molluscs etc.).

1.4.3.3 Fisheries and Aquatic Surveys

Dedicated aquatic baseline surveys were undertaken by Triturus Environmental Ltd on the 3rd and 4th of July 2025. Previous aquatic baseline surveys were also undertaken by Triturus Environmental Surveys Ltd. in July and October 2023, and the results of these surveys are used to supplement the findings of the 2025 surveys, where relevant. All freshwater watercourses and waterbodies, inclusive of rivers, lakes and ponds, which could be affected directly or indirectly by the Proposed Project were considered as part of the current assessment.

A total of n=8 sites were selected for detailed aquatic assessment. These survey sites were located on the Meander River (EPA code: 34M05) which flows along the southern boundary of the Site (EPA code: 34M05), an unnamed tributary of the River Robe (no EPA code) which flows downstream of Drumady Lough to the southeast of the Site (no EPA code), within the north and south basins of Drumady Lough which borders the Site to the east, and at a small pond within the Site. These survey locations are outlined in Table 1-1 below. Survey locations were selected based on a number of factors including proximity to the Site, potential hydrological connectivity, catchment hydrology and also staff access/safety. This is based on knowledge of surveys areas/catchments and examination of desktop information and ortho-photography, with the aim of collating a broad and representative overview of watercourses at the river-scale and sub-catchment-scale.

All aquatic survey locations are shown in Figure 2.1 of the Aquatic Baseline Report, which is included as Appendix 3 of this NIS.

Table 1-1 Locations of 8 no. aquatic survey sites in the vicinity of the Proposed Project

Site no.	Watercourse	EPA code	Location	X (ITM)	Y (ITM)	Distance Downstream of the Site
A1	Meander River	34M05	Cappagh North	528928	777233	150m
A2	Meander River	34M05	Maltpool	528240	775653	1.8km
A3	Meander River	34M05	Oory	526087	775116	4.5km
B1	Unnamed stream	n/a	Clogher Beg	529745	776187	1.5km
B2	Unnamed stream	n/a	Garravlagh	530452	773056	5.0km
P1	Pond	n/a	Cunlaghfadda	529145	777734	Within the Site
L1	Drumady Lough (north basin)	n/a	Drumady	529572	777795	50m from eastern Site boundary
L2	Drumady Lough (south basin)	n/a	Drumady	529752	777224	450m

Survey effort focused on both instream and riparian habitats at each aquatic sampling location. Surveys undertaken at each of the survey sites included a fisheries assessment (electro-fishing and/or fisheries habitat appraisal), white-clawed crayfish survey, macrophyte and aquatic bryophyte survey and (where suitable) biological water quality sampling (Q-sampling) and macro-invertebrate sweep sampling.

In addition, to validate site surveys and to detect potentially cryptically-low populations, composite water samples were collected from the Meander River and the unnamed tributary of the River Robe and analysed for lamprey (*Lampetra* sp.), European eel (*Anguilla anguilla*), freshwater pearl mussel (*Margaritifera margaritifera*), white-clawed crayfish (*Austropotamobius pallipes*) and crayfish plague (*Aphanomyces astaci*).

Full details of the methodology followed for the aquatic surveys as well as details of the locations of survey sites and dates of surveys are provided in the Aquatic Baseline Report, Appendix 3 of this NIS.

1.4.3.4 Bird Surveys

For the purposes of this NIS, 'target species' include Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the likely ZoI. Adopting a precautionary approach, a site-specific scope for ornithological surveys was devised. These were specifically designed to survey for these target species.

1.4.3.4.1 *Survey Methodology*

Field surveys were undertaken during the survey period October 2021 to September 2025, consisting of four breeding seasons (April – September) and four non-breeding seasons (October – March). This survey work forms the core dataset for the assessment of impacts on ornithology. The survey methodologies and effort relevant to European Sites and Special Conservation Interest (SCI) bird species are described below.

In the absence of specific national bird survey guidelines, the ornithological surveys were designed and undertaken in full accordance with the guidance document 'Recommended bird survey methods to inform impact assessment of onshore wind farms' (SNH [2017], which was revised in NatureScot

[2025a]), which is considered best practice in Ireland. The various ornithological surveys undertaken at the Site and hinterland are described in detail below.

Vantage Point Surveys

Vantage point surveys were undertaken in accordance with NatureScot guidance (SNH [2017], which was revised in NatureScot [2025a]) to monitor flight activity within the Site and to a 500m radius of the potential turbine positions as recommended in the NatureScot guidance. Surveys were conducted from two fixed point vantage points with comprehensive coverage of the Site. Due to the change in site layout in April 2023 one vantage point locations was moved 290m south. The vantage point locations were selected by undertaking a viewshed analysis (described below) and confirmed by a reconnaissance visit to ensure that the proposed turbine layout was entirely covered.

Viewsheds were calculated using the Visibility Analysis plugin (Version 1.8) over a raster digital elevation model (DEM) in QGIS (Version 3.28) using a notional layer suspended at 24m (as the minimum swept area was not known when surveys commenced), which is representative of the minimum height considered for the potential collision risk. The lowest swept height of 24m was used for the analysis with the understanding that the actual lowest swept of the candidate turbine would likely be similar to this. Note that while the relevance of being able to view as much of the site to ground level is acknowledged, the NatureScot guidance emphasises the importance of visibility of the 'collision risk volume' when the data is to be used to estimate the risk of collision with turbines by birds. Therefore, the viewshed analysis aims to identify the most suitable locations to site vantage points such that the airspace of the turbine rotor swept area is in view using the fewest possible number of vantage points. The vantage point locations were tested for visibility coverage by creating a point 1.75m in height (to represent the height of the surveyor) on a map using 10m contours terrain data. The relative height of any surrounding landscape features (e.g. trees) and their effects on visibility was also accounted for in the analysis. The software produced a 360° viewshed 24m from ground level up to a 2km radius around the vantage point. This viewshed was then cropped to a 180° arc representing the area visible to the surveyor.

Survey methodology followed SNH (2017, which was revised in NatureScot [2025a]). The surveyor collected data on bird observations and flight activity from the scanning arc of 180° to a 2km radius, as recommended in the NatureScot guidance, at the fixed vantage point locations for two 3-hour watches separated by a minimum 30 minute break (i.e. 6 hours total) per month. Surveys were conducted every month of the survey period, and were scheduled to provide a minimum of 36 hours per winter or breeding season and spread over the full daylight period, including dawn and dusk watches, to coincide with the highest periods of bird activity (Table 1-2).

Table 1-2 Vantage point survey watch duration

Survey Season and Number of Vantage Points (VPs)	Effort per Vantage Point (VP)
Winter Season 2021/2022 (2 VPs)	36 hours per VP
Breeding Season 2022 (2 VPs)	36 hours per VP
Winter Season 2022/2023 (2 VPs)	36 hours per VP
Breeding Season 2023 (2 VPs)	36 hours per VP
Winter Season 2023/2024 (2 VPs)	36 hours per VP
Breeding Season 2024 (2 VPs)	36 hours per VP
Winter Season 2024/2025 (2 VPs)	36 hours per VP

Breeding Season 2025 (2 VPs)	36 hours per VP

Flight activity of target species was mapped and recorded as per defined flight bands which were chosen in relation to the turbine dimensions for the potential turbine model for the site. Bands were split into 0-15m, 15-25m, 25-200m and >200m. All flight activity within height bands 15-25m and 25-200m are within the Potential Collision Height (PCH) with regard to the turbine swept area. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Breeding Walkover Surveys

The methodology was based on O'Brien and Smith (1992) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat. Breeding walkover surveys were undertaken to determine possible, probable or confirmed breeding bird activity within the Site and to a 500m radius, as recommended in NatureScot (2025a) guidance. Breeding walkover surveys were conducted at dawn over four visits during the core breeding season months April to July.

Transect routes were walked across different habitat complexes within the survey area where access allowed. Using binoculars, the surveyor regularly scanned the surroundings of each transect for target species. All target species were mapped and breeding status was assigned following British Trust for Ornithology (BTO) breeding status codes (https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence). In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Winter Walkover Surveys

The methodology follows those described in Bibby *et al.* (2000) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021). Winter walkover surveys were undertaken to record the presence of bird species within the Site to a 500m radius, including areas between vantage point locations, as recommended in NatureScot (2025a) guidance. Winter walkover surveys were conducted in daylight hours over four visits between October and March (i.e. four visits in winter 2021/2022, winter 2022/2023, winter 2023/2024 and winter 2024/2025).

Transect routes were walked across different habitat complexes within the survey area where access allowed. All target species were recorded and mapped. In addition, the presence of any non-target species was recorded to inform the evaluation of supporting habitat.

Waterbird Distribution and Abundance Surveys

Waterbirds include: swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Significant wetlands and waterbodies within 5km of the Site were surveyed for waterbirds during the 2021/2022, 2022/2023, 2023/2024 and 2024/2025 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the wind farm. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of SNH (2017) and follows the recommendations of SNH (2016) based on the foraging range of whooper swan.

Survey methodology follows Gilbert *et al.* (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021). Surveys were undertaken during daylight hours from suitable vantage points at wetlands and waterbodies. All target waterbird species were recorded and mapped.

2. DESCRIPTION OF PROPOSED PROJECT

2.1 Site Location

The Site is located within a rural, agricultural setting in Co. Mayo, approximately 5.3km northwest of the town of Claremorris, and 16km southeast of the town of Castlebar. The nearest Natura 2000 site to the Site, i.e., Special Area of Conservation (SAC) or Special Protection Area (SPA), is the River Moy SAC which is located approximately 2.2km west of the nearest proposed turbine (T1). Elevations within the Site are relatively flat and low-lying, ranging from approximately 60mOD (metres above Ordnance Datum) to 70mOD.

The Proposed Grid Connection includes for underground 110kV electrical cabling from the proposed onsite 110kV substation, in the townland of Cloonbaul, Co. Mayo to connect into the existing Cloon - Castlebar 110kV Overhead Line (OHL) which runs from the northwest to the southeast adjacent to the site in the townland of Cloonbaul, Co. Mayo. The Proposed Grid Connection will facilitate the connection of the Proposed Wind Farm to the national electricity grid. The OHL will be broken with 2 no. new end masts (lattice-type towers) to facilitate the connection to the proposed onsite substation via the underground electricity cabling. The Proposed Grid Connection is located entirely within private land. The nearest European Site to the Proposed Grid Connection is the River Moy SAC, which is located approximately 2.1km west of the Proposed Grid Connection.

To facilitate the transportation of turbine components off the L-55512 and onto the L-1519, minor accommodating works are required along the L-55512 which involves the temporary road widening and wall removal. A similar degree of works will be required on the L-1505, L1506 and L-5531.

Current land-use on the Site is predominantly agricultural pastures and rough grazing, with areas of turbary lands used for private peat cutting and private forestry also present. Current land-use along the Proposed Grid Connection comprises pastures and private land principally used by agriculture. Land-use in the wider landscape comprises a mix of pastoral agriculture and low-density residential. The Turbine Delivery Route also passes through the urban centres of Galway City and Claremorris town.

The existing uses of the Site will continue in conjunction with the Proposed Project.

A figure showing the location of the Proposed Project is provided in Figure 2-1 below.

525000
530000
535000
785000
780000
775000
N
Balla Mart
Lough Aveely
College Woods
Balla
Carrigeen Lough
Lough Nambrackkeagh
Walshpool Lough
Cuilmore Lough
Loona Bog
Needhams Lough
Tawny Lough
Ballinafad Bog
Curryaphreaghaun Lough
Parknauna
Peenoge Lough
Barnacarroll
Mayo Abbey
Lough Frank
Ballyglass
Cool Park
Lough Nanannagh
N17
Claremorris
Ballindine Road
Lough Dean
Taugheen
0
2.5
5 km
Map Legend
EIAR Site Boundary
© Ordnance Survey Ireland. All rights reserved. Licence number CYAL50267517
Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator
SITE LOCATION - NOT TO SCALE
Drawing Title
Site Location
Project Title
Proposed Cunlaghfadda Green Energy Project
Project No.	Drawing No.	Scale
220825	2-1	1:50,000
Drawn By	Checked By	Date
MNR	KB	07/04/2026
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

2.2 Characteristics of the Proposed Project

This section of the NIS describes the Proposed Project and all its component parts. The Proposed Project will be subject to a dual consenting process, with development relating to the Proposed Grid Connection being subject to a planning application under Section 182A of the Planning and Development Act, 2000, as amended. Development relating to the Proposed Wind Farm will be subject to a separate planning application under Section 34 of the Planning and Development Act, 2000, as amended. The planning application for the Proposed Grid Connection will be submitted to An Coimisiún Pleanála (ACP), while the planning application for the Proposed Wind Farm will be submitted to Mayo County Council. This NIS accompanies both applications and assesses both the Proposed Wind Farm and the Proposed Grid Connection.

The development description for the Proposed Wind Farm planning application to Mayo County Council, appears in the public notices as follows:

The development will consist of the provision of the following:

i. 7 no. wind turbines with a top of foundation to blade tip height of 160 metres; a rotor blade diameter of 136 metres; and hub height of 92 metres,1 no. meteorological mast with a height of 92 metres and subsequent decommissioning of the wind turbines and meteorological mast following a thirty five-year operational life from the date of full commissioning of the wind turbines;
ii. Turbine and meteorological mast foundations and associated temporary and permanent hard-standing areas;
iii. All associated underground electrical and communications cabling and subsequent decommissioning of all underground cabling within the site connecting the turbines to a proposed 110kV substation following a thirty five-year operational life from the date of full commissioning of the wind turbines;
iv. 1 no. temporary construction compound;
v. Upgrade and widening of existing internal tracks and provision of new permanent and temporary site access tracks and all associated site drainage;
vi. Upgrade and temporary road widening works along the L15053 and provision of 1 no. passing bay;
vii. 1 no. new temporary site entrance off the L1505 in the townland of Knockroe to accommodate the delivery of abnormal loads and construction phase traffic;
viii. 1 no. new permanent site entrance in the townlands of Cunlaghfadda and Cloonbaul;
ix. 1 no. borrow pit;
x. 10 no. peat and spoil management areas;
xi. 2 no. temporary security cabins;
xii. Tree felling and vegetation removal;
xiii. Biodiversity enhancement areas;
xiv. Site drainage;
xv. Site fencing, gates and signage; and
xvi. All related site works above and below ground and all ancillary development.

The development description for the Proposed Grid Connection planning application to ACP will appear in the public notices is as follows:

The development will consist of the provision of the following:

i. 1 no. 110kV electrical substation compound consisting of 2 no. single storey control buildings with welfare facilities, all associated electrical plant and apparatus, underground cabling, lighting columns, lightning masts, fencing and access gates, signage, 2 no. wastewater holding tanks and 2 no. rainwater harvesting tanks;

ii. The installation of c. 982 metres of 110kV underground cabling, 2 no. new end masts with a height of c. 16 metres and associated hard-standing areas to facilitate the new 'loop-in/loop-out' connection into the existing Castlebar to Cloon 110kV overhead line;
iii. A telecommunications tower with a height of 36 metres and associated foundation, hard-standing area, fencing and access gate;
iv. A temporary construction compound;
v. Provision of new permanent and temporary construction site access tracks;
vi. Tree felling and vegetation removal;
vii. Site drainage; and
viii. All related site works above and below ground and all ancillary development.

This application seeks a ten-year planning permission and a 35-year operational life from the date of commissioning of the entire wind farm.

The Proposed Project layout is illustrated on Figure 2-2. All elements of the Proposed Project are provided in the list above and have been assessed as part of this NIS.

A full description of components relating to the Proposed Wind Farm, the Proposed Grid Connection and the Proposed Project (i.e. both the Proposed Wind Farm and Proposed Grid Connection) are provided in in Chapter 4 'Description of the Proposed Project' of the EIAR submitted as part of this application. These components are summarised in the following subsections.

530000

N

T7
T6
T2
T4
T3
T1
T5

0 0.5 1 km

Map Legend

- EIAR Site Boundary
- Proposed Felling
- Proposed Construction Compound

Proposed Wind Farm

- Proposed Turbines
- Proposed Turbine Hardstands
- Temporary Hardstand Areas
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Proposed Internal Cables
- Proposed Met Mast

Proposed Grid Connection

- Proposed 110kV Substation
- Proposed 100kV Grid Connection Cable Route
- Proposed End Masts

Proposed Habitat Enhancement

- Proposed Woodland Planting
- Proposed Linear Planting and Enhancement
- Proposed Marsh Fritillary Enhancement Areas

Proposed Site Roads

- Proposed Upgrade to Existing Access Tracks
- Proposed New Access Tracks
- Proposed Upgrade to Public Road
- Temporary Construction Tracks
- Temporary Site Entrance
- Temporary Widening
- Passing Bay

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Project Layout

Project Title

Proposed Cunlaghfadda Green Energy Project

Project No.	Drawing No.	Scale
220825	2-2	1:9,000
Drawn By	Checked By	Date
MNR	KB	05/05/2026

MKO

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

530000

2.2.1 Proposed Wind Farm

2.2.1.1 Wind Turbines

The Proposed Wind Farm layout has been optimised using industry standard wind farm design software (WindPro) to maximise the energy yield from the Proposed Wind Farm, while maintaining sufficient distances between the proposed turbines to ensure turbulence and wake effects do not compromise turbine performance. The ITM Grid Reference coordinates of the proposed turbine locations are listed in Table 2-1 below. The final finished top of foundation level of the turbine foundations will be determined by the actual ground conditions at each proposed turbine location and may differ slightly from those levels listed in Table 2-1. This difference will be negligible and will not impact any assessments carried out as part of this NIS.

Table 2-1 Proposed Wind Turbine Locations and Top of Foundation level

Turbine	ITM X	ITM Y	Top of Foundation Levels (metre OD)
1	528306	777860	63m
2	528467	778197	69m
3	528831	777975	59m
4	529101	778181	59m
5	529174	777777	63m
6	528789	778419	60m
7	528327	778643	66m

The proposed wind turbines to be installed on the Site will have the following dimensions:

- Turbine Tip Height of 160 metres;
- Hub Height of 92 metres; and,
- Rotor Diameter of 136 metres.

Modern wind turbines from the main turbine manufacturers have evolved to share a common appearance and other major characteristics. The wind turbines that will be installed on the Site will be conventional three-blade turbines, which will be geared to ensure the rotors of all turbines rotate in the same direction at all times.

For the purposes of this NIS, the above turbine dimensions have been selected and considered in the relevant sections of the NIS. Turbine design parameters have a bearing on the assessment of shadow flicker, noise, visual impact, traffic and transport and ecology (specifically birds), as addressed in this NIS.

2.2.1.2 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground level. The size of the foundation will be dictated by the turbine manufacturer. Different turbine manufacturers use circular turbine foundations with some variation, depending on the requirements of the final turbine supplier, however, a foundation area large enough to accommodate modern turbine

models has been assessed in this NIS adopting a precautionary approach. The turbine foundation transmits any load on the wind turbine into the ground. The maximum horizontal and vertical extent of the turbine foundation will be approximately 25m and 3.5m respectively, which has been assessed in this NIS.

2.2.1.3 Hard Standing Areas

Hard standing areas consisting of levelled and compacted granular fill are required around each turbine base to facilitate access, turbine assembly and turbine erection. All crane hardstand areas will be designed taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The main body of the crane hardstands (i.e. permanent footprint not including the blade fingers, crane pads and turbine foundation) will be constructed in a similar manner to the excavated site roads. The main body of the crane hardstand area will measure approximately 25m x 50m.

The precise sizes, arrangement and positioning of hard standing areas are dictated by turbine manufacturers. The hard-standing area is intended to accommodate a crane during turbine assembly and erection. The layout represents the full extent of the hard standing areas but may be subject to optimisation according to the turbine manufacturer's specific requirements. The proposed hard standing areas for each individual turbine are shown as part of the detailed layout drawings included in Appendix 1 and using the precautionary principle, represent the maximum sizes required.

A temporary construction area has been identified around each of the proposed turbines hardstand areas which include for the provision of crane pads and blade fingers; these areas will be utilised during the construction phase to facilitate all works with the construction of the proposed turbines and associated infrastructure. These temporary construction areas are shown within the planning drawings included as Appendix 1 to this NIS.

2.2.1.4 Assembly Area

Levelled assembly areas will be located on either side of the hard-standing area. These assembly areas are required for offloading turbine blades, tower sections and hub from trucks until they are ready to be lifted into position by cranes and to assist the main crane during turbine assembly. The layout represents the full extent of the assembly areas but may be subject to optimisation according to the turbine manufacturer's specific requirements. The extent of the area required for the assembly areas is shown in the detailed site layout drawings in Appendix 1.

2.2.1.5 Generating Capacity

The exact generating capacity of the installed turbine will be designed to match the wind regime on the Site and will be determined by the selected manufacturer. For the purposes of this NIS, a rated generating capacity of 4.5MW has been chosen to calculate the potential capacity of the proposed 7 no. turbine renewable energy development, which would result in an estimated installed capacity of 31.5 MW. Based on this estimated installed capacity, the Proposed Wind Farm therefore has the potential to produce 96,579 MWh (Megawatt hours) of electricity per year.

The 96,579 MWh of electricity produced by the Proposed Wind Farm would be sufficient to supply approximately 19,542 Irish households with electricity per year, based on the average Irish household using 4.942 MWh of electricity[4] (this latest figure is based on an average of the household energy usage between 2005-2022, as available on the SEAI 'Irelands energy statistics – Residential' online data tool).

[4] *SEAI Energy and Data Insights 'Irelands energy statistics – Residential' online data tool. Available at: https://www.seai.ie/data-and-insights/seai-statistics/residential*

The 2022 Census of Ireland recorded a total of 52,114 occupied households in Co. Mayo. Per annum, based on a capacity factor of 35%, the Proposed Project would therefore produce sufficient electricity for the equivalent of 37% of the households in Co. Mayo.

2.2.1.6 Meteorological Mast

One meteorological (met) mast is proposed as part of the Proposed Wind Farm. The met mast will be equipped with wind monitoring equipment at various heights. The proposed met mast will be located at E528428, N778335 (ITM), as shown in the detailed site layout drawings included as Appendix 1 of this EIAR. The mast will be a free-standing slender lattice structure 92 metres in height. The mast will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast.

2.2.1.7 Temporary Construction Compound

A temporary construction compound measuring approximately 1,875m^2 in area will be located in the southern section of the Site, approximately 130m from the site entrance. The location of the proposed construction compound is shown on the Proposed Project layout drawing in Figure 2-2.

The temporary construction compound will include a bunded refuelling and containment area for the storage of lubricants, oils and site generators etc, and full retention oil interceptor, waste storage area, temporary site offices, staff facilities and car-parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by a permitted waste collector to wastewater treatment plants. There will also be a water supply on site for hygiene purposes, by way of a temporary storage tank.

The temporary construction compound will be removed as part of the post-construction reinstatement works of the Proposed Wind Farm. The concrete foundations of the compound will be left in situ and will be left to revegetate naturally.

2.2.1.8 Temporary Security Cabins

There will be 2 no. temporary security cabins with traffic barriers for the control of traffic into and out of the Site during the construction phase, one of which will be located approximately 281m east of T01 at the internal wind farm access junction, and the second of which will be located approximately 615m north of this, approximately 243m west of T04.

2.2.1.9 Borrow Pit

It is estimated that approx. 54,000m^3 of stone material will be required to construct the Proposed Wind Farm. It is intended to obtain materials (approx. 16,000m^3) for the construction of the Proposed Wind Farm from the proposed on-site borrow pit (with the remaining 38,000m^3 to come from local licenced quarries). The proposed on-site borrow pit is located directly to the southeast of Turbine 1 and measures approximately 5,525m^2 with a volume of 16,000m^3. Please see Appendix 2 of this NIS for further detail.

Access to the borrow pit will be via the temporary construction track. Post-construction, the borrow pit will be backfilled with excavated peat and spoil, with the majority of the material backfilled with non-peat spoil, then reseeded or left to vegetate naturally.

The extraction of material from the borrow pit is a construction phase activity only of the Proposed Wind Farm which will be a temporary operation run over a short period of time. Hardcore materials will be extracted from the borrow pit (and some turbine locations, if necessary), principally by means of

rock breaking. Depending on the hardcore volume, blasting may also be used as a more effective rock extraction method, capable of producing significant volumes of rock in a matter of milliseconds.

2.2.1.10 Turbine Delivery Route

For the purpose of this NIS, the Port of Galway has been selected and assessed to facilitate turbine delivery to the Site. Vehicles delivering large turbine components and other abnormal loads to the Site will depart from Galway Port and travel northwest through Galway City along the R339 and R336 Regional Roads before reaching the N6 National Road at the Bothar na dTreabh/Tuam Road junction. The delivery vehicles will continue west along the N6/M6 Motorway before merging onto the M17 at the M6/M17/M18 intersection through the Rathmorrisy Interchange. From here, the delivery vehicles will continue north on the M17 and N17 Tuam bypass. The delivery vehicles will continue on the N17, travelling through Claremorris town on the L1519 before turning east onto the L1506. The delivery vehicles will travel on the L1506 for approximately 2.5 km before turning north onto the L1505, followed by taking a turn on to the L15053 towards the proposed Site entrance. The proposed route is shown on Figure 4-34.

Works such as road widening are sometimes required along proposed turbine transport routes to accommodate the large turbine components and associated vehicles seeking to access wind farm sites. A swept path analysis was undertaken using Autotrack in order to establish the locations where the wind turbine transporter vehicles will be accommodated, and the locations where some form of remedial measure may be required.

To facilitate the transportation of turbine components off the L-55512 and onto the L-1519, minor accommodating works are required along the L-55512 which involves temporary road widening and wall removal. A similar degree of works will be required on the L-5531, L-1505 and L1506 where temporary road widening, vegetation clearance and extension of an existing culvert along a small stream will be required to provide the necessary clearance of the turbine delivery vehicle. All works are minor and have been assessed as part of this NIS. Once the turbines have been delivered, road widening areas will be reseeded/reinstated.

2.2.2 Proposed Grid Connection

As discussed above in Section 2.2, the Proposed Grid Connection will be subject to a separate planning application under Section 182A of the Planning and Development Act, 2000 (as amended). The components of the Proposed Grid Connection are detailed in the following sections.

2.2.2.1 Onsite 110kV Electrical Substation

It is proposed to construct a 110kV substation within the Site as shown in Figure 2-2. The proposed 110kV substation is located at the northwest of the Site, in the townland of Cloonbaul. The construction and exact layout of electrical equipment in the on-site electricity substation will be to Eirgrid/ESB Networks specifications. Access to the substation will be through internal wind farm access tracks which are accessed from the L-15053 to the south of the Site. Upon decommissioning of the Proposed Wind Farm, the 110kV substation within Cloonbaul townland will remain in situ and form part of the national grid infrastructure.

The footprint of the proposed onsite 110kV substation compound measures approximately 12,405m^2 in area and will include 2 no. control buildings and the electrical substation components necessary to consolidate the electrical energy generated by each wind turbine, and export that electricity from the proposed onsite 110kV substation to the national grid.

2.2.2.2 Wind Farm Control Buildings

Two substation control buildings will be located within the substation compound. The Transmission System Operator (TSO) Control Building will measure approximately 437.5m^2. The Independent Power Producer (IPP) Control Building will measure approximately 2164m^2.

The substation control buildings will include staff welfare facilities for the operational phase of the project. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the Proposed Grid Connection, there will be a very small water requirement for occasional toilet flushing and hand washing and therefore the water requirement of the control buildings does not necessitate a potable source. It is proposed to either harvest rainwater from the roofs of the buildings or, alternatively, install a groundwater well adjacent to the substation in accordance with the Institute of Geologists Ireland, *Guide for Drilling Wells for Private Water Supplies* (IGI, 2007). The well will be flush to the ground and covered with a standard manhole.

It is not proposed to treat wastewater on-site. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed underground storage tank, with all wastewaters being tankered off site by a permitted waste collector to a licenced wastewater treatment plant. The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. Full details of the proposed tank alarm system can be submitted to the Planning Authority in advance of any works commencing on-site. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the substation underground storage tank to a licensed waste water facility.

2.2.2.3 Substation Temporary Construction Compound

The proposed onsite 110kV substation will require its own separate temporary construction compound. This temporary construction compound will measure approximately 2,400m^2 in area and will be located directly adjacent to the 110kV substation to the southwest. This construction compound will include a bunded refuelling and containment area for the storage of lubricants, oils and site generators etc, and full retention oil interceptor, waste storage area, temporary site offices, staff facilities and car-parking areas for staff and visitors. Temporary port-a-loo toilets and toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters being tankered off site by a permitted waste collector to wastewater treatment plants. There will also be a water supply on site for hygiene purposes, by way of a temporary storage tank.

2.2.2.4 Grid Connection Underground Cabling

It is proposed to construct the grid connection underground cable route between the proposed onsite 110kV substation and the existing Cloon - Castlebar 110kV overhead line (OHL). The grid connection underground cabling route will consist of 2 no. underground cables.

This underground cabling route connection is located within private agricultural land and will be c. 982m in length. The OHL will be broken with 2 no. new end masts (lattice-type towers) to facilitate the connection to the proposed onsite substation via the underground electricity cabling route. Once constructed, electricity on the Cloon- Castlebar 110kV OHL will be transmitted through the proposed substation, hence the 'loop-in/loop-out' nature of the proposed 110kVsubstation.

2.2.2.5 End Masts

As detailed above, two proposed end masts (lattice type towers) will be required to connect the on-site 110kV substation to the existing Cloon- Castlebar 110kV OHL. These end masts will be located immediately beneath the existing OHL. The existing OHL conductor will be terminated at these masts

to facilitate a new OHL loop connection following the proposed c.982m underground grid connection route leading to the on-site 110kV substation. 3 existing wooden polesets located underneath the existing Cloon- Castlebar (Pole 103, 104 and 105) will need to be removed post construction to facilitate the new loop-in grid connection.

2.2.3 Proposed Project

Descriptions of components relating to the Proposed Project (i.e. both the Proposed Wind Farm and Proposed Grid Connection) are provided in the following sections.

2.2.3.1 Site Access Tracks

To provide access within the Site between the Proposed Grid Connection and Proposed Wind Farm infrastructure, existing access tracks will need to be upgraded, and new access tracks will need to be constructed.

The Proposed Project makes use of the existing access track network insofar as possible. It is proposed to upgrade approximately 1km of existing site access tracks, and to construct approximately 3.7km of new access tracks as part of the Proposed Project. It is also proposed to upgrade approximately 772m of the existing L15053 public road. As part of the access track network, approximately 615m of temporary construction tracks will be constructed as part of the Proposed Project. These temporary construction tracks will be utilised during the construction phase for the purpose of delivering turbine components and abnormal loads. These tracks will be covered over and reseeded or allowed to naturally revegetate following the construction phase of the Proposed Project. Following that, permanent operational tracks will be used during the operational phase of the Proposed Project. If there is turbine maintenance required during the operational phase that requires the use of any temporary construction tracks, these areas may be reinstated as required. Some temporary construction tracks may also need to be reinstated as part of the decommissioning phase. This decision will be made at the time of decommissioning in line with best practise at the time and will be assessed as part of a decommissioning plan.

The access track construction techniques to be considered are as follows:

- Upgrades of Existing Access Tracks and Public Road (L15053)
- Construction of New Floating Tracks
- Construction of New Excavated Tracks and Temporary Excavated Tracks

In addition to the above, there will be areas of temporary widening along the access track network to facilitate the delivery of turbines and abnormal loads during the construction phase. These temporary widening areas will only remain for the duration of the construction phase and will be reseeded over for the operational phase. As is the case for the temporary access tracks, should these widening areas be required for the operational phase for any maintenance required, these areas will be reinstated as appropriate.

2.2.3.2 Passing Bay

It is proposed to construct a passing bay along the proposed access track network in order to allow construction traffic to safely pass each other while travelling in opposite directions. Areas such as wide junctions and proposed hardstands will also be used as passing bays throughout the construction phase of the Proposed Wind Farm.

2.2.3.3 Biodiversity Management and Enhancement Plan

A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-4 of the EIAR submitted as part of this planning application. This plan has been developed to offset the loss of habitats identified within the Site and further enhance the biodiversity of the Site and its environs. The proposed enhancement measures include the following:

- Replanting and bolstering of treelines and hedgerows
- Planting of native woodland and scrub habitats
- Enhancement of *Molinia* meadow habitat

2.2.3.4 Tree Felling and Vegetation Removal

Tree felling will be required within and around the Proposed Project infrastructure footprint to allow for the construction of the turbine bases, access tracks, underground cabling, and the other ancillary infrastructure. Approximately 0.7 hectares of conifer plantation (WD4) will be felled to accommodate Proposed Project infrastructure. Of this, 0.6 ha relates to the Proposed Wind Farm infrastructure and 0.1 ha relates to the Proposed Grid Connection infrastructure.

Approximately 2.5ha of scrub and mosaics of scrub will be permanently lost to facilitate the Proposed Project. Approximately 1,256 linear metres of hedgerows and treeline will also be permanently removed to facilitate the construction of access tracks and ancillary infrastructure, and to achieve the required bat foraging buffers from the proposed turbines.

The 0.7ha of commercial forestry felling required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. The policy requires that a copy of the planning permission for the Proposed Project be submitted with the felling licence application; therefore, the felling licence cannot be applied for until such time as planning permission is obtained for the Proposed Project.

2.2.3.4.1 *Tree Planting (including forestry, native woodland/scrub and linear treeline/hedgerow)*

In line with the Forest Service's published policy on granting felling licences for wind farm developments, areas cleared of forestry for access tracks, and any other wind farm-related uses will have to be replaced by replanting at an alternative site or sites. The Forest Service policy requires replacement or replanting on a hectare for hectare basis for the felling carried out as part of the Proposed Project.

The identified 0.7ha of commercial forestry that will be permanently felled for the Proposed Project will be replaced or replanted on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the Proposed Project. Replanting is a requirement of the Forestry Act and is primarily a matter for the statutory licensing processes that are under the control of the Forest service. The replacement of the felled forestry as part of the Proposed Project may occur on any lands, within the State benefitting from Forest Service Technical Approval[5] for afforestation, should the Proposed Project receive planning permission. Under the Forestry Regulations 2017, all applications for licences for afforestation require the prior written approval (technical approval) of the Minister for Agriculture, Food and the Marine. Before the Minister can grant approval, he/she must first determine if the project is likely to have significant effects on the environment (for EIA purposes) and shall assess if the

[5] *All proposed forestry developments where the area involved is greater than 0.1 hectare must receive the prior written approval of the Forest Service. The application for approval is known as Pre-Planting Approval – Form 1.*

development, individually or in combination with other plans or projects is likely to have a significant effect on any European site (for Appropriate Assessment purposes).

The Applicant commits to replanting the 0.7ha of conifer plantation, outside the hydrological catchments within which the Site is located. On this basis, it is unlikely that there will be any significant cumulative effect associated with the replanting of 0.7ha of conifer plantation. Therefore, the forestry replanting is not considered further in this NIS. In addition, the Applicant commits to not commencing the Proposed Project until both a felling and afforestation licence(s) is in place and, therefore, this ensures the afforested lands are identified, assessed and licenced appropriately by the relevant consenting authority.

Additionally, approximately 2,500m of linear treeline/hedgerow habitat and approximately 3.5ha of native scrub and woodland habitat will be planted as part of the Proposed Project.

2.2.3.5 Watercourse / Culvert Crossings

The Site is extensively drained by a network of natural watercourses and manmade land drains. The following EPA mapped watercourse flows through the Site:

- Meander River – flows within the southeast of the Site (c.372m southwest of T5) and is hydrologically connected to the River Moy SAC

An unmapped watercourse is also located along the proposed Turbine Delivery Route at the location of the junction of the L1505 and L1506 roads. At this location, in order to accommodate turbine delivery vehicles, accommodation works will be required which include the extension of the existing culvert.

Several field drains within the Site will be crossed by appropriately sized pipe crossings.

All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Project will be suitably sized for the expected peak flows in the relevant drain.

Some culverts may be installed to manage drainage waters from works areas of the Proposed Wind Farm, particularly where the waters have to be taken from one side of an existing track to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base. In all cases, culverts will be oversized to allow mammals to pass through the culvert. Culverts will be constructed as per the methodology detailed in Section 4.8.1.4. All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

2.2.4 Peat and Spoil Management

The construction of the Proposed Project will require the excavation of peat and spoil. The quantities of peat and spoil requiring management on the Site are presented in Section 4.4.4 of the EIAR submitted as part of this planning application.

It is considered that any spoil generated by the proposed infrastructure will be removed and accommodated within the peat and spoil management areas within the Site. Any access track material containing tar will be managed separately and taken to a licensed facility.

Once the required volume of rock has been extracted from the onsite borrow pit, it is intended to reinstate this area with any surplus peat and overburden excavated from the works areas of the Proposed Project.

Further details on construction methodologies, including recommendations and best practice guidelines for the management of peat and spoil in the onsite borrow pit, are detailed in the Peat & Spoil Management Plan included as Appendix 2 of this NIS.

It is proposed to manage any excess overburden generated through construction activities locally within the Site, in identified peat and spoil management areas. The total capacity of the peat and spoil management areas within the Site is approx. 59,400m^3 while the borrow pit has a storage capacity of 27,000m^3 along with approximately 15,500m^3 required for landscaping purposes, providing enough capacity for the total volume of peat and spoil requiring management for the Proposed Project.

The peat and spoil management areas have been selected based on the locations of spoil generation, areas suitable for spoil management and environmentally or ecologically constrained areas, with any sensitive environmental or ecological areas being avoided.

3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1 Hydrological Desk Study

The following sections have been summarised from the hydrological and hydrogeological assessment carried out for Chapter 9 Water of the EIAR that accompanies this planning application, where pertinent in the assessment of potential effects on European Sites.

3.1.1 Regional and Local Hydrology

Regionally, the Site lies at the boundary between 2 no. WFD surface water catchments. The north and south of the Site are mapped in the Moy and Killala Bay Catchment within Hydrometric Area 34. This catchment includes the area drained by the River Moy and all streams entering the tidal water in Killala Bay, between Benwee Head and Lenadoon Point. Meanwhile, the centre of the Site is located in the Corrib Catchment within Hydrometric Area 30. This catchment includes the areas drained by the River Corrib and all stream entering the tidal water between Renmore Point and Nimmo's Pier, Galway.

Within the Corrib Catchment, the Site is mapped in the Robe River sub-catchment (Robe_SC_010) and the Robe_030 WFD river sub-basin. Within this river sub-basin there are no EPA mapped watercourses within the Site. The nearest EPA mapped watercourse to this area of the Site is a small 1st order stream which outfalls from the south of Drumady Lough. Drumady Lough itself is located outside of the Site boundaries, immediately to the east and 240m from the closest turbine (T4). The stream which outfalls from the lake, flows to the south and discharges into the River Rober (EPA Code: 30R01) ~5.6km to the south of the Site. The River Robe flows to the southwest past Hollymount and Ballinrobe before it discharges into Lough Mask ~18.5km to the southwest of the Site.

Within the Moy and Killala Bay Catchment, the Site is mapped in the Castlebar River sub-catchment (Castlebar_SC_020) and 2 no. WFD river sub-basins. The south of the Site is mapped in the Meander_010 WFD river sub-basin whilst the north is mapped in the Tullymore (Mayo)_010 WFD river sub-basin. Within the Meander_010 WFD river sub-basin Lough Nambrackkeagh is situated directly to the south of the Site. The Meander River (EPA Code: 34M05) outflows from Lough Nambrackkeagh, initially flowing to the south before veering to the northwest and discharging into the Manulla River (EPA Code: 34M01) ~5.5km to the northwest of the Site. A small section of the Meander River is located in the southeast of the Site as it flows along the southern boundary of the Site, downstream of Lough Nambrackkeagh, approximately 372m southwest of Turbine 5. The Manulla River continues north and drains into the Castlebar River (EPA Code: 34C01) ~16.6km northwest of the Site. From this point the Castlebar River feeds into the Toormore and Clydagh Rivers respectively, meandering further north (~10km) to discharge into Lough Cullin.

The northern portion of the Site resides within the Tullymore (Mayo)_010 WFD river sub basin. The Meander River flows along the southern boundary of the Site, approximately 372m southwest of Turbine 5. The Tullymore Stream is located ~5km northwest of the Site and flows to the north into the Little Strade River. Inspection of local base maps revel the presence of some hydrological features which drain this section of the Site and flow to the north and discharge into Lough Fark, located ~700m to the north of the Site.

It is noted that the Turbine Delivery Route works will require the extension of a culvert along an existing stream adjacent to the L1506. These works are proposed within the Robe River sub-catchment (Robe_SC_010) and the Robe_030 WFD river sub-basin. This stream does not form part of the EPA blueline database but was recorded during site walkover surveys of the Turbine Delivery Route. This

unmapped stream discharges into the Temp Stream (EPA Code: 30A92) which discharges into the River Robe ~3km to the south of the proposed works location.

3.1.2 Site Drainage

As stated above, the central section of the Site drains towards Drumady Lough situated immediately to the southeast. A mixture of peat and agricultural drainage systems direct drainage towards this lake. The southern section of the Site drains towards the Meander River. This area is predominantly comprised of a peat drainage network that directs surface run off towards Lough Nambrackkeagh. The north of the Site is also drained by a network of manmade drainage features which direct water to the north towards Lough Fark.

In places the natural drainage is further facilitated by a network of manmade drains. The nature of these manmade drains depends on the local land use and comprise of agricultural field drains or forestry drains. Drains are also present in the peat areas where turbary cutting has been taking place.

The forestry plantations within the Site are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the Site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation. Mound drains and ploughed ribbon drains are generally spaced approximately every 15m and 2m respectively. Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations.

3.1.3 EPA Biological Water Quality Monitoring

Biological Q-rating data for EPA monitoring points on the Meander and Robe rivers from 2022 to 2024 are shown in Table 3-1 below. The Q-Rating is a water quality rating system based on both the habitat and the invertebrate community assessment and is divided into status categories ranging from 0-1 (Poor) to 4-5 (Good/High).

Within the Corrib Catchment, the closest EPA monitoring station downstream of the Site is located on the River Robe at a bridge northeast of Hollybrook House. The River Robe achieved a Good Q-status at this station in 2024. Further downstream at Hollymount Bridge the River Robe was assigned a Moderate Q-status in 2024. The Q-status improved further downstream at Atkins Bridge to High Q-status.

Within the Moy and Killala Bay Catchment, the closest EPA monitoring station downstream of the Site for which recent data is available is located on the Meander River at a bridge northwest of Rathnacreeva. The Meander River achieved a High Q-status at this location in 2022. Further downstream the Manulla and Castlebar rivers achieved Good Q-status in recent monitoring rounds. Meanwhile, the Little Strade River downstream of the Site via the Tullymore (Mayo)_010 WFD river sub-basin achieved High Q-status in 2022 at a bridge northwest of Sraheens.

Table 3-1 EPA Water Quality Monitoring Q-Rating Values

Watercourse	Location and Station ID	Year	Easting	Northing	EPA Q-Rating Status
Corrib Catchment					
River Robe	Br E of Hollybrook House (RS30R010310)	2024	128313	272068	4 (Good)
River Robe	Hollymount Bridge (RS30R010400)	2024	125978	268613	3-4 (Moderate)
River Robe	Akit Bridge (RS30R010600)	2024	119458	264943	4-5 (High)

Watercourse	Location and Station ID	Year	Easting	Northing	EPA Q-Rating Status
Moy and Killala Bay Catchment					
Meander River	Br N.N.W. of Rathnacreeva (RS34M050400)	2022	123482	280086	4-5 (High)
Manulla River	Bridge at Ballycarra (RS34M010200)	2022	119965	284278	4 (Good)
Manulla River	Manulla Bridge (RS34M010300)	2022	121300	288600	4 (Good)
Manulla River	Bridge u/s Castlebar River (RS34M010500)	2022	121937	293360	4 (Good)
Castlebar River	Br 1 km W. of Ballyvary (RS34C010400)	2022	123360	294478	4 (Good)
Little (Strade) River	Bridge NW Sraheens (RS34L020300)	2022	127630	291066	4-5 (High)

3.1.4 Hydrogeology

3.1.4.1 Regional Hydrogeology

The Site is mapped to be underlain by 2 no. Groundwater Bodies (GWBs). The north and south of the Site are underlain by the Swinford GWB (IE_WE_G_0033) whilst the central section of the Site is underlain by the Cong Robe GWB (IE_WE_G_0019). The boundaries of these GWBs in the area of the Site is the same as the boundaries of the regional surface water catchments.

The GSI's Initial Characterisation Report for the Cong-Robe GWB (GSI, 2004) states that this GWB occupies the area between Claremorris and Cong. Within the GWB, a surface water catchment has been shown to be bypassed by groundwater flowing beneath surface water channels and across surface water catchment divides. Tracer tests have shown that flow lines exist that do not relate to the expected flow lines inferred from water table maps. A large number of karst features are present, particularly in the southwestern part of the GWB. In general, the degree of interconnection in karstic systems is high and they support regional scale flow systems. The main discharges are to the rivers, large springs, Lough Mask and Lough Corrib. In winter, groundwater discharges to the many turloughs and transmitted via the artificial channels that were installed to alleviate flooding. There is a high degree of interaction between surface water and groundwater.

The GSI's Initial Characterisation Report for the Swinford GWB (GSI, 2004) states that this GWB occupies an area stretching from Knock to Castlebar to Swinford. The aquifer is a Regionally important karstified aquifer. Several karst features are recorded, and these include turloughs, caves and swallow holes but this is thought to only represent a fraction of the existing karst features. The main discharges are to the small springs, streams, rivers and lakes. The stream density is relatively high, probably due to the subsoils overlying the GWB (GSI, 2004).

3.1.4.2 Site Hydrogeology

The Site is typically overlain by peat and mineral soils with small occurrences of made ground. Where present the peat depth is relatively shallow, with an average depth of 1.2m and 91% of peat probes encountering peat depths less than 1. A small number of localised readings recorded peat depths between 3.5 and 6.1m.

The site investigations indicate that the Site is underlain predominantly by peat and low permeability till deposits. These deposits protect the underlying regional bedrock groundwater system, preventing

significant rates of groundwater recharge within the Site. This is supported by observations made during the site walkover surveys whereby a high density of surface water drainage features were recorded on site. Furthermore, no karst features were recorded during walkover surveys, and no significant karst was encountered in the borehole at the proposed borrow pit location.

Therefore, the hydrogeological regime at the Site is characterised by high rates of surface water runoff and low rates of groundwater recharge.

3.1.5 Groundwater vulnerability

The GSI mapped vulnerability rating of the bedrock aquifer at the majority of the Site ranges between "Moderate" to "High" with a small portion mapped as "Low". This reflects the variable soils/subsoils across the Site with the area of peat having low to moderate groundwater vulnerability. The areas of mineral soils have moderate to high groundwater vulnerability.

Meanwhile, a small area of 'Extreme' vulnerability is mapped at the location of the proposed borrow pit. This corresponds with the GSI mapped occurrence of a small area of karstified bedrock outcrop or subcrop in this area. It is important to note that site investigations have revealed the depth to rock as being 10.6mbgl in this area, with the limestone bedrock overlain by a substation thickness of gravels, clays and sands.

The site investigations and walkover surveys indicate that there are low groundwater recharge rates at the Site, with the local soils/subsoils providing protection to the underlying regional groundwater system. Therefore, surface water bodies such as drains and streams/rivers are more vulnerable (to contamination from human activities) than groundwater across much of the Site, although localised areas may have higher rates of groundwater recharge.

3.2 Results of Consultation

MKO undertook a scoping exercise during preparation of this NIS in 2023 and 2026. Table 3-2 below provides a list of the organisations consulted with regard to biodiversity and Appropriate Assessment during the scoping process, notes where scoping responses were received and provides details of the contents of the scoping responses. Responses received in to scoping undertaken in 2026 are included, with additional responses from 2023 included where no response was received in 2026.

Table 3-2 Organisations consulted with regard to biodiversity

Consultee	Date Response Received	Response	Addressed within NIS
An Taisce	N/A	No response received at the time of writing.	N/A
Bat Conservation Ireland	N/A	No response received at the time of writing.	N/A
BirdWatch Ireland	N/A	No response received at the time of writing.	N/A
Butterfly Conservation Ireland	N/A	No response received at the time of writing.	N/A

Consultee	Date Response Received	Response	Addressed within NIS
Department of Agriculture, Food and the Marine	16th of February 2026	› A Felling License must be obtained from this Department before trees are felled or removed. › The factors considered by the Forest Service when assessing applications to fell trees was outlined, including the interaction of these proposed works with the environment locally and more widely, in addition to potential direct and indirect impacts on designated sites and water. Consultation with relevant environmental and planning authorities may be required where specific sensitivities arise (e.g. local authorities, National Parks & Wildlife Service, Inland Fisheries Ireland, and the National Monuments Service). › It was highlighted that where developments are subject to an EIA procedure, Appropriate Assessment procedure or where the proposed development requires the felling and replanting of trees, deforestation for the purposes of conversion to another type of land use, or replacement of broadleaf high forest by conifer species, that there is a requirement inter alia under the EIA Directive for an overall assessment of the effects of the project or the alteration thereof on the environment to be undertaken, including the direct and indirect environmental impact of the project. › Additionally, pursuant to Article 2(3) of the EIA Directive, the Department of Agriculture, Food and the Marine strongly recommends that, notwithstanding the fact that a parallel consent in the form of felling licence may also have to be applied for, any EIAR and/or NIS produced in connection with the application for planning permission to the Local Planning Authority or An Bord Pleanála, should include an assessment of the impact of and measures, as appropriate, to prevent, mitigate or compensate for any significant adverse effects direct or indirect identified on the environment arising from such felling and	As outlined in Section 2.2.3.4 above, the 0.7ha of commercial forestry felling required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments. An overall assessment of the effects of the Proposed Project and associated forestry and tree felling on European Sites has been undertaken within this NIS, including the direct and indirect environmental impacts. Where appropriate, an assessment of the potential impact of and measures to prevent or mitigate any potential for likely significant effects identified on European Sites which may arise from such felling and replanting of trees and deforestation for the purposes of conversion to another type of land use are included in Section 6 of this NIS.

Consultee	Date Response Received	Response	Addressed within NIS
		replanting of trees, deforestation for the purposes of conversion to another type of land use, or replacement of broadleaf high forest by conifer species.	
Department of Climate, Energy and the Environment (Geological Survey Ireland)	5th of March 2026	Geological Survey Ireland is the national earth science agency and is part of the Department of Climate, Energy and the Environment. › It was recommended to use the various data sets available on the Geological Survey Ireland website when conducting the EIAR, SEA, planning and scoping processes for developments, plans and policies. › No issues were raised in relation to European Sites, biodiversity, flora or fauna.	Datasets provided by Geological Survey Ireland have been consulted during the preparation of this NIS, as outlined in Section 3.1 of this report. Further details are provided in Chapter 8 Land, Soils and Geology and Chapter 9 Water of the EIAR which accompanies this planning application. These data have been used to inform the Appropriate Assessment Screening and Natura Impact Statement where appropriate.
Department of Housing, Local Government and Heritage	9th of March 2026	<u>Active raised bog (7110) and Degraded raised bog still capable of regeneration (7120)</u> › The Department notes that some areas of cutover bog are now considered to have potential to correspond to the Annex I habitat Active Raised Bog (7110), therefore the Department recommends that the habitat survey and assessment included in the EIAR uses the preliminary classification and assessment methodology for cutover bogs outlines in the document The Habitats of Cut-over Bog (Smith and Crowley, 2020) where appropriate. › The Department recommends characterising the areas of cut-over bog within the zone of influence of any proposed infrastructure accordingly to help inform the design of any layout and demonstrate the implementation of the mitigation hierarchy as necessary. › Areas of the Annex I habitat Active Raised Bog (7110) should be avoided where possible. If direct impacts on such areas are unavoidable, the effects of those impacts should be correctly characterised in the EIAR, and mitigation provided as necessary.	Detailed assessments have been undertaken to assess the potential for habitats within the Site to conform to Annex I habitats. These include remnant Active raised bog [7110] and Degraded raised bog still capable of regeneration [7120] in line with Fernandez *et al.* (2014), as well as Active raised bog occurring on cutover bog habitats per Smith and Crowley (2020). Species-rich grasslands with the potential to conform to the Annex I habitat *Molinia* meadows [6410] were also assessed in line with Martin *et al.* (2018), a guidance which builds upon and improves the methodologies employed by O'Neill *et al.* (2013). Methodologies for the assessment of Annex I habitats and detailed survey results are provided in Chapter 6 Biodiversity of the EIAR which accompanies this planning application. The habitats within the grasslands and peatlands within the Site are not associated with any European Sites. The results of these surveys were used to inform the design of the Proposed Project and to inform appropriate enhancement measures as necessary. Full details on the ecological impact assessments, including the potential for drainage effects on Annex I habitats

Consultee	Date Response Received	Response	Addressed within NIS
		› The condition assessment for any Annex I Habitats present should also be used to inform any proposed compensation or enhancement measures being proposed as necessary › The Department also recommends that the areas of high bog occurring both within the Site, and in the zone of influence of the Site, are characterised adequately to determine the presence of the Annex I habitats Active Raised Bog (7110) and Degraded Raised Bog still capable of natural regeneration (7120), in line with *Raised Bog Monitoring and Assessment Survey* (Fernandez *et al.,* 2013) › The presence, or absence, of any corresponding Annex I habitats should be established, and their condition assessed as necessary, to help inform the design of the layout and demonstrate the implementation of the mitigation hierarchy as necessary. › The potential for indirect hydrological impacts on both the areas of high bog, and cutover bog, within the Site should be addressed. The proposed turbine bases, roads, and borrow pit, are located in areas of cut-over adjoining areas of high bog. There is potential to cause drainage effects which can indirectly impact on the adjoining areas of both cut-over and high bog and the vegetation communities thereon. Excavations, associated pumping, and the breeching of any impermeable layer may cause changes to the hydraulic gradients within the site which may affect vegetation communities, including those of any Annex I bog habitats that may occur, on either the cut-over and high bog areas. <u>Species-rich grasslands</u> › It was highlighted that areas of species-rich grassland may occur within the Site, and recommended that any such areas are characterised using the Irish Vegetation Classification system.	are included in Section 6 of Chapter 6 Biiversity of the EIAR which accompanies this planning application. As the Site is not located within or adjacent to any European Sites, these assessments are not included within this NIS.

Consultee	Date Response Received	Response	Addressed within NIS
		› Areas corresponding to Annex I habitats should be identified and their condition assessed using the appropriate methodology (O'Neill *et al.,* 2013) to inform the design and implementation of the mitigation hierarchy, and the design of any proposed compensation or enhancement areas as necessary.	
Environmental Protection Agency	N/A	No response received at the time of writing.	N/A
Fáilte Ireland	25th of February 2026	Fáilte Ireland's '*Guidelines for the Treatment of Tourism in an EIA'* was shared, which noted the following in relation to Biodiversity: › Landscapes which are 'unspoiled' can be attractors of tourism. However, the disturbance to ecology must be managed to minimise impacts. › Biodiversity is also a tourism asset and should be protected as such from other development and should be provided for in proposals where possible. › The assessment should also consider current Government policy on nature conservation as outlined in the National Biodiversity Action Plan 2017-2021 (NBAP) (and subsequent iterations (Including draft NBAP recently open for public consultation, to cover 2023 to 2027) which also includes Ireland's vision for biodiversity: 'That biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally.'	The potential for the Proposed Project to result in significant effects on all aspects of Biodiversity have been assessed within Chapter 6 Biodiversity of the EIAR which accompanies this planning application, and the potential for likely significant effects on European Sites is addressed within this report. The latest National Biodiversity Action Plan (2023-2030) has been fully reviewed and compliance of the Proposed Project with this Biodiversity Action Plan is considered within Section 8 of this NIS.
Geological Survey Ireland	5th of March 2026	See above response received from the Department of Climate, Energy and Environment.	See above response received from the Department of Climate, Energy and Environment.
Golden Eagle Trust	N/A	No response received at the time of writing.	N/A

Consultee	Date Response Received	Response	Addressed within NIS
Inland Fisheries Ireland	23rd of June 2023	› The River Robe is a brown trout fishery which feeds Lough Mask, site of Lough Mask SPA (004062) and Lough Carra/Mask Complex SAC (001774). Drumady lake is the source for the Ballynew stream. Ballynew is a trout spawning channel and IFI have a fisheries development project planned for the lower section of it in 2023. The Water Framework Directive has classed the Ballynew stream (Robe-030) as of good ecological status, a status which must be maintained. › The proposed site crosses both the Meander River and Robe River catchments. The Meander River provides salmon and trout spawning and nursery habitat for the wider River Moy system. The Meander River forms part of the River Moy Special Area of Conservation which is designated for the protection of Atlantic salmon, white-clawed crayfish and lamprey species. This catchment has been allocated good ecological status and this status must be protected to comply with the Water Framework Directive. › The EIS should assess the potential impacts the proposed development may have including, damage to the aquatic and associated riparian habitat, pollution of water, changes to hydrology, introduction of non-native species and interference with upstream and downstream movement of aquatic life. The assessment should include all aspects of the development. › All watercourses that will receive drainage from the construction site including the turbines or the access roads must be assessed. IFI request an electrofishing fish survey and invertebrate sampling assessment are carried out. › There must be no spread of invasive species as a result of the proposed development. A survey for the presence of invasive species should be carried out and a management plan put in place where found. › A construction and operational phase water quality and habitat	Detailed baseline aquatic and fisheries assessments were undertaken during the preparation of this NIS and accompanying EIAR. The potential for the Proposed Project to result in significant effects on all downstream watercourses and associated aquatic habitats and species have been assessed within Chapter 6 Biodiversity and Chapter 9 Water of the EIAR which accompanies this planning application, and where there is the potential for likely significant effects on aquatic receptors associated with European Sites, those are also fully addressed within this report. All aspects of the Proposed Project have been considered within this assessment. Mitigation measures for the protection of all downstream watercourses and designated sites are prescribed in Section 9.5 of Chapter 9 Water of the EIAR which accompanies this planning application, and mitigation measures relevant to the protection of downstream European Sites are outlined within Section 6 of this NIS. A water quality monitoring program is detailed in the CEMP, which is included as Appendix 7 of this NIS. Groundwater vulnerability is discussed in Section 3.1.5 of this NIS and Section 9.3.11 of Chapter 9 Water of the EIAR which accompanies this planning application. The design phase of the Proposed Project also included detailed constraints mapping which applied 50m buffers to rivers and streams and 100m buffers to lakes. Where in-stream works are required along the proposed Turbine Delivery Route, these have been fully considered and mitigation measures for the protection of aquatic habitats and species prescribed within Chapter 6 Biodiversity of the EIAR which accompanies this planning application, following best practice guidelines. Due to the presence of the invasive species Japanese knotweed (*Reynoutria japonica*) within the Site, a site-specific

Consultee	Date Response Received	Response	Addressed within NIS
		monitoring programme must be put in place. The monitoring of all surface flows during construction is essential and remote sensing equipment should be considered as a normal precaution and extended into the post construction phase. › Adequately sized aquatic buffer zones must be established along all watercourses. IFI recommends a minimum width of 15 metres from a minor watercourse to low-risk parts of the construction site with larger buffer zones required for more sensitive habitats and higher risk operations e.g., 50m from a turbine. › Groundwater vulnerability ranges from moderate to extreme across the site. The location of turbines and main construction works must avoid high groundwater vulnerability areas. › Watercourse crossings existing on site or along the proposed delivery routes must be assessed to determine if works will be required to facilitate site access and the potential impacts of such works. The locations and design of any proposed new watercourse crossings should be provided. › All instream works or other works which may impact directly on a watercourse should only be carried out during the open season which is from 1st July to 30th of September (so as to avoid impacting on the aquatic habitat during the spawning season.)	Invasive Species Management Plan has been prepared, included as Appendix 11 of this NIS, which outlines measures to prevent the potential spread of this species within the Site or to any potential pathways for spread beyond the Site.
Irish Peatland Conservation Council	N/A	No response received at the time of writing.	N/A
Irish Raptor Study Group	N/A	No response received at the time of writing.	N/A
Irish Red Grouse Association	N/A	No response received at the time of writing.	N/A
Uisce Éireann	10th of March 2026, 22nd of	No issues raised in relation to European Sites, biodiversity, flora or fauna.	N/A

Consultee	Date Response Received	Response	Addressed within NIS
	April 2026		
Irish Wildlife Trust	N/A	No response received at the time of writing.	N/A
Mayo County Council – Environmental Department	N/A	No response received at the time of writing.	N/A
Office of Public Works	29th of April 2026	No issues raised in relation to European Sites, biodiversity, flora or fauna.	N/A
The Heritage Council	N/A	No response received at the time of writing.	N/A
Waterways Ireland	29th of May 2023	No comments were provided on the Proposed Project as the Site is not located within the Zone of Influence of any Waterways Ireland waterways.	N/A

3.3 Results of Baseline Ecological Surveys

3.3.1 Description of Habitats within the Site

The habitat mapping and descriptions presented in this section are informed by multidisciplinary and detailed vegetation surveys of the Site undertaken by MKO in 2023, 2024, 2025 and 2026.

The Site comprises primarily areas of cutover bog and agricultural grassland habitats. Cutover bog habitats dominate the southern sections of the Site, and largely encompass areas of dry, revegetating peatlands with some areas of bare peat also present where turbary activities are ongoing. Areas of species-rich cutover bog and transition mire were identified within some parts of the cutover bog, and are described in detail in the following sections. A small marginal area of remnant uncut raised bog is also present within the west of the Site and extends beyond the Site boundary.

Much of the north of the Site is characterised by improved agricultural grasslands, with small sections of conifer plantation and scrub also present in the northeast. In the southeast of the Site wet grasslands dominate, and vary from species-poor agricultural wet grasslands to species-rich. These habitats are traversed and bordered by a network of stone walls, treelines and hedgerows, with existing roads and tracks present through the centre of the Site.

A total of 23 habitats and mosaic habitats were recorded within the Site and associated works areas including:

- Raised bog (PB1)
- Cutover bog (PB4)
- Transition mire and quaking bog on Cutover bog (PB4/PF3)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Dry meadows and grassy verges / Scrub mosaic (GS4/WS1)
- Wet grassland (GS4)

- Mixed broadleaved/conifer woodland (WD2)
- Mixed conifer woodland (WD3)
- Conifer plantation (WD4)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)
- Scrub on Cutover bog (PB4/WS1)
- Depositing/lowland river (FW2)
- Drainage ditches (FW4)
- Pond (Other)
- Tilled land (BC3)
- Stone walls and other stonework (BL1)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Eroding/upland river (FW1) – Turbine Delivery Route only

The habitats present across the Site are described in the following subsections. Subsequent subsections provide additional location-specific detail for habitats occurring within the Proposed Project footprint, including the Proposed Grid Connection and Turbine Delivery Route.

A high-level overview of the habitats within the Site is provided in the following subsections. Detailed descriptions of each habitat is fully outlined within Chapter 6 Biodiversity of the EIAR which accompanies this planning application.

3.3.1.1 Peatland Habitats

Peatland habitats cover a large part of the Site. Peatland habitat predominantly comprised of cutover bog which has been subject to recent and historical turbary activities. However an area of uncut raised bog was also recorded to the west of the Site with the small marginal area at its southern extent occurring within the Site. The peatland habitats within the Site are summaries below and described in detail in Chapter 6 Biodiversity of the EIAR which accompanies this planning application.

3.3.1.1.1 *Raised bog (PB1)*

In the west of the Site, there is an area of uncut bog classified as Raised bog (PB1). This area of uncut raised bog extends beyond the Site with only a small section of its southern extent located within the Site boundary. The marginal area located within the Site is bordered by a steep facebank approximately 2m in height and man-made drains and is degraded in nature. It is subject to ongoing turbary activity in this section, with areas of cutover bog to the east of the uncut bog being used for the stacking of turf. This area of raised bog is located outside of the Proposed Project footprint, approximately 50m from the permanent hardstand associated with proposed Turbine 1. Temporary (construction phase) hardstand areas are located in closer proximity at approximately 18m distance, and proposed internal cabling is located at approximately 16m distance.

The potential for this area of remnant raised bog to conform to the Annex I habitats Active raised bog [7110] (ARB) and Degraded raised bog still capable of natural regeneration [7120] (DRB) was considered. According to the latest Article 17 report (NPWS, 2025), *"ARB is characterised by the presence of an acrotelm, which is defined as the living, actively growing upper layer of a raised bog, the surface of which is composed mainly of living bog bosses (Sphagnum spp.)".* In addition, as outlined in Smith and Crowley (2020), previous raised bog research in Ireland indicated that ARB, at least in the midlands, generally supports cover of *Sphagnum* greater than 40% (Fernandez Valverde *et al.* 2005, 2012).

The marginal areas of this remnant raised bog, located within the Site, were subject to detailed botanical assessment, the results of which are outlined in Appendix 6-1 of Chapter 6 Biodiversity of the

EIAR which accompanies this planning application. A relevé undertaken approximately 10m from the facebank and 95m from the location of proposed Turbine 1 found ling heather (*Calluna vulgaris*) to be dominant, with a *Sphagnum* cover of approximately 40% and soft to firm ground conditions, however no pools were present and small areas of eroding bare peat were present in the vicinity (Plate 3-1). It is also bordered by a deep drain and facebank along its southern margin (Plate 3-2). This area was found to best align with the *Marginal* raised bog ecotope, per Fernandez *et al.* (2014).

The central areas of this raised bog (Plate 3-3) both within and outside of the Site, were characterised by a high cover of *Sphagnum* species (>40%) and a high water table. These areas were found to best align with the *Sub-central* raised bog ecotope, per Fernandez *et al.* (2014), with areas also having characteristics of *Sub-marginal* ecotopes, therefore representing a hydrological and ecological mosaic influenced by surrounding turbary activities which remain ongoing in some areas. Considering the vegetation communities present, which are fully outlined within Chapter 6 Biodiversity of the EIAR, and the high *Sphagnum* cover and water table, this area of remnant raised bog is considered to have potential to correspond to Annex I ARB [7110] in the central section, with drier areas best corresponding to the Annex I habitat DRB [7120].

A small area (approx. 0.6ha) of uncut, remnant raised bog was identified to the east of the proposed Turbine 3 (Plate 3-4). This area is bordered by a facebank which is approximately 1.5m in height, and a deep drain. This area of raised bog was dry in nature, with approximately 25% *Sphagnum* cover and firm ground conditions. No pools or tussocks were present and the area was surrounded by degraded cutover bog. This area was found to best align with the *Marginal* raised bog ecotope, per Fernandez *et al.* (2014). This area is unlikely to conform to any Annex I raised bog habitats due to the recorded vegetation communities and low *Sphagnum* cover, isolated and highly degraded nature, very small size, and the presence of high facebanks with a lack of drains which could be blocked to facilitate rehabilitation to peat-forming status.

In addition to these areas, a number of small sections of remnant raised bog were identified in the south of the Site, to the east of the existing site access track. These areas are surrounded by cutover bog and drainage ditches, occurring as small uncut remnants throughout the cutover bog. In all areas, the remnant raised bog habitats were found to best align with the *Marginal* raised bog ecotope, per Fernandez *et al.* (2014) due to the presence of soft to firm ground conditions and a lack of obvious hummocks or pools. *Sphagnum* cover exceeded 40% in all relevés, increasing to over 60% in wetter areas. While these remnants are highly fragmented and small in size, considering the vegetation communities present, the high cover and diversity of *Sphagnum* species, relatively soft ground conditions and lack of a high facebank, these areas have the potential to conform to highly degraded areas of Annex I DRB (Plate 3-5).

It should be noted that all uncut raised bog remnants, including the marginal area of the larger complex which occurs within the Site, are located entirely outside of the Proposed Project infrastructure footprint.



Plate 3-1 Margins of the raised bog to the north of proposed Turbine 1, looking south towards the facebank



Plate 3-2 Deep existing drainage ditch and facebank along the margins of the raised bog to the north of proposed Turbine 1



Plate 3-3 Area of Raised bog (PB1) located to the west of the Site. This photo was taken in the centre of the area of remnant raised bog which is located outside of the Site



Plate 3-4 Area of remnant raised bog surrounded by cutover bog, located to the east of proposed Turbine 3.



Plate 3-5 A small area of remnant raised bog surrounded by cutover bog in the south of the Site.

3.3.1.1.2 Cutover bog (PB4)

The majority of the peatland within the Site has been subject to both historical and recent turbary activities and is classified as Cutover bog (PB4) (Plate 3-6). This habitat covers a large area of the Site, primarily in the southern and eastern sections. This habitat was predominantly made up of revegetating, dry cutover bog, with areas of eroding bare peat where turbary activities are ongoing.

The cutover bog habitats on the Site do not correspond to either Active raised bog [7110] (ARB) or Degraded raised bog still capable of natural regeneration [7120] (DRB) in accordance with NPWS Article 17 Reporting for (2025, 2019) and Smith and Crowley (2020). The vast majority of the cutover bog was found to be relatively dry in nature and have either no or low *Sphagnum* cover and did not meet the criteria to be considered ARB as per Smith and Crowley (2020).

Additionally, some areas of cutover bog within the Site have recolonised with secondary heath communities (Plate 3-7). Revegetating cutover bog habitats within the Site do not conform to Annex I or non-Annex I heath habitats as defined by the Irish Wildlife Manual (Perrin *et.al.* 2014) or Smith and Crowley (2020). The vast majority of heath communities which have established on the cutover bog within the Site occur on peat with a depth of >0.5m and none of the good heath indicator species were recorded within these habitats during the field surveys undertaken. Therefore the secondary heath type communities growing on cutover bog within the site do not conform to Annex I heath habitats. They are secondary, cutover raised bog habitats that are located on deep peat and level ground.

Where cutover bog has become recolonised with other habitats such as transition mire, wet grassland and scrub, these habitats are discussed within the relevant sections below.



Plate 3-6 An example of a revegetating Cutover bog (PB4) habitat located at the south of the Site.



Plate 3-7 Secondary heath community recolonising on Cutover bog (PB4) in the east of the Site.

3.3.1.1.3 *Transition mire and quaking bog (PB4/PF3)*

An area classified as transition mire which has developed on an area of cutover bog was recorded in the eastern section of the Site to the northwest of Drumady Lough (Plate 3-8).

An assessment was carried out on this area of transition mire, to assess its affinities to the Annex I habitat Transition mires and quaking bogs [7140]. This habitat conforms to the IVC community FE2A Water horsetail – Bogbean (*Equisetum fluviatile – Menyanthes trifoliata*). According to the IVC synopsis for this community, *"Stands with Carex rostrata or Carex lasiocarpa are like to correspond with EU HD Annex I habitat 7140 Transition mires".* Therefore, this habitat within the Site was considered conform to the Annex I habitat Transition mire and quaking bog [7140] due to the presence of bottle sedge (*Carex rostrata*).



Plate 3-8 An area of Annex I Transition mire and quaking bog [7140] in the east of the Site.

3.3.1.2 Grassland Habitats

Grassland habitats dominate the northern and eastern sections of the Site. These habitats primarily comprise Improved agricultural grasslands (GA1) and Wet grasslands (GS4) used for agricultural purposes, and areas of Dry meadows and grassy verges (GS2) along roadsides and where management is less intensive. A number of areas of species-rich wet grassland within the Site were also found to conform to the Annex I habitat *Molinia* meadows on calcareous, peaty of clayey-silt-laden soils (*Molinion caeruleae*) [6410]. These habitats are summarised below and described in detail in Chapter 6 Biodiversity of the EIAR which accompanies this planning application.

3.3.1.2.1 *Improved agricultural grasslands (GA1)*

The dominant habitat throughout the north and mid region of the Site is Improved agricultural grassland (GA1) (Plate 3-9). These improved agricultural grasslands are generally species-poor

consisting predominantly of perennial rye grass (*Lolium perenne*), Yorkshire-fog (*Holcus lanatus*), white clover (*Trifolium repens*) and creeping buttercup (*Ranunculus repens*).



Plate 3-9 Example of typical sward of Improved agricultural grassland (GA1) within the Site.

3.3.1.2.2 Dry meadows and grassy verges including Dry meadows/Scrub mosaic (GS2, GS2/WS1)

Small areas of Dry meadows and grassy verges (GS2) are present within the Site, at the location of the proposed met mast (Plate 3-10) and to the northwest of Turbine 6. Small areas of grassy verges were also commonly recorded as linear features along existing farm tracks and throughout the Site, however due to the small area of these habitats, these areas have not been mapped in detail.

At the location of the proposed Turbine 1 and proposed borrow pit, dry meadow habitat occurs in a mosaic with Scrub (GS2/WS1) (Plate 3-11), with a scrub component comprising brambles (*Rubus fruticosus* agg.), European gorse (*Ulex europaeus*), rosebay willowherb (*Chamaenerion angustifolium*) and blackthorn (*Prunus spinosa*).



Plate 3-10 Example of Dry meadows and grassy verges located at the location of the proposed met mast.



Plate 3-11 Mosaic of Dry meadows and grassy verges and Scrub (GS2/WS1) at the location of the proposed borrow pit.

3.3.1.2.3 Wet grassland (GS4)

Wet grassland was recorded throughout the Site and varied in nature from relatively species-poor agricultural wet grassland to more species-rich wet grasslands, often in close proximity to cutover habitats.

Many of the areas of wet grassland in the north-west of the Site in the vicinity of Turbines 6 and 7 and to the east of Drumady Lough in the vicinity of the proposed Turbine 5 are primarily used for agriculture and are relatively species-poor, with dominant plant species typically including soft rush (*Juncus effusus*), creeping buttercup (*Ranunculus repens*), broad-leaved dock (*Rumex obtusifolius*), Yorkshire fog (*Holcus lanatus*), common sorrel (*Rumex acetosa*), creeping bent grass (*Agrostis stolonifera*) and perennial rye grass (*Lolium perenne*) (Plate 3-12).

Other areas of wet grassland within the Site were less intensively managed and were characterised by a greater plant species diversity. These included an area of wet grassland to the north-west of Drumady Lough at the location of the proposed Turbine 4, characterised by sweet vernal grass (*Anthoxanthum odoratum*) and purple moor grass (*Molinia caerulea*) and which also supported pockets of wet heath vegetation in places including ling heather (*Calluna vulgaris*), heath-rush (*Juncus squarrosus*), and *Carex* spp. It also includes an area in the south of the Site, comprising wet grassland on a small mound located on and area of Cutover bog (PB4/GS4). This area also had infestations of Japanese knotweed (*Reynoutria japonica*).

Four areas of particularly species-rich wet grassland were identified within the Site. These areas are located outside of the Proposed Project footprint, approximately 70m to the southwest of the proposed onsite substation, approximately 10m to the southeast of the proposed Turbine 6, immediately to the south and east of proposed Turbine 4, and approximately 50m to the north of proposed Turbine 3, immediately to the east of the existing site access track. Annex I habitat assessments were carried out on these areas in line with Irish Wildlife Manual 102 '*The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats'* (Martin *et al.,* 2018) in order to assess their conformity to the Annex I habitat *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]. These habitats were highly diverse (Plate 3-13).

The areas to the southwest of the proposed onsite substation and to the north of proposed Turbine 3 conform to the IVC community GL1D: Purple moor-grass – Tormentil – Creeping bent (*Molinia caerulea – Potentilla erecta – Agrostis stolonifera*) grassland, and the area to the south and east of proposed Turbine 4 conforms to the IVC community GL1C: Purple moor-grass – Devil's-bit scabious (*Molinia caerulea – Succisa pratensis*) grassland. All three areas of wet grassland were found to conform to the Annex I habitat *Molinia* meadows on calcareous, peaty of clayey-silt-laden soils (*Molinion caeruleae*) [6410].

The area of wet grassland located to the southeast of the proposed Turbine 6 was originally surveyed in 2023, following which it was found to conform to Annex I *Molinia* meadow. However, during repeat surveys undertaken in 2025, this area of wet grassland was found to have deteriorated in quality and was characterised by a high cover of tussocks of purple moor grass (*Molinia caerulea*) tussocks which had outcompeted other indicator species. During these surveys the habitat was found to correspond to the IVC community HE4D: Purple moor-grass – Tormentil – Cross-leaved heath (*Molinia caerulea – Potentilla erecta – Erica tetralix*) heath and no longer found to meet the criteria required to be considered Annex I *Molinia* meadow.



Plate 3-12 Example of typical sward of Wet grassland (GS4) within the southeast of the Site.



Plate 3-13 An example of Annex I Molinia meadow located southwest of T5 and within the EIAR boundary.

3.3.1.3 Woodland, Scrub, Treeline and Hedgerow Habitats

A number of woodland and scrub habitats are present within the Site, including Scrub (WS1), Mixed broadleaved/conifer woodland (WD2), Mixed conifer woodland (WD3) and Conifer plantation (WD4). The Site is also traversed by a network of linear Hedgerows (WL1) and Treelines (WL2), primarily along agricultural and wet grassland field boundaries in the north and southeast of the Site. These habitats are each summarised in the following sections and described in detail in Chapter 6 Biodiversity of the EIAR which accompanies this planning application.

3.3.1.3.1 *Scrub (WS1)*

Large areas of scrub and linear sections of scrub are present at various locations throughout the Site including areas where it has colonised cutover bog as well as along field boundaries, drainage ditches, treelines, and at the edges of woodland. Species predominantly comprise European gorse (*Ulex europaeus*), grey willow (*Salix cinerea*), eared willow (*Salix aurita*), downy birch (*Betula pubescens*), bramble (*Rubus fruticosus* agg.), bracken (*Pteridium aquilinum*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and dog rose (*Rosa canina*) (Plate 3-14).

Where scrub was recorded growing on cutover bog habitats, scrub was largely dominated by European gorse (*Ulex europaeus*), with occasional grey willow (*Salix cinerea*), eared willow (*Salix aurita*) and downy birch (*Betula pubescens*) (Plate 3-15). In the northeast of the Site is an area of cutover bog that has recolonised with dry heath communities in association with scrub upon an area of previously-felled conifer plantation (Plate 3-16). Parts of this habitat had recolonised with dense heather, bramble, and tussocks of purple moor grass. Old rotting tree stumps were noted under the tussocks of grass and heath.

Where scrub occurs in a mosaic with dry meadows and grassy verges, this mosaic habitat is described in Section 3.3.1.2.2 above.



Plate 3-14 Example of Scrub (WS1) habitat bordering a wet grassland located to the southwest of Turbine 6.



Plate 3-15 European gorse (Ulex europaeus) dominated Scrub growing on Cutover bog (PB4/WS1)



Plate 3-16 A mosaic of Scrub on Cutover bog (PB4/WS1) that has recolonised on an area of previously-felled conifer plantation in the northeast of the Site.

3.3.1.3.2 Mixed broadleaved/conifer woodland (WD2)

A small area of Mixed broadleaved/conifer woodland (WD2) was identified within the east of the Site, to the north of proposed Turbine 5. This woodland is comprised of immature and semi-mature sitka spruce (*Picea sitchensis*) trees along with ash (*Fraxinus excelsior*), downy birch (*Betula pubescens*) and holly (*Ilex aquifolium*). The understorey within this woodland is comprised mainly of bramble (*Rubus fruticosus*), nettles (*Urtica dioica*), bracken (*Pteridium aquilinum*), Yorkshire fog (*Holcus lanatus*), common hogweed (*Heracleum sphondylium*), herb-Robert (*Geranium robertianum*), short-fruited willowherb (*Epilobium obscurum*), false brome (*Brachypodium sylvaticum*) and European gorse (*Ulex europaeus*) (Plate 3-17).

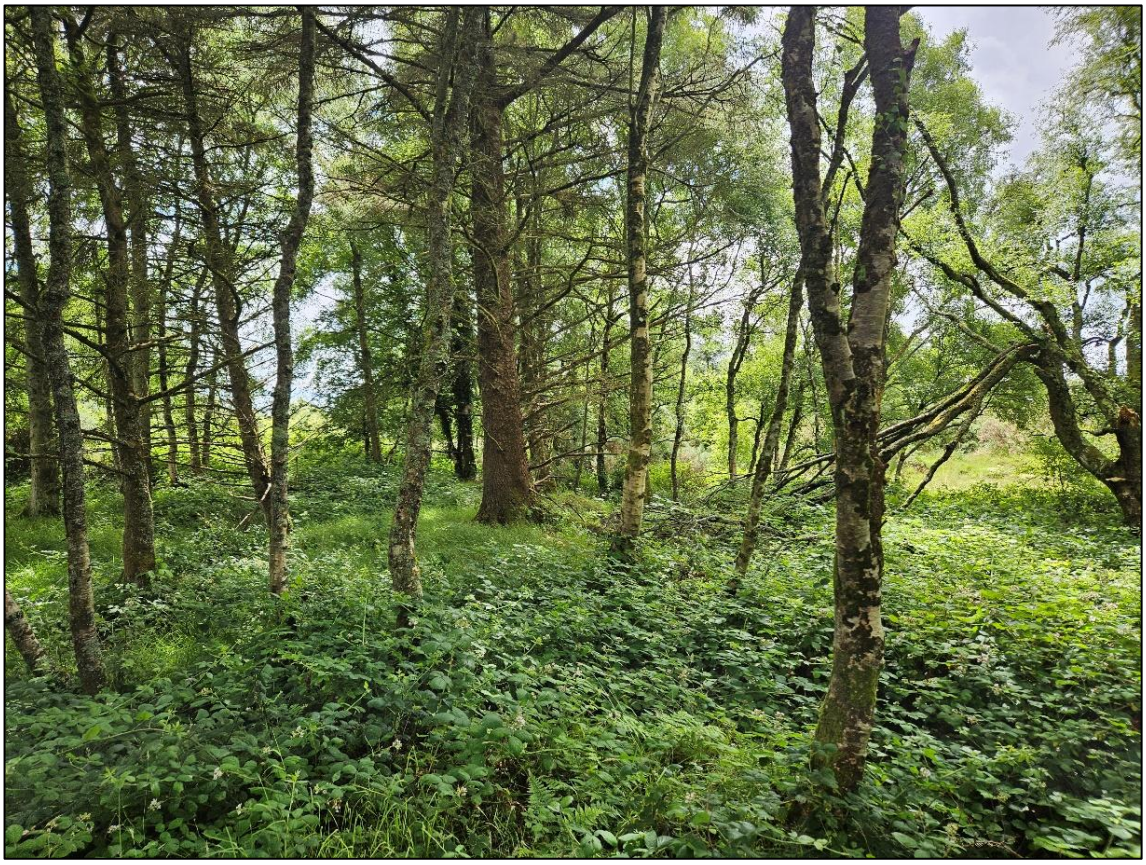


Plate 3-17 Mixed broadleaved/conifer woodland (WD2) located to the north of proposed Turbine 5

3.3.1.3.3 Mixed conifer woodland (WD3)

In the northwestern section of the Site, there is a small area of coniferous trees classified as Mixed conifer woodland (WD3). This is comprised of semi-mature Douglas fir (*Pseudotsuga menziesii*), Scot's pine (*Pinus sylvestris*) and sitka spruce (*Picea sitchensis*) trees.



Plate 3-18 Small area of Mixed conifer woodland (WD3) in the northern section of the Site.

3.3.1.3.4 Conifer plantation (WD4)

An area of Conifer plantation (WD4) was recorded in the northeast of the Site. This habitat is primarily dominated by sitka spruce (*Picea sitchensis*), with an understorey of heath-associated species (Plate 3-19). This habitat occurs as a mosaic with Scrub (WS1), and is bordered to the east and north by a Treeline (WL2).



Plate 3-19 Area of sitka spruce (Picea sitchensis) dominated conifer plantation located in the northeast of the Site.

3.3.1.3.5 Hedgerows (WL1)

Hedgerows (WL1) occur frequently within the Site, primarily in the northern and southeastern areas, delineating agricultural field boundaries. Species recorded in the hedgerow habitats predominantly included hawthorn (*Crataegus monogyna*), European gorse (*Ulex europaeus*), holly (*Ilex aquifolium*), grey willow (*Salix cinerea*), bramble (*Rubus fruticosus*), and common ivy (*Hedera helix*) with an understorey composition reflecting the species within the adjacent habitats (Plate 3-20).



Plate 3-20 Example of a Hedgerow (WL1) in the northern section of the Site.

3.3.1.3.6 Treelines (WL2)

Treelines (WL2) were recorded bordering grasslands, farm tracks, and drainage ditches throughout the Site. Species recorded in the treeline habitats predominantly included hawthorn (*Crataegus monogyna*), ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*) and beech *(Fagus sylvatica)* (Plate 3-21). The understorey primarily comprised of bramble (*Rubus fruticosus*), nettle (*Urtica dioica),* ivy (*Hedera hibernica*), dandelion (*Taraxacum officinale*), rough hawkbit (*Leontodon hispidus)*, creeping thistle (*Cirsium arvense*), foxglove (*Digitalis purpurea*), elder (*Sambucus nigra*) and dog rose (*Rosa canina*).



Plate 3-21 Treeline (WL2) located to the east of the proposed substation location.

3.3.1.4 Watercourses and Waterbodies

The Site is traversed by a network of Drainage ditches (FW4) that flow along the agricultural field boundaries and through cutover bog habitats. Additionally, there is a small pond located in the south of the Site. The Meander River also flows along the southern boundary of the Site. These habitats are described in detail in the following sections.

3.3.1.4.1 *Depositing/lowland rivers (FW2)*

The Meander River flows along the southern boundary of the Site, and is classified as a Depositing/lowland river (FW2) (Plate 3-22). Where it occurs within the Site, this watercourse has been extensively straightened and deepened, resulting in a trapezoidal channel with very poor hydromorphology and no observable flows at the time of survey. The stagnant channel was 1.5-2m wide and 0.05-0.1m deep. Widespread bank slumping resulting in abundant in-stream peat accumulations have caused frequent impoundments. The substrata were comprised exclusively of deep anoxic peat (often >0.5m in depth). The river was heavily vegetated with abundant bulrush (*Typha latifolia*) and common duckweed (*Lemna minor*). Branched bur reed (*Sparganium erectum*) and bottle sedge (*Carex rostrata*) were locally frequent. No aquatic bryophytes were identified, and *Leptothrix* sp. bacterial films were present on the water's surface. Encroachment of terrestrial vegetation was high with frequent willowherb (*Epilobium* spp.), floating sweet grass (*Glyceria fluitans*), meadowsweet (*Filipendula ulmaria*), rushes (*Juncus* spp.) and willow (*Salix* sp.) along the littoral areas and in-stream. This watercourse is bordered by Cutover bog (PB4) and reclaimed agricultural wet grasslands (GS4) with Conifer plantation (WD4) to the south further downstream.



Plate 3-22 A representative image of the uppermost reaches of the Meander River in the vicinity of the Site.

3.3.1.4.2 Drainage ditches (FW4)

There are numerous agricultural and turbary-associated drains classified as Drainage ditches (FW4) throughout the Site. Many of the drainage ditches associated with agricultural grassland areas (Plate 3-23) are heavily vegetated with low water levels and little to no flow.

Drainage ditches were also recorded across the cutover bog habitats within the Site, in some instances being newly dug at the time of survey (Plate 3-24). These drains generally sparsely vegetated.



Plate 3-23 An example of Drainage ditch (FW4) to the northeast of Turbine 7 within an agricultural grassland.



Plate 3-24 A newly-dug Drainage ditch (FW4) within cutover bog habitat in the south of the Site.

3.3.1.4.3 *Pond (Other)*

In the southeast of the Site is a small, very shallow, heavily enriched pond approximately 0.2ha in area. The landlocked pond is a homogeneous 0.1-0.2m deep with a bed comprised exclusively of organic rich soft sediment overlaying compacted gravels. The margins are heavily grazed and poached by cattle (Plate 3-25). Water turbidity was very high at the time of survey given livestock access and a very significant cyanobacterial bloom. This had resulted in a near absence of macrophytes, with only common duckweed (*Lemna minor*) and floating sweet grass (*Glyceria fluitans*) in the sheltered littorals. The southern and eastern part of the small basin was colonised by dense soft rush (*Juncus effusus*) (Plate 3-26).



Plate 3-25 The margins of the pond located in the southeast of the Site, which have been highly poached by cattle.



Plate 3-26 Soft rush (Juncus effusus) dominated vegetation within pond in the southeast of the Site.

3.3.1.5 Artificial and Cultivated Habitats

3.3.1.5.1 *Tilled land (BC3)*

During surveys of the Site undertaken in July 2025, a field in the eastern section of the Site was identified as Tilled land (BC3). During previous surveys of the Site this area had been classified as an agricultural grassland, and had been recently ploughed (Plate 3-27).



Plate 3-27 Area of recently ploughed grassland in the east of the Site, classified as Tilled land (BC3)

3.3.1.5.2 *Spoil and bare ground (ED2)*

Farm tracks are present throughout the Site and are classified as Spoil and bare ground (ED2). These tracks are made up of loose stone chippings and compacted dirt with small numbers of plant species colonising parts of the centre of the track. An area of spoil and bare ground was also recorded in the south of the Site, in an area being used for storage of wood chippings and brash (Plate 3-28) where regular tracking of tractors and machinery have created bare soil.



Plate 3-28 Area of Spoil and bare ground (ED2) in the south of the site being used for storage of wood chippings and brash.

3.3.1.5.3 Recolonising bare ground (ED3)

Where farm tracks within the Site have begun to revegetate, they are classified as Recolonising bare ground (ED3). In the north of the site, due to the presence of limestone chippings along the farm tracks, some areas have also recolonised with a more diverse sward including calcareous species (Plate 3-29). There is also a small area of recolonising bare ground in the southeast of the Site where recent scrub clearance has exposed bare ground and allowed recolonisation of wet grassland species.

At the location of the proposed onsite substation, an area of recolonising bare ground was recorded (Plate 3-30). Species composition is similar to that of the adjacent agricultural and wet grasslands, including common knapweed (*Centaurea nigra*), crested dog's-tail (*Cynosurus cristatus*), red clover (*Trifolium pratense*), rough meadow-grass (*Poa trivialis*), soft rush (*Juncus effusus*), nettles (*Urtica dioica*), creeping buttercup (*Ranunculus repens*) and creeping thistle (*Cirsium arvense*).



Plate 3-29 Farm track classified as Recolonising bare ground (ED3) located in the north of the Site.



Plate 3-30 Recolonising bare ground (ED3) at the location of the proposed onsite substation.

3.3.1.5.4 *Stonewalls and other stonework (BL1)*

Stone walls classified as Stone walls and other stonework (BL1) were recorded in the north of the Site bordering agricultural grassland and wet grassland habitats and also in the south and southeast of the Site within wet grassland habitat. The stone walls located in the north of the Site were well maintained and often in association with short sections of treeline and hedgerow habitats. It was noted that the stonewalls recorded at the south of the Site tended to be less maintained with frequent gaps and destruction due to livestock and trampling.

Additionally, a ruin of an old stone building was identified in the southeast of the Site, northwest of proposed Turbine 2 and was also classified as stone walls and other stonework. This stone building is disused with semi-mature trees and scrub growing from within (Plate 3-32).



Plate 3-31 Stone walls (BL1) delineate several agricultural fields in the northern areas of the Site.



Plate 3-32 Old stone building classified as Stonewalls and other stonework (BL1) located at the southeast of the Site.

3.3.1.5.5 Buildings and artificial surfaces (BL3)

The main site access to the Site is via the L1506 road which is located within the south of the Site. This existing road is comprised of a tarmac road for a short distance before becoming a gravel track (Plate 3-33) and is therefore classified as Buildings and artificial surfaces.



Plate 3-33 Main access road to the Site, classified as Buildings and artificial surfaces (BL3)

3.3.1.6 Habitats Along the Proposed Grid Connection Route

The Proposed Grid Connection will be located entirely within the Site and as such the habitats associated with the footprint of the Proposed Grid Connection have been discussed in detail in the preceding sections. The layout of the Proposed Grid Connection in relation to the onsite habitats is shown in Figure 2-2 above.

In summary, the location of the proposed 110kV onsite substation will be located within an area of Wet grassland (GS4) and Improved agricultural grassland (GA1), with sections of Scrub (WS1), Recolonising bare ground (ED3) and a farm track classified as Spoil and bare ground (ED2). A short section of Hedgerow (WL1) largely comprising brambles (*Rubus fruticosus* agg.) growing over a Stone wall (BL1), with sparse European gorse (*Ules europaeus*) and hawthorn (*Crataegus monogyna*) is also located within the footprint of the proposed onsite substation. A Treeline (WL2) dominated by hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*) and occasional sycamore (*Acer pseudoplatanus*) is also present at the location of the proposed onsite substation. The proposed construction compound for the onsite substation is also located within Wet grassland (GS4) habitat.

The proposed underground cabling route associated with the Proposed Grid Connection extends northwards from the proposed onsite substation along proposed new tracks for approximately 150m to the location of a proposed end mast, all located within Improved agricultural grasslands (GA1) and alongside a section of Treeline (WL2). An additional section of proposed underground cabling associated with the Proposed Grid Connection is located to the south of the proposed onsite substation within proposed new tracks, crossing eastwards through an existing Treeline (WL2) and Stone wall (BL1) into an Improved agricultural grassland (GA1) for approximately 120m. The habitat then transitions into a Wet grassland (GS4) at the eastern side of this agricultural grassland. The proposed cabling route and new track then crosses a Drainage ditch (FW4) along the field boundary and enters a section of Scrub (WS1). The route then turns southeast through this scrub, entering Conifer plantation (WD4) and then an area of Scrub on Cutover bog (PB4/WS1). The second proposed end mast and the

end of this section of proposed new tracks and underground cabling are located within this area of cutover bog.

3.3.1.7 Habitats Along the Turbine Delivery Route

Areas along the Turbine Delivery Route where minor accommodation works will be required were surveyed as part of the multi-disciplinary ecological walkover surveys, comprising mostly of overhanging trees which require pruning, and small areas of land-take due to overrun at junctions along the route.

Trees are proposed for pruning along the L55512 to the north of Claremorris town (Plate 3-34). These are present as a Treeline (WL2) comprised mostly of ash (*Fraxinus excelsior*) with elder (*Sambucus nigra*) and sycamore (*Acer pseudoplatanus*), some of which are densely clad with ivy (*Hedera helix*). The overhanging branches are predominantly those of the ash trees, with some elder and sycamore also overhanging the road.

To the west a small area of land-take due to overrun and road widening is required at the junction of the L55512 and the R320. This area of located at the edge of an Improved agricultural grassland (GA1) that is intensively grazed by sheep (Plate 3-35), with a small amount of soft rush (*Juncus effusus*) encroachment. The field boundary is delineated by a stone wall classified as Stone walls and other stonework (BL1) which will require removal as part of the accommodation works.

To the southeast, further branches of overhanging trees require pruning from the Treelines (WL2) along the L1506. Trees in this area include beech (*Fagus sylvatica*), horse chestnut (*Aesculus hippocastanum*), sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*), with the majority of overhanging branches along this road being those of ash trees.

At the junction of the L1506 and the L1505, further pruning of overhanging Treelines (WL2) is required, including mature sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*). A small area of road widening is also requires at this location, which will involve the removal of a dry stone wall classified as Stone walls and other stonework (BL1) and the edge of an Improved agricultural grassland (GA1).

Additionally at this junction, an unmapped watercourse was identified and classified as an Eroding/upland river (FW1), likely having developed from a roadside drainage ditch. This stream is culverted under the adjacent house entrances and emerges at the roadside. Its bank width is approximately 1m, with a wetted width of approximately 0.8m. Its substrate is comprised of approximately 60% cobbles, 30% boulders and 10% gravel, and has a depth of 30cm at deepest point, but averaging 10-15cm. No turbidity was recorded at the time of survey and the stream had a moderate flow rate.

Due to the high percentage of cobble substrate and low percentage of gravels, the stream was considered to be of negligible potential for spawning fish species, including salmonids and lamprey. The presence of the adjacent culvert which creates a partial barrier to upstream migration, as well as its location adjacent to a roadway and lack of shaded sections also results in a low potential as a salmonid nursery habitat. For these reasons, in addition to an absence of soft sediment, it was considered of negligible potential as a lamprey nursery habitat. The presence of riffles, flows and glides may encourage invertebrates and provide feeding potential for some fish species, including European eel for which potential in this stream was assessed as low. As a holding habitat for salmonids, potential is also considered to be low due to its narrow width and generally shallow depth. The existing culvert in this location will be extended as part of the proposed Turbine Delivery Route.

At the entrance to the Site, additional accommodation works are required at the junction of the L15053. In this area, road widening is required within two fields of Improved agricultural grassland (GA1). Additionally, short sections of Hedgerows (WL1) will be removed in order to facilitate the road widening, as well as associated stone walls classified as Stone walls and other stonework (BL1).



Plate 3-34 An example of overhanging Treelines (WL2) along the proposed Turbine Delivery Route which are proposed for pruning, located along the L55512.



Plate 3-35 An intensively sheep-grazed agricultural grassland within the land-take area at the junction of the L55512 and the R320, along the proposed Turbine Delivery Route.



Plate 3-36 A small stream classified as an Eroding/upland river (FW1) at the junction of the L1506 and the L1505

3.3.1.8 Invasive Plant Species

One invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was recorded during the ecological surveys. Large stands of Japanese knotweed (*Reynoutria japonica*) occur frequently throughout the south of the Site and show significant evidence of spread.

This species was recorded within the footprint of the Proposed Project along the main site access route, where the public road is proposed for upgrade. Japanese knotweed has spread widely through the south of the Site in areas of cutover bog and wet grassland on cutover bog. Several large stands are present, measuring up to 50m in extent (Plate 3-37), with significant numbers of seedlings in the surrounding area (Plate 3-38), possibly spread through local machinery tracking and turbary activities.

During baseline aquatic surveys undertaken by Triturus Environmental Ltd., the aquatic invasive species Canadian pondweed (*Elodea canadensis*) was recorded at sites B2 (unnamed tributary of the River Robe), L1 and L2 (Drumady Lough) (see Figure 2.1, Appendix 3 for survey locations). This species was listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) before its removal in 2015 (S.I. 355 of 2015)[6], and is not listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

[6] *Irish Statute Book [online]. Available at: https://www.irishstatutebook.ie/eli/2015/si/355/made/en/print [Accessed 01/04/2026]*



Plate 3-37 Large stands of Japanese knotweed present within the south of the Site.



Plate 3-38 Significant numbers of seedlings showing the spread of Japanese knotweed through the south of the Site.

3.3.2 Fauna in the Existing Environment

3.3.2.1 Otter

During the aquatic baseline surveys, Triturus Environmental Ltd. surveyed 5 no. riverine and 2 no. lacustrine sites located hydrologically downstream of the Site, including the Meander River along the Site's southern boundary as outlined in Section 1.4.3.2 above. In addition, a pond within the Site was surveyed, however this was found to have negligible suitability for otter. While the Site is crossed by a network of drains, these do not provide optimal habitat for otter.

The following should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 3).

During the aquatic baseline surveys in 2025, otter signs were identified in the following locations:

- Four otter spraint sites were identified on exposed boulders under the road crossing at survey site A2 along the Meander River, approximately 1.8km downstream of the Site. These spraints were found to contain crayfish remains. This survey site is located upstream of the River Moy SAC, for which otter is a Qualifying Interest (QI).
- A regular spraint site containing abundant crayfish remains was also recorded on a mossy wall/revetment approximately 30m upstream of the road bridge at survey location B2 on an unnamed tributary of the River Robe, located approximately 5.0km downstream of the Site. A second spraint site (also with abundant crayfish remains) was located on the cutwater/bridge abutment located immediately downstream of the bridge.
- At survey site L1 in the north of Drumady Lough, located adjacent to the Site, a regular spraint site was recorded on a marginal tussock along the banks.

Otter spraint sites were also recorded at sites A2 on the Meander River and site B2 on the unnamed River Robe tributary in 2023. No breeding (holt) or couch (resting) areas were identified during any of the surveys undertaken in 2023 or 2025.

3.3.2.2 Fisheries and Aquatic Fauna

Full details of results of aquatic surveys undertaken in July 2025 in watercourses hydrologically downstream of the Site are provided in the Aquatic Baseline Report (Appendix 3) and are summarised in this section. The 2025 survey findings form the core dataset for assessment and are supplemented by data from previous aquatic baseline surveys undertaken in 2023, where relevant. The locations of the survey sites (n=8) are outlined in Table 1-1 above, and all survey locations are shown in Figure 2.1 in the Aquatic Baseline Report (Appendix 3).

The following has been summarised from the baseline report.

3.3.2.2.1 Watercourses

The two watercourses surveyed in the vicinity of the Site, the Meander River and the River Robe, were lowland, alkaline channels that had been historically modified (straightened and or deepened). Historical straightening and deepening of watercourses (as has occurred within the Meander River) removes habitat and hydromorphological heterogeneity, encourages siltation of substrata and results in an irreparable reduction in fisheries potential, particularly for salmonids but also lamprey and European eel (O'Grady *et al.,* 2017, O'Grady, 2006 cited in Aquatic Report).

The invasive macrophyte Canadian pondweed (*Elodea canadensis*) was recorded at site B1 on an unnamed River Robe tributary and was abundant in both Drumady Lough basins (L1 & L2). The species is relatively widespread in Ireland and was listed on the Third Schedule of the European

Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) before its removal in 2015 (S.I. 355 of 2015)[6].

Both the Meander River and unnamed Robe tributary were found to support brown trout populations during surveys undertaken in 2025 and 2023. Fish abundances and distributions recorded in 2025 were similar to those recorded in 2023, with greater numbers of brown trout recorded at sites A3 and B2 in 2025 where superior nursery and spawning habitats were located. No Atlantic salmon were recorded, in keeping with data for the wider survey area. Lamprey (*Lampetra* sp.) were recorded in low densities at sites A2 and A3 on the Meander River only (Table 3.1 of the Aquatic Baseline Report), where sub-optimal and limited nursery habitat was present. Suitability for lamprey was typically poor given a paucity of spawning habitat (clean gravels) and organic-rich soft sediment >5cm in depth required for healthy populations (Appendix A of the Aquatic Baseline Report). Despite widespread suitability, no European eel were recorded during electro-fishing surveys undertaken in 2023 or 2025. However, eel were detected in eDNA samples from both the Meander River (A3) and the Robe tributary (B2) (Appendix B of the Aquatic Baseline Report). Drumady Lough north and south basins (sites L1 & L2) were also of high suitability for eel.

In summary, the following fish species were recorded during the aquatic baseline surveys.

- **Brown trout** (*Salmo trutta*) were recorded from 3 no. sites in total (A2, A3 and B2).
- **Lamprey ammocoetes** (*Lampetra* sp.) were recorded from 2 no. sites (A2 and A3).
- **Three-spined stickleback** (*Gasterosteus aculeatus*) were recorded from 4 no. sites (A1, A2, A3 and B1).
- **Pike, minnow and stone loach** (*Esox lucius, Phoxinus phoxinus, Barbatula barbatula*) were also recorded from site B2.

3.3.2.2.2 White-clawed crayfish

White-clawed crayfish were recorded from site A2 and A3 on the Meander River, with crayfish remains also recorded in otter spraint at site A2. White-clawed crayfish were also recorded from sites B1 and B2 on an unnamed River Robe tributary at low and very high densities, respectively. Crayfish distributions recorded in 2023 and 2025 were similar.

3.3.2.2.3 eDNA analysis

In support of site surveys, composite water samples were collected from the Meander River (site A3) and an unnamed tributary of the River Robe (B2) in July 2025 and analysed for lamprey (*Lampetra* sp.), European eel, freshwater pearl mussel (*Margaritifera margaritifera*) and crayfish plague (*Aphanomyces astaci*) environmental DNA (eDNA).

In support of electro-fishing surveys, lamprey eDNA was detected at site A3 on the Meander River. Whilst not recorded during electro-fishing, European eel eDNA was detected at both sites A3 and B2. These results were considered as evidence of the species' presence at and or upstream of the sampling locations.

No crayfish plague or freshwater pearl mussel eDNA was detected at the two riverine sampling sites in 2023 or 2025. These results were considered as evidence of the absence of crayfish plague and freshwater pearl mussel at and or upstream of the sampling locations.

3.3.2.2.4 Kick-sampling and Q-Value

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples taken from 5 no. riverine sites or sweep samples collected at 3 no. lacustrine sites in July 2025.

Site A2 on the Meander River and B2 on the unnamed Robe tributary achieved **Q4 (good status)** water quality in July 2025 and thus met the target good status (≥Q4) requirements of the European Union Environmental Objectives (Surface Waters)(Amendment) Regulations 2019 and the Water Framework Directive (2000/60/EC). Site B1 achieved **Q3-4 (moderate status)**. Thus, this site did not meet the qualifying criteria for good status as set out by Toner *et al.* (2005).

Sites A1 and A3 on the Meander River achieved **Q3 (poor status)**. It should be noted that the rating for site A1 was tentative due to poor flows and an absence of riffle areas for sampling at the time of survey (as per Toner *et al.,* 2005).

Siltation and eutrophication of riverine watercourses was noted during the surveys and is known to be a primary threat to water quality in the survey area, in addition to hydromorphological modifications (EPA, 2018, 2019 cited in Aquatic Baseline Report).

3.3.2.3 Bird Surveys

The potential for likely significant effects on the following SPAs was considered in Table 4-1 below as they were identified as being within the potential Zone of Influence of the Proposed Project.

- Lough Carra SPA
- Lough Mask SPA
- Lough Conn and Lough Cullin SPA

The results of the extensive bird surveys of the Site undertaken by MKO between October 2021 and September 2025 to inform the EIAR for the Proposed Project were reviewed. Results pertaining to species listed as Special Conservation Interest (SCI) species for the above-mentioned SPAs are described below (and in Chapter 7 of the EIAR submitted with this planning application). Species which were recorded within, flying over or within an 500m radius of the Site and which are listed as SCIs for these SPAs are:

- Tufted duck
- Black-headed gull
- Common gull
- Lesser black-backed gull
- Common tern
- Greenland white-fronted goose
- Common scoter

The results of the detailed bird surveys, including all data and associated maps relating to the above species are provided in Chapter 7 Birds of the EIAR that was prepared in support of the planning application and are included in Appendix 4 of this NIS.

The following species are also SCI species of SPAs included in Table 4-1 below but were not recorded during the ornithological surveys undertaken between 2021 and 2025:

- Common tern
- Common scoter

The sections below set summarise the results of the surveys in relation to the relevant SCI species listed above, i.e. tufted duck, black-headed gull, common gull, lesser black-backed gull and Greenland white-fronted goose, under the relevant survey headings.

3.3.2.3.1 *Greenland White-fronted Goose*

Greenland white-fronted goose were observed in the winter season. Raw survey data and maps are provided in Appendix 4. The relevant SPAs for which this species is an SCI are designated for the

wintering population of Greenland white-fronted goose only, and the Conservation Objectives relate solely to maintaining the favourable conservation condition of the wintering population.

Waterbird Distribution and Abundance Surveys

There were four observations of Greenland white-fronted goose during waterbird distribution and abundance surveys. All observations were during November 2021of flocks on water. There was one observation of 2 birds on Drumady Lough, 300m from the nearest infrastructure within the Site. There were three observations of flocks of 2, 13 and 104 birds on Tawny Lough, 4.5km from the Site.

3.3.2.3.2 *Black-headed Gull*

Black-headed gull were observed in the breeding and winter season. Raw survey data and maps are provided in Appendix 4. The relevant SPAs for which this species is an SCI are designated for the breeding population of black-headed gull only, and the Conservation Objectives relate solely to maintaining the favourable conservation condition of the breeding population.

Vantage Point Surveys

There were 10 observations of black-headed gull during vantage point surveys, or on average one every 58 hours of surveying. Nine observations were of birds travelling over the Site during the breeding season, with a single winter record from November 2021. There was one observation of a flock of 21 individuals flying over the Site in June 2022, and all other observations were of individual birds. Eight of the observations were at the potential collision height.

Waterbird Distribution and Abundance Surveys

Black-headed gull were observed on 32 occasions during waterbird distribution and abundance surveys (38% of survey days carried out). Observations were during the winter and spring passage (April, May) seasons. All observations were of between 1 and 36 birds travelling, foraging or resting and were at a distance greater than 2.8km from the Site.

There were six observations of up to 36 individuals at Lehenagh (3.2km northwest of the Site), travelling, resting and swimming. There was one individual observation at Facefield (2.7km northeast of the Site), two observations of two individuals at Shanrawy (4.3km northwest of the Site), two observations of up to 6 individuals at Ballynacarrick (4.3km northeast of the Site) and one individual observation at Clare Lough (5.3km southeast of the Site). There were nine more observations at Tawny Lough (4.4km northeast of the Site) and Balla (5.1km north of the Site) each.

Incidental Observations

There was one incidental observation of an individual black-headed gull travelling during a breeding raptor survey, 1.6km to the southeast of the Site in June 2024.

3.3.2.3.3 *Common Gull*

Common gull were observed in the breeding season. Raw survey data and maps are provided in Appendix 4. The relevant SPAs for which this species is an SCI are designated for the breeding populations of common gull only, and the Conservation Objectives relate solely to maintaining the favourable conservation condition of the breeding populations.

Breeding Walkover Surveys

There was one observation of an individual flying during breeding walkover surveys within the Site. This record was of an individual bird flying over the south of Site in July 2022. There were no other observations of this species during breeding walkover surveys and no breeding activity was recorded within the Site.

Incidental Observations

There were five incidental observations of up to two birds flying during breeding raptor and breeding woodcock surveys, one of which was within the Site.

3.3.2.3.4 *Lesser Black-backed Gull*

Lesser black-backed gull were observed in the winter and breeding seasons. Raw survey data and maps are provided in Appendix 4. The relevant SPAs for which this species is an SCI are designated for the breeding population of lesser black-backed gull only, and the Conservation Objectives relate solely to maintaining the favourable conservation condition of the breeding population.

Vantage Point Surveys

Lesser black-backed gull were observed on 110 occasions during vantage point surveys, or on average once every five surveys. Of these records, 97 were during the breeding season. Observations were of up to 114 birds travelling, foraging and mobbing within, or partially within, the Site. There were two observations of flocks of 6 and 45 birds foraging within the Site. There were 95 observations at the potential collision height.

Winter Walkover Surveys

There were four observations of lesser black-backed gull during winter walkover surveys (on 9% of survey days carried out). Observations were of up to five birds travelling within 500m of the Site.

Breeding Walkover Surveys

There were 19 observations of lesser black-backed gull during breeding walkover surveys (on 63% of survey days carried out). The majority of observations were of between one and four birds travelling over and within 500m of the Site. There were two observations of flocks of 4 and 16 birds foraging, one of which was within the Site. No breeding activity was recorded within the Site.

Waterbird Distribution and Abundance Surveys

Lesser black-backed gull were observed on 27 occasions during waterbird distribution and abundance surveys (on 19% of surveys carried out). Up to 34 individuals were observed flying, foraging and roosting between 80m and 5.7km from the Site. There was one observation of two birds travelling over the Site, 60m from the closest infrastructure, during surveys and there were two observations at Drumady Lough (adjacent to the Site). The majority of the remaining observations were at Balla (5km from the Site), Tawny Lough (4.5km from the Site) and Mayfield Lough (4.3km from the Site).

Incidental Observations

There were 72 incidental observations of lesser black-backed gull during breeding raptor, breeding woodcock, hen harrier roost and vantage point surveys. Of these, 68 were during the breeding season.

Observations were of up to seven birds travelling. Four observations were of birds travelling over the Site.

3.3.2.3.5 *Tufted Duck*

Tufted duck were observed in the winter and passage season. Raw survey data and maps are provided in Appendix 4. The relevant SPAs for which this species is an SCI are designated for the wintering population of tufted duck only, and the Conservation Objectives relate solely to maintaining the favourable conservation condition of the wintering population.

Waterbird Distribution and Abundance Surveys

Tufted duck were observed during waterbird distribution and abundance surveys on 121 occasions, on 50 of 84 survey dates. Observations were of between 1 and 185 birds foraging and roosting. There were seven observations on Drumady Lough, adjacent to the Site, 330m from the closest infrastructure within the Site. The majority of the remaining observations were at Balla (5km from the Site) and Tawny Lough (4.5km from the Site).

4. STAGE 1 – APPROPRIATE ASSESSMENT SCREENING

4.1 Identification of Relevant European Sites

The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the Proposed Project:

- Initially the most up to date GIS spatial datasets for European Designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie).
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the Proposed Project are shown on Figure 4-1. Information on these European Sites according to the Site-Specific Conservation Objectives is provided in Table 4-1.
- In addition to the European Sites considered in Table 4-1 below, SACs and SPAs located further downstream were also considered. The Killala May/Moy Estuary SAC and SPA are located hydrologically downstream of the Site via the Meander River, which flows along the southern boundary of the Site. Additionally, the Lough Corrib SAC and SPA, and the Galway Bay Complex SAC and Inner Galway Bay SPA are located hydrologically downstream of the Site via the River Robe, which flows downstream of Drumady Lough to the east of the Site. However, due to the significant length of the hydrological flowpaths (>55km) and the presence of large intervening waterbodies, there is no potential for likely significant effects on these European Sites and they are not considered for further assessment.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the Site and any European Sites. The hydrological catchments are also shown in Figure 4-1, and groundwater bodies are shown in Figure 4-2.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas* (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between a project and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 4-1 provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any likely direct or indirect effects of the Proposed Project, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the European Site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these European Sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report.
- Where potential pathways for Likely Significant Effect are identified, the European Site is included within the Likely Zone of Influence and further assessment is required within the NIS.

- The potential for the Proposed Project to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 4-1. Plans and projects considered include those that are listed in Appendix 9.

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Lough Conn and Lough Cullin SPA

Moy_SC_060

Moy_SC_040

Moy_SC_030

Newport[Mayo]_SC_010

Castlebar_SC_030

Newport River SAC

Moy_SC_070

Moy & Killala Bay

Moy_SC_050

Urlaur Lakes SAC

CARROWTOOTAGH_SC_010

Lung_SC_010

Castlebar_SC_010

Derrinea Bog SAC

Balla Turlough SAC

Erriff-Clew Bay

Castlebar_SC_020

Glore[Mayo]_SC_010

Upper Shannon

Pollagh_SC_010

Errit Lough SAC

River Moy SAC

Ballinafad SAC

Suck_SC

Aille[Mayo]_SC_010

Upper Shannon

Aghinish_SC_010

Moore Hall (Lough Carra) SAC

Lough Carra SPA

Robe_SC_010

Clare[Galway]_SC_010

Croaghill

Carrowkeel Turlough SAC

Robe_SC_020

Sinking_SC_010

Glensaul_SC_010

Clare[Galway]_SC_020

Lough Mask SPA

Lisnageeragh Bog and Ballinastack Turlough SAC

Ardkill Turlough SAC

Corrib

Lough Carra/Mask Complex SAC

Kilmaine_SC_010

Clare[Galway]_SC_030

0 10 20 km

Cong[Canal]_SC_010

Kildun Souterrain SAC

Black[Shrule]_SC_010

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Map Legend

- EIAR Site Boundary
- Special Protection Areas (SPAs)
- Special Area of Conservation (SACs)
- Hydrological Catchments
- Hydrological SubCatchments

N

SITE LOCATION - NOT TO SCALE

Drawing Title

European Designated Sites with Hydrological Catchments

Project Title

Proposed Cunlaghfadda Green Energy Project

Project No.	Drawing No.	Scale
220825	4-1	1:175,000
Drawn By	Checked By	Date
MNR	KB	09/04/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

500000

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N

Malranny

Lough Conn and Lough Cullin SPA

Newport River SAC

Foxford

Swinford Gravels

Swinford

Beltra Lough South

Waste Facility (W0021-01)

Curlew Mountains

Urlaur Lakes SAC

Newport

Gweestion-Moy Gravels Group 1

errinea Bog SAC

Balla Turlough SAC

Carrick on Shannon

Gweestion-Moy Gravels Group 2

Errit Lough SAC

Suck North

Ballyhean

Ballinafad SAC

River Moy SAC

Aghagower

Killavally

Corrib Gravels

Moore Hall (Lough Carra) SAC

Lough Carra SPA

Clifden Castlebar

Castlerea

Croaghill

Maam-Clonbur

Carrowkeel Turlough SAC

Dunmore

GWDTE-Skealoughan Turlough (SAC000541)

Lisnageeragh B
Ballinastack Tu
SAC

Ardkill Turlough SAC

Dunmore Gravels

Cong-Robe

GWDTE-Shrule Turlough (SAC000525)

Kildun Souterrain SAC

0 10 20 km

500000

550000

Map Legend

- EIAR Site Boundary
- Special Protection Areas (SPAs)
- Special Area of Conservation (SACs)
- Groundwater Catchments

N

SITE LOCATION - NOT TO SCALE

Drawing Title

European Designated Sites with Groundwater Catchments

Project Title

Proposed Cunlaghfadda Green Energy Project

Project No.	Drawing No.	Scale
220825	4-2	1:175,000
Drawn By	Checked By	Date
MNR	KB	09/04/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

Table 4-1 Identification of European Sites within the Likely Zone of Influence

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
Special Areas of Conservation (SAC)			
River Moy SAC [002298] **Distance:** 1.7km **Hydrological Distance:** approx. 4.9km	› [1092] White-clawed crayfish (*Austropotamobius pallipes*) › [1095] Sea lamprey (*Petromyzon marinus*) › [1096] Brook lamprey (*Lampetra planeri*) › [1106] Salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*) › [6510] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)[7] › [7110] Active raised bogs* › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion* › [7230] Alkaline fens	Detailed site-specific conservation objectives for this European Site (Version 1, August 2016[8]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Meander River flows in a southerly direction along the southern boundary of the Site. This river flows into the River Moy SAC approximately 4.9km downstream. There is potential hydrological connectivity between the Proposed Project and the SAC via drainage ditches within the Site which ultimately discharge to the Meander River which has connectivity with the SAC downstream. Both the Site and River Moy SAC are underlain by the Swinford groundwater body (GWB). As per Chapter 9 of the EIAR submitted with this planning application, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally, the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface

[7] *The habitat 'Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]' is not listed as a QI of the River Moy SAC in the Site-Specific Conservation Objectives document (August 2016), however it is listed in the Statutory Instrument for the SAC (S.I. 332 of 2023), and the Site Synopsis document (October 2020), states 'This site is one of the most important in the country for the habitat 'lowland hay meadow'. It is therefore included as a QI in this assessment.*

[8] *NPWS (2016) Conservation Objectives: River Moy SAC 002298. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
	› [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)		water, rather than as groundwater flows, and will enter local rivers, including the Meander River, which has hydrological connectivity downstream with the SAC. Therefore, in the absence of mitigation there is a potential pathway for indirect effect on the SAC during the construction, operational and decommissioning phases of the Proposed Project via deterioration of water quality arising from run-off of pollutants, including silts, hydrocarbons and cementitious materials, to surface waters (including drainage ditches and the Meander River to the south of the Site) potentially affecting the downstream SAC. Given the hydrological regime at the Site, i.e. relatively low groundwater recharge, the main pathway for effect on the SAC is considered to be via surface water pathways. However, taking a highly precautionary approach a potential pathway for indirect effects on the SAC due to deterioration of water quality via groundwater pathways, resulting from percolation of pollutants to groundwater during construction, operation and decommissioning of the Proposed Project was also identified. Additionally, due to the presence of Japanese knotweed (*Reynoutria japonica*) within the Site, an invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), taking a precautionary approach and in the absence of mitigation there is potential for the disturbance of this species during construction activities and spread of this species into

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			the SAC via the onsite drains which have hydrological connectivity with the Meander River, which itself flows into the SAC downstream. Given the distance between the Site and the SAC (4.9km downstream), there is potential for otter utilising the Meander River, which flows along the southern boundary of the Site, to be associated with the River Moy SAC population. Potential for likely significant effects on otter as a result of *ex-situ* disturbance has therefore also been considered. While the Meander River flows along the southern boundary of the Site, it is located over 300m from the nearest proposed infrastructure (proposed Turbine 5), as the Proposed Project has been designed so that all major infrastructure, i.e., turbine bases and hardstands, avoids significant watercourses. Therefore due to the distance between the proposed infrastructure footprint and the nearest suitable habitat for otter, there is no potential for likely significant disturbance effects on otter as a result of the Proposed Project. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on River Moy SAC. Therefore, this European Site is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.**
Balla Turlough SAC [000463] **Distance:** 4.7km	› [3180] Turloughs*	Detailed site-specific conservation objectives for this European Site	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. Both the Site and Balla Turlough SAC are underlain by the Swinford GWB and a Regionally Important Karstic Bedrock Aquifer. As

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
		(Version 1, January 2021[9]) were reviewed as part of this assessment and are available at www.npws.ie.	mentioned above, the hydrological regime at the Site is characterised by high rates of surface water runoff and low rates of groundwater recharge, with water generally leaving the Site as surface water rather than as groundwater flows and entering local watercourses including the Meander River and the Robe River. There is no connectivity between these watercourses and the SAC. Nonetheless, given the distance between the Proposed Project and the SAC and the absence of watercourses between the Site and the SAC to which groundwater could discharge taking a highly precautionary approach, there is considered to be low potential for hydrological connectivity between the Site and the SAC via the karstified bedrock aquifer underlying the area. Therefore, a potential pathway for indirect effect on the SAC via deterioration of groundwater quality arising from percolation of pollutants to groundwater during the construction, operational and decommissioning phases of the Proposed Project was identified. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on Balla Turlough SAC. Therefore, this European Site is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.**
Ballinafad SAC [002081]	› [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*)	Detailed site-specific conservation objectives for this European Site	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site.

[9] *NPWS (2021) Conservation Objectives: Balla Turlough SAC 000463. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
Distance: 6.6km		(Version 1, August 2018[10]) were reviewed as part of this assessment and are available at www.npws.ie.	The Site is located approximately 6.6km from the lesser horseshoe bat (*Rhinolophus hipposideros*) roost within the SAC. The core foraging range of this species is 2.5km (NPWS, 2018[11]), therefore, due to the distance between the Site and the SAC, there is no potential for likely significant effect on this QI species. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Ballinafad SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Towerhill House SAC [002179] **Distance:** 7.2km	› [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*)	Detailed site-specific conservation objectives for this European Site (Version 1, September 2018[12]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Site is located approximately 7.2km from the lesser horseshoe bat roost within the SAC. The core foraging range of this species is 2.5km (NPWS, 2018), therefore, due to the distance between the Site and the SAC, there is no potential for likely significant effect on this QI species.

[10] *NPWS (2018) Conservation Objectives: Ballinafad SAC 002081. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.*
[11] *NPWS (2018) Conservation objectives supporting document – lesser horseshoe bat (Rhinolophus hipposideros) Version 1. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland*
[12] *NPWS (2018) Conservation Objectives: Towerhill House SAC 002179. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Towerhill House SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Carrowkeel Turlough SAC [000475] **Distance:** 7.4km	› [3180] Turloughs	Detailed site-specific conservation objectives for this European Site (Version 1, January 2021[13]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 7.4km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of the EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC.

[13] *NPWS (2021) Conservation Objectives: Carrowkeel Turlough SAC 000475. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Carrowkeel Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Lough Carra/Mask Complex SAC [001774] **Distance:** 8.9km **Hydrological Distance:** approx. 38.7km	› [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*) › [1355] Otter (*Lutra lutra*) › [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) › [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*	Detailed site-specific conservation objectives for this European Site (Version 1, November 2021[14]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. As per Chapter 9 of the EIAR submitted with this planning application, the central section of the Site drains via agricultural and peat drains to Drumady Lough to the east of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. This SAC is located over 38km downstream of the Site via the unnamed stream which outfalls from Drumady Lough and the River Robe. Additionally, the unmapped watercourse which is located along the proposed Turbine Delivery Route also discharges into the unnamed stream approximately 3.5km upstream of the River Robe, with the SAC over 35km downstream of the works location.

[14] *NPWS (2021) Conservation Objectives: Lough Carra/Mask Complex SAC 001774. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
	› [3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › [4030] European dry heaths › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › [6216] Slender Green Feather-moss (*Hamatocaulis vernicosus*) › [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › [7230] Alkaline fens › [8240] Limestone pavements* › [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)*		Given the nature and scale of the Proposed Project and the length of the hydrological flowpath between the Site and this SAC, there is no potential for likely significant effects on the SAC as a result of the Proposed Project. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough Carra/Mask Complex SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Moore Hall (Lough Carra) SAC [000527] **Distance:** 9.6km	› [1303] Lesser horseshoe bat (*Rhinolophus hipposideros*)	Detailed site-specific conservation objectives for this European Site (Version 1, August 2018[15]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. The Site is located approximately 9.6km from the lesser horseshoe bat roost within the SAC. The core foraging range of this species is

[15] *NPWS (2018) Conservation Objectives: Moore Hall (Lough Carra) SAC 000527. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			2.5km (NPWS, 2018), therefore, due to the distance between the Site and the SAC, there is no potential for likely significant effect on this QI species. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Moore Hall (Lough Carra) SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Kilglassan/Caheravoostia Turlough Complex SAC [000504] **Distance:** 11.3km	› [3180] Turloughs	Detailed site-specific conservation objectives for this European Site (Version 1, January 2021[16]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 11.3km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of the EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River

[16] *NPWS (2021) Conservation Objectives: Kilglassan/Caheravoostia Turlough Complex SAC 000504. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Kilglassan/Cahervoostia Turlough Complex SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Greaghans Turlough SAC [000503] **Distance:** 13.8km	› [3180] Turloughs	Detailed site-specific conservation objectives for this European Site (Version 1, January 2021[17]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 13.8km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of the EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff

[17] *NPWS (2021) Conservation Objectives: Greaghans Turlough SAC 000503. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Greaghans Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Ardkill Turlough SAC [000461] **Distance:** 14.1km	› [3180] Turloughs	Detailed site-specific conservation objectives for this European Site (Version 1, December 2020[18]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. This SAC is located approximately 14.1km to the south of the Site and is underlain by the same GWB, the Cong-Robe GWB, as the central section of the Site. As outlined in Chapter 9 Water of the EIAR, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally the bedrock is protected by thick overburden deposits (>10m), characterised by low

[18] *NPWS (2020) Conservation Objectives: Ardkill Turlough SAC 000461. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe River downstream of the Site. There is no hydrological connectivity between these watercourses and the SAC. Taking the above into account and the distance between the Proposed Project and the SAC there is no potential for significant indirect effects on the SAC via hydrological pathways. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Ardkill Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Skealoghan Turlough SAC [000541] **Distance:** 14.3km	› [3180] Turloughs	Detailed site-specific conservation objectives for this European Site (Version 1, January 2021[19]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of this European Site. There is no potential for indirect effects as the Site is underlain by a separate hydrological groundwater catchment to this SAC.

[19] *NPWS (2021) Conservation Objectives: Skealoghan Turlough SAC 000541. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Skealoghan Turlough SAC is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.
Special Protection Area (SPA)			
Lough Carra SPA [004051] **Distance:** 9.0km	› [A182] Common gull (*Larus canus*)	Detailed site-specific conservation objectives for this European Site (Version 1, March 2025[20]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of and >9km from this European Site. There is no direct surface water connectivity between the Site and this SPA as the River Robe, which is located downstream of the Site, discharges into Lough Mask, located downstream of Lough Carra. Additionally, the SPA is located underlain by a separate groundwater body to the Site, therefore, there is no potential for likely significant effects on the SPA via surface or groundwater pathways. The potential for indirect effects on SCI species where they occur outside the SPA is also considered. While the Site is located within the core foraging range of common gull (25km, Thaxter *et al.*, 2012), over the four years of detailed ornithological surveys (October 2021 to September 2025) common gull were only observed within the Site on two occasions (refer to Section 3.3.2.3.3 above, and Appendix 4

[20] *NPWS (2025) Conservation Objectives: Lough Carra SPA 004051. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			for raw survey data). As such, the Site is not considered to be of ecological significance for the SCI species, and there is no potential for likely significant *ex-situ* effects. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. This site is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**
Lough Mask SPA [004062] **Distance:** 14.5km **Hydrological Distance:** approx. 39.3km	› [A061] Tufted duck (*Aythya fuligula*) › [A179] Black-headed gull (*Chroicocephalus ridibundus*) › [A182] Common gull (*Larus canus*) › [A183] Lesser black-backed gull (*Larus fuscus*) › [A193] Common tern (*Sterna hirundo*) › [A395] Greenland white-fronted goose (*Anser albifrons flavirostris*) › [A999] Wetlands	Detailed site-specific conservation objectives for this European Site (Version 1, March 2025[21]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of and >14km from this European Site. As per Chapter 9 of the EIAR submitted with this planning application, the central section of the Site drains via agricultural and peat drains to Drumady Lough to the east of the Site. A small unnamed watercourse outfalls from the south of Drumady Lough and discharges to the River Robe approximately 5.6km to the south of the Site. This SPA is located over 39km downstream of the Site via the unnamed stream which outfalls from Drumady Lough and the River Robe. Additionally, the unmapped watercourse which is located along the proposed Turbine Delivery Route also discharges into the unnamed stream approximately 3.5km upstream of the River Robe, with the SPA located approximately 37km downstream of the works at this location. Given the length of the hydrological flowpath between the Site and this SPA and the nature and scale of the

[21] *NPWS (2025) Conservation Objectives: Lough Mask SPA 004062. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			Proposed Project there is no potential for likely significant effects on the SPA due to deterioration of water quality. The potential for indirect effects on SCI species where they occur outside the SPA is also considered. Greenland white-fronted goose, black headed gull, common gull, lesser black-backed gull and tufted duck were all recorded either within the Site, within 500m of the Site or flying over the Site during the dedicated bird surveys undertaken (refer to Section 3.3.2.3 above, and Appendix 4 for raw survey data). These species are listed as SCIs for the SPA and given the distance between the Site and the SPA there is potential for individuals recorded using the Site to be associated with the SPA populations as it is within the foraging range of some of these species. The construction of the Proposed Project will result in a permanent loss of agricultural grasslands within the construction footprint which also provides suitable foraging habitat for some of these species. Although the overall footprint is small relative to the extent of available habitat within the Site and wider landscape, this has the potential to represent a loss of *ex-situ* habitat for SCI species. Additionally, as SCI bird species were recorded utilising the habitats within the Site, there is potential significant for *ex-situ* disturbance/displacement effects during the construction and operational phases of the Proposed Project. In addition to the above, there were a number of observations of lesser black-backed gull flying through the Site at potential collision height during vantage point surveys. Therefore there is also potential for collision risk/mortality during operation of the Proposed Project.

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			Therefore on a precautionary basis, a potential pathway for likely significant effects on the SPA due to *ex-situ* disturbance/displacement, loss of *ex-situ* supporting habitat and collision risk/ mortality has been identified. **A complete source pathway receptor chain was identified and in the absence of mitigation, there is potential for the Proposed Project to result in likely significant effects on Lough Mask SPA. Therefore, this European Site is considered to be within the Likely Zone of Influence of the Proposed Project and further assessment is required.**
Lough Conn and Lough Cullin SPA [004228] **Distance:** 21.8km **Hydrological Distance:** approx. 40km	› [A061] Tufted duck (*Aythya fuligula*) › [A065] Common scoter (*Melanitta nigra*) › [A182] Common gull (*Larus canus*) › [A395] Greenland white-fronted goose (*Anser albifrons flavirostris*) › [A999] Wetlands	Detailed site-specific conservation objectives for this European Site (Version 1, April 2025[22]) were reviewed as part of this assessment and are available at www.npws.ie.	There is no potential for direct effect as the Proposed Project is located completely outside of and >21km from this European Site. The Meander River flows in a southerly direction along the southern boundary of the Site. The SPA is located approximately 40km downstream of the Site via the Meander River. Given the length of the hydrological flowpath between the Site and this SPA and the nature and scale of the Proposed Project there is no potential for likely significant effects on the SPA as a result of water quality deterioration arising from Proposed Project. The potential for indirect effects on SCI species where they occur outside the SPA is also considered. While the Site is located within the core foraging range of common gull (25km, Thaxter *et al.*, 2012),

[22] *NPWS (2025) Conservation Objectives: Lough Conn and Lough Cullin SPA 004228. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

European Sites and distance from Proposed Project	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives. Please note an asterisk denotes a priority habitat)	Conservation Objectives	Identification of Source-Pathway-Receptor Chain
			over the four years of detailed ornithological surveys (October 2021 to September 2025) common gull were only observed within the Site on two occasions. Additionally, tufted duck and Greenland white-fronted goose were only observed during hinterland waterbird distribution and abundance surveys outside the Site, and common scoter were not recorded during any surveys undertaken. As such, the Site is not considered to be of ecological significance for the SCI species, and there is no potential for likely significant *ex-situ* effects. **No pathway for likely significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Lough Conn and Lough Cullin SPA is not within the Likely Zone of Influence of the Proposed Project. Therefore, it is not considered further in this assessment.**

4.2 Stage 1 Appropriate Assessment Screening Conclusion

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 site-specific conservation objectives of the relevant European sites, that the Proposed Project would be likely to have a significant effect on the following European Sites:

- River Moy SAC]002298]
- Balla Turlough SAC [000463]
- Lough Mask SPA [004062]

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

5. STAGE 2- NATURA IMPACT STATEMENT (NIS)

The potential for likely significant effects on the following European Sites in the absence of any mitigation, individually or cumulatively with other plans or projects, was identified in the preceding section:

- River Moy SAC]002298]
- Balla Turlough SAC [000463]
- Lough Mask SPA [004062]

The following sections consider each European Site individually to:

1. Determine which individual qualifying features have the potential to be adversely affected by the Proposed Project.
2. Provide information with regard to the Conservation Objectives and site-specific pressures and threats for those qualifying features that have the potential to be adversely affected.

5.1 Identification of and Information on Relevant Qualifying Features

5.1.1 River Moy SAC [002298]

The potential for likely significant effects on this SAC was identified in Section 4.1 above. The identified pathways for effect include the following:

- There is potential surface-water connectivity between the Site and River Moy SAC via drainage ditches on Site which drain to the Meander River, which flows in a southerly direction along the southern boundary of the Site. The Meander River is hydrologically connected to this European Site, approximately 4.9km downstream. In the absence of mitigation, there, there is potential for run off of pollutants including silts, hydrocarbons and cementitious materials to surface waters, including drains within the Site and the Meander River, during the construction, operation and decommissioning of the Proposed Project. This has potential to affect the aquatic QI habitats and species associated with the SAC.
- As outlined in Table 4-1 above, taking a highly precautionary approach, a potential pathway for indirect effects on the SAC due to deterioration of water quality via groundwater pathways was also identified. This could occur as a result of percolation of pollutants to groundwaters during the construction, operation and decommissioning phases of the Proposed Project.
- Due to the presence of Japanese knotweed (*Reynoutria japonica*) within the Site, an invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), taking a precautionary approach there is potential for the disturbance and spread of this species, potentially leading to spread of this species into the SAC via surface water pathways.

Table 5-1 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.1.1 Identification of Individual Qualifying Features with the Potential to be Adversely Affected

Table 5-1 Assessment of Qualifying features potentially affected in the River Moy SAC

Qualifying Interest	Conservation Objective (NPWS, Version 1, August 2016[8]),	Rationale	Potential for Adverse Effects Yes/No
[1092] White-clawed Crayfish (*Austropotamobius pallipes*)	To maintain the favourable conservation condition of White-clawed Crayfish in River Moy SAC	According to Map 7 of the Site-Specific Conservation Objectives (SSCOs) for the SAC, white clawed crayfish are recorded throughout the watercourses associated with the SAC. In addition, during baseline aquatic surveys undertaken of the watercourses downstream of the Site in 2023 and 2025, white-clawed crayfish were recorded within the Meander River approximately 3.1km and 360m upstream of the SAC, respectively (refer to the Aquatic Baseline Report in Appendix 3 for details) and there is potential for these populations to be associated with the SAC. There is no potential for direct disturbance or mortality of this species as there are no instream works associated with the Proposed Project. However, given there is hydrological connectivity between the Proposed Project and the SAC, there is potential for adverse effects on populations of this species associated with the SAC where it occurs downstream of the Site due to deterioration of water quality and resulting degradation of supporting habitat. **This pathway is further assessed in this NIS.**	**Yes**
[1095] Sea Lamprey (*Petromyzon marinus*)	To maintain the favourable conservation condition of Sea Lamprey in River Moy SAC	This species is known to occur within the watercourses within the SAC downstream of the Site. There is no potential for direct disturbance or mortality of this species as there are no instream works associated with the Proposed Project. However, given there is hydrological connectivity between the Proposed Project and the SAC, there is potential for adverse effects on populations of this species associated with the SAC where it occurs downstream of the Site due to deterioration of water quality and resulting degradation of supporting habitat. **This pathway is further assessed in this NIS.**	**Yes**
[1096] Brook Lamprey (*Lampetra planeri*)	To maintain the favourable conservation condition of Brook Lamprey in River Moy SAC	This species is known to occur within the watercourses within the SAC downstream of the Site. The Meander River downstream of the Site also supports suitable habitat for the species and lamprey ammocoetes (*Lampetra* spp.) were	**Yes**

Qualifying Interest	Conservation Objective (NPWS, Version 1, August 2016[8]),	Rationale	Potential for Adverse Effects Yes/No
		recorded within the Meander River, approximately 360m and 3.1km upstream of the SAC during aquatic surveys in 2023 and 2025 (refer to the Aquatic Baseline Report in Appendix 3 for details) and there is potential for these populations to be associated with the SAC. There is no potential for direct disturbance or mortality of this species as there are no instream works associated with the Proposed Project. However, given there is hydrological connectivity between the Proposed Project and the SAC, there is potential for adverse effects on populations of this species associated with the SAC where it occurs downstream of the Site due to deterioration of water quality and resulting degradation of supporting habitat. **This pathway is further assessed in this NIS.**	
[1106] Salmon (*Salmo salar*)	To maintain the favourable conservation condition of Salmon in River Moy SAC	This species is known to occur within the watercourses within the SAC downstream of the Site. There is no potential for direct disturbance or mortality of this species as there are no instream works associated with the Proposed Project. However, given there is hydrological connectivity between the Proposed Project and the SAC, there is potential for adverse effects on populations of this species associated with the SAC where it occurs downstream of the Site due to deterioration of water quality and resulting degradation of supporting habitat. **This pathway is further assessed in this NIS.**	**Yes**
[1355] Otter (*Lutra lutra*)	To maintain the favourable conservation condition of Otter in River Moy SAC	According to Map 8 of the SSCOs, appropriate otter habitat is predominantly located on the banks of Lough Conn and Lough Cullin in the northwest of the SAC. However, the watercourses within the River Moy SAC directly downstream of the Site also provide appropriate habitat for foraging and commuting otter. Furthermore, during baseline aquatic surveys in 2023 and 2025, otter spraint sites were identified on the Meander River, approximately 1.8km downstream of the Site (refer to Aquatic Baseline Report in Appendix 3 for details). Given there is hydrological connectivity between the Proposed Project and the SAC via the Meander River, there is potential for adverse effects on otter where it occurs downstream of the Site due to deterioration of water quality which could potentially affect fish prey availability for otter. **This pathway is further assessed in this NIS.**	**Yes**

Qualifying Interest	Conservation Objective (NPWS, Version 1, August 2016[8]),	Rationale	Potential for Adverse Effects Yes/No
		As outlined in Table 4-1 above, given the distance between the Site and the SAC via the Meander River (4.9km downstream), the potential for likely significant effects on otter, where they may be present in the Meander River outside of the SAC, as a result of *ex-situ* disturbance was also considered at the screening stage. However as outlined in Table 4-1, the Proposed Project has been designed so that all major infrastructure, i.e., turbine bases and hardstands, avoid significant watercourses, including the Meander River. The closest proposed infrastructure to the Meander River is located >300m away. Given the distance between the Meander River and the infrastructure there is no potential for adverse effects on otter as a result of disturbance during construction activities (including ground works at turbines, blasting activities at the proposed borrow pit), operational phase activities (including noise/maintenance activities) or during the decommissioning phase.	
[6510] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	No site-specific conservation objective has been set for this habitat in the River Moy SAC (see footnote 7 in Section 4.1 above).	According to the Site Synopsis document, the River Moy SAC is one of the most important in the country for this habitat, with just over 9ha of the habitat recorded by the Grassland Monitoring Survey (2015-2017) within the River Moy SAC. However, this is a terrestrial habitat, and no hydrological or other functional connectivity exists between the Proposed Project and this habitat within the SAC. As such, there is no potential for adverse effects on this QI habitat and no further assessment is required.	No
[7110] Active raised bogs	To restore the favourable conservation condition of Active raised bogs in River Moy SAC.	According to the SSCOs for this SAC, there are five areas of raised bogs listed for River Moy SAC, all of which are located over 30km to the northwest of the Site. This is a terrestrial habitat, and no hydrological or other functional connectivity exists between the Proposed Project and this habitat within the SAC. As such, there is no potential for adverse effects on this QI habitat and no further assessment is required.	No
[7120] Degraded raised bogs still capable of natural regeneration	The long-term aim for Degraded raised bogs still capable of natural regeneration	According to the SSCOs for this SAC, the conservation objectives for this habitat are inherently linked to that of Active raised bog [7110] and no separate	No

Qualifying Interest	Conservation Objective (NPWS, Version 1, August 2016[8]),	Rationale	Potential for Adverse Effects Yes/No
	is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in River Moy SAC	conservation objectives have been set for this habitat within the River Moy SAC. This is a terrestrial habitat, and no hydrological or other functional connectivity exists between the Proposed Project and this habitat within the SAC. As such, there is no potential for adverse effects on this QI habitat and no further assessment is required.	
[7150] Depressions on peat substrates of the *Rhynchosporion*	Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in River Moy SAC	According to the SSCOs for this SAC, the conservation objectives for this habitat are inherently linked to that of Active raised bog [7110] and no separate conservation objectives have been set for this habitat within the River Moy SAC. This is a terrestrial habitat, and no hydrological or other functional connectivity exists between the Proposed Project and this habitat within the SAC. As such, there is no potential for adverse effects on this QI habitat and no further assessment is required.	No
[7230] Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in River Moy SAC	According to the SSCOs, the full extent and distribution of this QI habitat within River Moy SAC is unknown. An extensive area is known to occur as part of a wetland complex on the Glore River, northwest of Ballyhaunis, however this is located over 16km from the Site and there is no downstream connectivity between the Site and this wetland complex. However, it is noted that there are likely to be other areas present within the SAC. Therefore, taking a precautionary approach, there is potential for indirect adverse effects on this QI habitat, resulting from a potential deterioration of groundwater quality as a result of the Proposed Project. **This pathway is further assessed in this NIS.**	**Yes**
[91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	To maintain the favourable conservation condition of Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles in River Moy SAC	According to the SSCOs, the main location of this habitat within the SAC is at Pontoon Woods to the west of Lough Conn and Lough Cullin, located over 25km from the Site, However, it is noted that the total extent of this habitat within the SAC is unknown, and it may occur in mosaics with other woodland types. This is a terrestrial habitat, and no hydrological or other functional connectivity exists between the Proposed Project and this habitat within the SAC.	No

Qualifying Interest	Conservation Objective (NPWS, Version 1, August 2016[8]),	Rationale	Potential for Adverse Effects Yes/No
		As such, there is no potential for adverse effects on this QI habitat and no further assessment is required.	
[91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	To maintain the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) in River Moy SAC	According to the SSCOs, the mapped area of this habiatat within the SAC occurs at Prospect on the western shore of Lough Conn, located over 37km from the Site, and over 55km via surface water pathways. Due to the length of the hydrological flowpath, there is no potential for adverse effects on this mapped are of alluvial woodland within the SAC. However, it is noted that the total extent of this habitat within the SAC is unknown, and it may occur in mosaics with other woodland types. Given there is hydrological connectivity between the Proposed Project and the SAC, there is potential for adverse effects on un-mapped areas of this semi-aquatic habitat associated with the SAC where it occurs downstream of the Site due to deterioration of water quality and resulting degradation of supporting habitat. **This pathway is further assessed in this NIS.**	**Yes**

5.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the SAC, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-2 below.

Table 5-2 River Moy SAC site-specific threats, pressures and activities

Negative Impacts			
Rank	**Code**	**Threats and Pressures**	**Inside/Outside**
High	A02.01	Agricultural intensification	Both
High	B01	Forest planting on open ground	Both
High	B05	Use of fertilizers (forestry)	Both
High	H01.05	Diffuse pollution to surface waters due to agricultural and forestry activities	Both
High	I01	Invasive non-native species	Both
Medium	C01.03	Peat extraction	Both
Medium	D04.02	Aerodrome, heliport	Both

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to potential for pollution to surface waters as well as invasive non-native species.

5.1.1.3 QI Species-Specific Information

5.1.1.3.1 *White-clawed Crayfish (Austropotamobius pallipes) [1092]*

According to the Site-Specific Conservation Objectives (NPWS, 2016[8]), the general distribution of white-clawed crayfish in the SAC is that it is widespread in the upper tributaries of the River Moy and the rivers which feed Loughs Conn and Cullin. It is absent from the main River Moy.

The latest Article 17 Report (NPWS, 2025[23]) states that in most of its range, white-clawed crayfish is found principally in first-order streams, but in Ireland it utilises a much broader spectrum of habitats extending from smallest streams and drains to large rivers and medium-sized lakes wherever there is sufficient lime. The white-clawed crayfish is generally associated with good quality waters, but this is not necessarily the case in Ireland where it can occur in water of lower quality, down to a Q value of around 3 (i.e. it is not particularly pollution-sensitive). It is now generally considered as a keystone species rather than as a bioindicator, because of its traditional importance and its large size, longevity and dominant position in the ecosystem. The overall status of this species was assessed as *Bad*, with a *deteriorating* trend, unchanged from the 2019 Article 17 reporting assessment. The *Bad* status is due to population decline and poor future prospects for the species due to the presence of the Crayfish Plague organism across seventeen catchments.

[23] *NPWS (2025). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Domhnall Finch, Aoife Delany, Fionnuala O'Neill and Deirdre Lynn*

Targets and Attributes

The conservation objective for this QI is:

> '*To maintain the favourable conservation condition of White-clawed Crayfish in River Moy SAC*'.

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-3 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-3 Targets and Attributes associated with nominated site-specific conservation objectives for white-clawed crayfish in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No reduction from baseline.	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect the populations of white-clawed crayfish downstream and their distributions, which has the potential to undermine this target.
Population structure: recruitment	Juveniles and/or females with eggs in all occupied tributaries	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect the breeding populations of white-clawed crayfish where it occurs downstream of the Site, which has the potential to undermine this target.
Negative indicator species	No alien crayfish species	No – The Proposed Project does not have the potential to result in the introduction of alien crayfish species as there are no in-stream works required within the watercourses upstream of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Disease	No instances of disease	No – The Proposed Project does not have the potential to result in the introduction of any water-borne diseases as there are no in-stream works required within the watercourses upstream of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Water quality	At least Q3-4 at all sites sampled by EPA	**Yes** - In the absence of mitigation, the Proposed Project has the potential to result in deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters,

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		which has the potential to undermine this target.
Habitat quality: heterogeneity	No decline in heterogeneity or habitat quality	**Yes** - In the absence of mitigation, the Proposed Project has the potential to result in deterioration in habitat quality as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, which has the potential to undermine this target.

5.1.1.3.2 *Sea Lamprey (Petromyzon marinus) [1095]*

According to the Site-Specific Conservation Objectives (NPWS, 2016), artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas (Rooney *et al.* 2015, cited within the SSCOs), however, there are no artificial barriers in the Moy catchment limiting lamprey access.

The latest Article 17 Report (NPWS, 2025) states there are two optimal habitat requirements for sea lamprey including adult spawning and larval nursery habitat. Spawning activity is found in gravelled areas of main stem SAC rivers with a moderate gradient and water velocity. Larval habitat consists of fine-grained areas of sediment in areas of deposition and of reduced velocity. The sea lamprey is listed in the most recent Irish Red Data Book as Near Threatened. Pressures on sea lamprey include barriers to upstream migration (e.g. weirs), which limit access to spawning beds and juvenile habitat; changes in precipitation due to climate change; and impacts from fishing on prey species availability. The Overall Status of this species is assessed as *Bad*, as in the last two assessments, but there is a change in trend from *stable* to *deteriorating*.

Targets and Attributes

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Sea Lamprey in River Moy SAC'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-4 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-4 Targets and Attributes associated with nominated site-specific conservation objectives for sea lamprey in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	No - The Proposed Project does not have the potential to result in a reduction in the accessibility of the watercourses to sea lamprey, as there will be no new artificial barriers constructed. Therefore the Proposed Project has no potential to undermine this target.

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Population structure of juveniles	At least three age/size groups present	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect population structure of sea lamprey downstream of the Site, which has the potential to undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density at least 1/m^2	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect juvenile density of sea lamprey downstream of the Site, which has the potential to undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect the extent of suitable spawning habitats downstream of the Site, which has the potential to undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect the extent of suitable juvenile habitats downstream of the Site, which has the potential to undermine this target.

5.1.1.3.3 *Brook Lamprey (Lampetra planeri) [1096]*

According to the Site-Specific Conservation Objectives (NPWS, 2016), artificial barriers can block lampreys' migration both up- and downstream, thereby possibly limiting species to specific stretches, restricting access to spawning areas and creating genetically isolated populations (Espanhol *et al.,* 2007; cited within the SSCOs). However, there are no artificial barriers in the Moy catchment limiting lamprey access.

The latest Article 17 Report (NPWS, 2025) states that adult brook lampreys require well-oxygenated gravelled areas for spawning in the main channels and tributaries of rivers. Rearing habitat in the form of fine sands and silts in slow-flowing depositional areas is required for the larval life stage. The main pressures and threats identified include diffuse and point source pollution, largely resulting from agriculture, forestry and inefficient urban wastewater treatment, hydrological changes and climate change. While lampreys may be resilient to some degree, there are significant unknowns regarding the impacts of eutrophication, oxygen depletion, chemical pollution, etc. on lampreys. Due to the widespread distribution of brook lamprey, while several pressures have been identified, these pressures are often indirect, usually acting in combination, and deemed as having low influence. Their effects are

typically restricted to specific catchments and hence act on a minority of the population. The Overall Status of this species was assessed as *Favourable*, with a *stable* trend, as it has been for the last three Article 17 reporting periods.

Targets and Attributes

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Brook Lamprey in River Moy SAC'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-5 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-5 Targets and Attributes associated with nominated site-specific conservation objectives for brook lamprey in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	Access to all watercourses down to first order streams	No - The Proposed Project does not have the potential to result in a reduction in the accessibility of the watercourses to sea lamprey, as there will be no new barriers constructed. Therefore the Proposed Project has no potential to undermine this target.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off, as well as run off and/or percolation of other pollutants to surface and groundwaters, could indirectly affect the breeding populations of brook lamprey downstream of the Site, which has the potential to undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m^2	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could indirectly affect the breeding populations of brook lamprey downstream of the Site, which has the potential to undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could indirectly affect the extent of suitable spawning habitats downstream of the Site, which has the potential to undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could indirectly affect the extent of suitable juvenile habitats

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		downstream of the Site, which has the potential to undermine this target.

5.1.1.3.4 Salmon (Salmo salar) [1106]

According to the Site-Specific Conservation Objectives (NPWS, 2016), Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. There are no artificial barriers on the Moy catchment limiting salmon access. A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "*the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship*". The target is based on the Standing Scientific Committee (SSC) of the National Salmon Commission's annual model output of CL attainment levels. For the 2016 SSC advice, the Moy is currently exceeding its CL by 19,012 salmon.

The latest Article 17 Report (NPWS, 2025) states that population abundance of salmon in general has decreased since the 2019 Article 17 reporting period, however, the area of occupied habitat by salmon is currently considered sufficient for long-term survival, and the trend in habitat area occupied has not changed since previous reporting periods. The quality of occupied habitat varies enormously between river systems and it is currently unknown whether the habitat quality is sufficient for the long-term survival of salmon in all occupied habitat areas. Trends in habitat quality (barriers, water quality, hydromorphology) have generally remained stable or not improved substantially between reporting periods. Whilst a general decrease in adult returns across all rivers is strongly correlated with changing marine conditions, river populations subject to additional habitat stressors (water quality, degraded habitat, barriers, aquaculture) are further below their conservation limits compared to populations with fewer habitat stressors, indicating that habitat quality does compromise the survival of certain affected stocks. The Overall Status is assessed as *Bad* and *deteriorating*, a decline from *Inadequate* and *stable* in the last assessment (NPWS, 2019).

Targets and Attributes

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Salmon in River Moy SAC'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-6 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-6 Targets and Attributes associated with nominated site-specific conservation objectives for salmon in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	No - The Proposed Project does not have the potential to result in a reduction in the accessibility of the watercourses to salmon, as there will be no new barriers constructed. Therefore the Proposed Project has no potential to undermine this target.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	**Yes** - In the absence of mitigation, deterioration in water quality and habitat

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		degradation as a result of silt-laden run-off and other pollutants could indirectly affect the breeding populations of salmon downstream of the Site, which has the potential to undermine this target.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could reduce the populations of salmon fry downstream of the Site, which has the potential to undermine this target.
Out-migrating smolt abundance	No significant decline	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could reduce the populations of out-migrating smolts downstream of the Site, which has the potential to undermine this target.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	**Yes** - In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could reduce the availability of suitable habitat for spawning salmon downstream of the Site, which has the potential to undermine this target.
Water quality	At least Q4 at all sites sampled by EPA	**Yes** - In the absence of mitigation, the Proposed Project has the potential to result in deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants, which has the potential to undermine this target.

5.1.1.3.5 *Otter (Lutra lutra) [1355]*

According to the Site-Specific Conservation Objectives (NPWS, 2016), areas of terrestrial habitats for otters include 10m terrestrial buffer along lake shorelines and along river banks, and otters will utilise freshwater habitats from estuaries to headwaters. Otters also need lying up areas throughout their territory where they are secure from disturbance. They have a broad diet that varies locally and seasonally, but is dominated by fish, in particular salmonids, eels and sticklebacks in freshwater.

The latest Article 17 Report (NPWS, 2025) states that Ireland continues to remain a stronghold otters. The most recent national survey (2023/24) indicates that the population has stabilised overall and that the species remains widespread. Otters have two basic requirements: aquatic prey and safe refuges where they can rest. In Ireland, otter populations are found along rivers, lakes and coasts, where fish and other prey are abundant, and where the bank-side habitat offers plenty of cover. The otter is an opportunistic predator with a broad and varied diet. In freshwater areas a variety of fish from sticklebacks to salmon and eels will be taken, while crayfish and frogs can be important locally or seasonally. There are some concerns about declining water quality nationally as well as ongoing pressures on riparian habitats through drainage works and riparian scrub/woodland clearance, but it is not clear how these changes might impact on otter. The Overall Status assessment remains *Favourable*,

and the trend is taken as *stable*, a change from the *improving* trend recorded in the 2019 Article 17 reporting.

Targets and Attributes

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Otter in River Moy SAC'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-7 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-7 Targets and Attributes associated with nominated site-specific conservation objectives for otter in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Distribution	No significant decline	**Yes** – In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could indirectly affect prey availability downstream, which has the potential to undermine this target.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 1068.8ha	No – The Proposed Project will not result in any loss of terrestrial habitat for otter. No works will occur within the SAC, and no suitable otter habitat was recorded within the Site. Therefore the Proposed Project has no potential to undermine this target.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 479.4km	No - The Proposed Project will not result in any loss of riverine habitat for otter. No works will occur within the SAC, and no instream works are proposed. Therefore the Proposed Project has no potential to undermine this target.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 1248.2ha	No - The Proposed Project will not result in any loss of lacustrine habitat for otter. No works will occur within the SAC, and no instream works are proposed. Therefore the Proposed Project has no potential to undermine this target.
Couching sites and holts	No significant decline	No – There will be no decline in otter couching sites or holts. No works will occur within the SAC, and no otter couching sites or holts were recorded. Furthermore, there will be no instream works as part of the Proposed Project, and the nearest proposed infrastructure to the Meander River are located at a distance of over 300m. Therefore the Proposed Project has no potential to undermine this target.

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Fish biomass available	No significant decline	**Yes** – In the absence of mitigation, deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could reduce the availability of fish biomass downstream of the Site, which has the potential to undermine this target.
Barriers to connectivity	No significant increase	No - The Proposed Project does not have the potential to result in a reduction in the accessibility of the watercourses to otter, as there will be no new barriers constructed. Therefore the Proposed Project has no potential to undermine this target.

5.1.1.4 QI Habitat-Specific Information

5.1.1.4.1 *Alkaline fens [7230]*

According to the Site-Specific Conservation Objectives (NPWS, 2016), the full extent of this habitat within the SAC is unknown. An extensive area is known to occur as part of a wetland complex on the Glore River, northwest of Ballyhaunis but there are likely to be other areas present in the SAC.

The latest Article 17 Report (NPWS, 2025) states that alkaline fens are relatively widespread in Ireland. The most extensive areas of alkaline fens occur in lowland basins associated with limestone groundwater bodies (most often in western and midland areas). Alkaline fens associated with flushes and open water transitions tend to be smaller, but may be more widespread than those in lowland basins. Alkaline fens are groundwater-fed, generally peat-forming systems with extensive areas of species-rich small sedge and brown moss communities. They occur in areas where there is a high water table and a base-rich, often calcareous, water supply. Alkaline fens can develop in areas where vertical water movement predominates (topogenous), such as poorly drained basins or hollows and open water transitions; or where horizontal water movement is also important (soligenous), such as flushes, valley fens and the laggs of raised bogs. However, this distinction is not always clear (such as in large flood plain fens which can include both elements). The overall status of this habitat was assessed as *Bad*, with a deteriorating trend.

Targets and Attributes

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Alkaline fens in River Moy SAC'

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-8 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-8 Targets and Attributes associated with nominated site-specific conservation objectives for alkaline fens in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	No - The Proposed Project does not have the potential to result in a reduction in the area of alkaline fen within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Habitat distribution	No decline, subject to natural processes	No - The Proposed Project does not have the potential to result in a reduction in the distribution of alkaline fen within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Hydrological regime	Appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	No – The Proposed Project does not have the potential to result in an alteration of the hydrological scheme within the SAC. As per Chapter 9 Water of the EIAR which accompanies this planning application, dewatering of the borrow pit (as required) and other deep excavations (i.e. turbine bases) have the potential to impact on local groundwater levels and flows, however, temporary reductions in groundwater levels by short duration and transient dewatering works will be very localised and of small magnitude due to the nature and permeability of the local subsoil and bedrock geology. Groundwater level effects will not be significant due the local hydrogeological regime across much of the Site. Therefore due to the distance between the Site and this SAC (1.7km), the Proposed Project has no potential to undermine this target.
Peat formation	Active peat formation, where appropriate	No - The Proposed Project does not have the potential to result in a reduction in active peat formation in alkaline fen associated with the SAC, as the Site is located entirely outside of the SAC and, as outlined in relation to the target above, the Proposed Project does not have the potential to result in an alteration of the hydrological scheme within the SAC. Therefore the Proposed Project has no potential to undermine this target.
Water quality: nutrients	Appropriate water quality to support the natural structure and functioning of the habitat	**Yes** - In the absence of mitigation, deterioration in groundwater quality arising from the Proposed Project could indirectly affect the water quality within the SAC, which has the potential to undermine this target.

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Vegetation structure: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	No - The Proposed Project does not have the potential to affect the vegetation structure of alkaline fens, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%	No - The Proposed Project does not have the potential to affect the vegetation composition of alkaline fens, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%. Where tufa is present, disturbed bare ground less than 1%	No - The Proposed Project does not have the potential to result in an increase in the area of disturbed bare ground, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%	No - The Proposed Project does not have the potential to result in an increase in drainage or heavy trampling within alkaline fens, as the Site is located entirely outside of the SAC. Additionally, as outlined in relation to the target above, the Proposed Project does not have the potential to result in an alteration of the hydrological scheme within the SAC. Therefore the Proposed Project has no potential to undermine this target.

5.1.1.4.2 *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]*

According to the Site-Specific Conservation Objectives (NPWS, 2016), the total extent of this habitat within the SAC is unknown and it may occur in mosaics with other woodland types. Two sites (Site Codes 1763, 1800, on the western shores of Lough Conn and Lough Cullin) within the SAC were surveyed as part of the National Survey of Native Woodlands (Perrin *et al.,* 2008). Areas mapped as other wet woodland types may also correspond with this Annex I woodland type. There are also likely to be additional areas of this Annex I woodland type within the SAC.

The latest Article 17 Report (NPWS, 2025) states that alluvial woodlands occur on heavy soils that are periodically inundated by the rise of water levels. Flooding may occur frequently (annually or more often) or infrequently (at intervals of several years) but the inundation will nonetheless determine the vegetation. The Interpretation Manual (EC, 2013) states that all types of 91E0 are periodically flooded but otherwise well-drained and aerated during low water. However, this is not always the case in the wet climate of Ireland and soils may remain waterlogged for most of the year, particularly where the woodland contains springs and flushes or is crossed by small streams. A functioning stand of alluvial woodland with a good structure is a multi-layered system, with a typical canopy of willows (*Salix* spp.), ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*). Native tree species should dominate. Invasive alien plant species including Japanese knotweed are included under the main pressures and threats to this habitat, as well as overgrazing by deer, the fungal disease Ash dieback and hydrological pressures such

as drainage and modification of hydrological flow. The Overall Status of this habitat was assessed as *Bad*, with a deteriorating trend, unchanged since the 2019 Article 17 report.

Targets and Attributes

The conservation objective for this QI is:

> *'To maintain the favourable conservation condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) in River Moy SAC'*

The attributes and targets for this species as per the SSCOs for the SAC are provided in Table 5-9 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-9 Targets and Attributes associated with nominated site-specific conservation objectives for Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) in the River Moy SAC

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	No - The Proposed Project does not have the potential to result in a reduction in the area of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Habitat distribution	No decline	No - The Proposed Project does not have the potential to result in a reduction in the distribution of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	No - The Proposed Project does not have the potential to result in a reduction in the woodland sizes of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer	No - The Proposed Project does not have the potential to alter the woodland structure of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Woodland structure: community diversity and extent	Maintain diversity and extent of community types	No - The Proposed Project does not have the potential to alter the woodland structure or community types of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions	No - The Proposed Project does not have the potential to result in a reduction in regeneration of alluvial forests within the

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
	to ensure survival of woodland canopy	SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Hydrological regime: Flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	No - The Proposed Project does not have the potential to alter the hydrological regime of alluvial forests within the SAC, as it will not result in an increase in flooding or alteration of water table height. Therefore the Proposed Project has no potential to undermine this target.
Woodland structure: dead wood	At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)	No - The Proposed Project does not have the potential to result in a reduction in dead wood within alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Woodland structure: veteran trees	No decline	No - The Proposed Project does not have the potential to result in a reduction in veteran trees within alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Woodland structure: indicators of local distinctiveness	No decline	No - The Proposed Project does not have the potential to result in a reduction in indicators of local distinctiveness of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	No - The Proposed Project does not have the potential to result in a reduction in native tree cover of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix* spp.), oak (*Quercus robur*) and ash (*Fraxinus excelsior*)	No - The Proposed Project does not have the potential to result in an alteration of the typical species of alluvial forests within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	**Yes** – In the absence of mitigation, there is the potential for contamination and spread of Japanese knotweed into the SAC via surface water pathways including onsite drains and the Meander River, which has the potential to undermine this target.

5.1.2 Balla Turlough SAC [000463]

The potential for likely significant effects on this SAC were identified in Section 4.1 above. The identified pathways for effect include the following:

- Both the Site and Balla Turlough SAC are underlain by the Swinford GWB and a Regionally Important Karstic Bedrock Aquifer. A potential pathway for indirect effect on the SAC due to deterioration of water quality via groundwater pathways was identified in Table 4-1 above.

Table 5-10 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.2.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-10 Assessment of Qualifying features potentially affected in Balla Turlough SAC

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2021[9]),	Rationale	Potential for Adverse Effects Y/N
[3180] Turloughs*	To maintain the favourable conservation condition of Turloughs in Balla Turlough SAC.	Both the Site and Balla Turlough SAC are underlain by the Swinford GWB and a Regionally Important Karstic Bedrock Aquifer. As per Chapter 9 Water of the EIAR submitted with this planning application, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally, the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater flows, and will enter local rivers, including the Meander and Robe Rivers. There is no connectivity between these watercourses and the SAC.	**No**

Qualifying feature	Conservation Objective (NPWS, Version 1, January 2021[9]),	Rationale	Potential for Adverse Effects Y/N
		In addition to this, as outlined in Chapter 9 of the EIAR, the proposed works are shallow and localised, with low potential to interact with the underlying regional groundwater system and groundwater is not considered a primary sensitive receptor. Taking the above into consideration, as well as the distance between the Proposed Project and the SAC, there is no potential for adverse effects on the integrity of SAC via hydrological or other pathways.	

5.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the SAC, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in the table below.

Table 5-11 Site-specific threats, pressures and activities in Balla Turlough SAC

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Medium	A08	Fertilisation	Outside
Medium	A04	Grazing	Inside
Low	F03.01	Hunting	Inside

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified.

5.1.2.3 QI Habitat-Specific Information

5.1.2.3.1 *Turloughs [3180]*

According to the Site-Specific Conservation Objectives (NPWS, 2021[9]), the turlough area in the SAC has been calculated as 34.3ha, and has been categorised as being of national ecological importance.

The latest Article 17 Report (NPWS, 2025) states that turloughs are basins that flood annually and are restricted to regions of well-bedded, relatively pure karstified Carboniferous limestone. Water inflow and outflow is predominantly through the ground. Turloughs can be described as the floodplains of underground rivers. Turlough communities can include other Annex I habitats, notably Hard water lakes (3140), Alkaline fen (7230), Chenopodion vegetation (3270) and Limestone pavement (8240). The main pressures are drainage, water pollution and ecologically unsuitable grazing, and at a wider landscape scale, flood relief schemes. Recent studies indicate early signs of climate change pressures. The Overall Status is assessed as *Inadequate* with a *stable* trend, unchanged from the 2019 Article 17 reports.

The conservation objective for this SCI is:

'To maintain the favourable conservation condition of Turloughs in Balla Turlough SAC"

The attributes and targets for this habitat as per the SSCOs for the SAC are provided in Table 5-12 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-12 Targets and attributes associated with nominated site-specific conservation objectives for turloughs in Balla Turlough SAC

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Habitat area	Area stable or increasing, subject to natural processes	No - The Proposed Project does not have the potential to result in a reduction in the area of turloughs

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Habitat distribution	No decline, subject to natural processes	No - The Proposed Project does not have the potential to result in a reduction in the distribution of turloughs within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Hydrological regime	Maintain appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat	No – The Proposed Project does not have the potential to result in an alteration of the hydrological scheme within the SAC. As per Chapter 9 Water of the EIAR submitted with the planning application for the Proposed Project, dewatering of the borrow pit (as required) and other deep excavations (i.e. turbine bases) have the potential to impact on local groundwater levels and flows, however, temporary reductions in groundwater levels by short duration and transient dewatering works will be very localised and of small magnitude due to the nature and permeability of the local subsoil and bedrock geology. Groundwater level effects will not be significant due to the local hydrogeological regime across much of the Site. Therefore due to the distance between the Site and this SAC (4.7km), the Proposed Project has no potential to undermine this target.
Soil type	Maintain variety, area and extent of soil types necessary to support turlough vegetation and other biota	No - The Proposed Project does not have the potential to result in a alteration to the soil type within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Soil nutrient status: nitrogen and phosphorus	Maintain nutrient status appropriate to soil types and vegetation communities	No - The Proposed Project does not have the potential to result in a alteration to the nitrogen and phosphorus statuses within the SAC, as the Site is located entirely outside of the SAC and the Proposed

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		Project will not result in contamination of these nutrients, which are associated with agricultural processes. Therefore the Proposed Project has no potential to undermine this target.
Physical structure: bare ground	Maintain sufficient wet bare ground, as appropriate	No - The Proposed Project does not have the potential to result in an alteration in the amount of wet bare ground within the SAC, as the Site is located entirely outside of the SAC and the hydrological regime will not be altered as a result of the Proposed Project. Therefore the Proposed Project has no potential to undermine this target.
Chemical processes: calcium carbonate deposition and concentration	Maintain appropriate calcium carbonate deposition rate and concentration in soil	No - The Proposed Project does not have the potential to result in changes in calcium carbonate deposition rates within the SAC, as the Site is located entirely outside of the SAC and the hydrological regime will not be altered as a result of the Proposed Project. Therefore the Proposed Project has no potential to undermine this target.
Active peat formation	Maintain active peat formation	No - The Proposed Project does not have the potential to result in a reduction in active peat formation within the SAC, as the Site is located entirely outside of the SAC and the hydrological regime will not be altered as a result of the Proposed Project. Therefore the Proposed Project has no potential to undermine this target.
Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat	No - As outlined in Table 5-10 above, Site investigations have confirmed the absence of karst features and shallow bedrock at the Site. Additionally, the bedrock is protected by thick overburden deposits (>10m), characterised by low permeability peat and glacial tills which protect the bedrock and restrict groundwater recharge. The hydrological regime at the Site is therefore typically characterised by high rates of surface water runoff and relatively low rates of groundwater recharge. Water will generally leave the Site as surface water, rather than as groundwater

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		flows, and will enter local rivers, including the Meander and Robe Rivers. There is no connectivity between these watercourses and the SAC. In addition to this, as outlined in Chapter 9 of the EIAR, the proposed works are shallow and localised, with low potential to interact with the underlying regional groundwater system and groundwater is not considered a primary sensitive receptor. Taking the above into consideration, as well as the distance between the Proposed Project and the SAC, there is no potential for adverse effects on the integrity of SAC due to deterioration of water quality. Therefore the Proposed Project has no potential to undermine this target.
Vegetation composition: area of vegetation communities	Maintain area of sensitive and high conservation value vegetation communities/units	No - The Proposed Project does not have the potential to result in an alteration to the vegetation communities within the SAC, as the Site is located entirely outside of the SAC and the hydrological regime will not be altered as a result of the Proposed Project. Therefore the Proposed Project has no potential to undermine this target.
Vegetation composition: vegetation zonation	Maintain vegetation zonation/mosaic characteristic of the turlough	No - The Proposed Project does not have the potential to result in an alteration to the vegetation zonation within the SAC, as the Site is located entirely outside of the SAC and the hydrological regime will not be altered as a result of the Proposed Project. Therefore the Proposed Project has no potential to undermine this target.
Vegetation structure: sward height	Maintain sward heights appropriate to the vegetation unit, and a variety of sward heights across the turlough	No - The Proposed Project does not have the potential to result in a alteration to the vegetation structure within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Typical species	Maintain typical species within the turlough	No - The Proposed Project does not have the potential to result in an alteration to the typical species within the SAC, as the Site is located entirely outside of the SAC and the hydrological regime will not be altered as a result of the Proposed Project. As such, there will be no alteration to the terrestrial, wetland and aquatic plants or invertebrate species within the turlough. In relation to typical bird species mentioned in the SSCOs, detailed ornithological surveys of the Site and surrounding hinterland, including Balla Turlough, were conducted between October 2021 and September 2025, during which no species were found to occur within Balla Turlough in a significant manner. The potential for *ex-situ* effects on bird species associated with Balla Turlough has been considered, however, as detailed within Chapter 7 Birds of the EIAR accompanying this application, no significant effects on bird species are anticipated. Therefore the Proposed Project has no potential to undermine this target.
Fringing habitats: area	Maintain marginal fringing habitats that support turlough vegetation invertebrate, mammal and/or bird populations	No - The Proposed Project does not have the potential to result in a reduction in the area of fringing habitats within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.
Vegetation structure: turlough woodland	Maintain appropriate turlough woodland diversity and structure	No - The Proposed Project does not have the potential to result in a reduction in the area of turlough woodland within the SAC, as the Site is located entirely outside of the SAC. Therefore the Proposed Project has no potential to undermine this target.

5.1.3 Lough Mask SPA [004062]

The potential for likely significant effects on this SPA were identified in Section 4.1 above. The identified pathways for effect include the following:

- Greenland white-fronted goose, black headed gull, common gull, lesser black-backed gull and tufted duck were all recorded either within the Site, within 500m of the Site or flying over the Site during the dedicated bird surveys undertaken (refer to Section 3.3.2.3 above, and Appendix 4 for raw survey data). These species are listed as SCIs for the SPA and given the distance between the Site and the SPA there is potential for individuals recorded using the Site to be associated with the SPA populations as it is within the foraging range of some of these species. The construction of the Proposed Project will result in a permanent loss of agricultural grasslands within the construction footprint which also provides suitable foraging habitat for some of these species, which has the potential to represent a loss of *ex-situ* habitat for SCI species.
- Additionally, as SCI bird species were recorded utilising the habitats within the Site, there is potential for *ex-situ* disturbance/displacement effects during the construction and operational phases of the Proposed Project.
- Due to the observations of individuals flying through the Site at potential collision height during vantage point surveys, there is also the potential for collision risk and mortality of SCI species during operation of the Proposed Project.

In addition to the SCI species for which Lough Mask SPA is designated, consideration has also been given to whether other Annex I or regularly occurring migratory bird species occur within the SPA in a significant manner, that could be relevant to the assessment of potential effects on the European Site. The Site Synopsis document for Lough Mask SPA was consulted, where it is stated that *"Other species using the site include Mute Swan (49), Whooper Swan (54), Wigeon (84), Teal (99), Mallard (101), Pochard (65), Goldeneye (89), Red-breasted Merganser (12), Little Grebe (17), Cormorant (36), Coot (112), Lapwing (31) and Curlew (75)."* However, these data are mean peaks for four of the five winters in the period 1995/96 to 1999/2000, therefore more recent data were also consulted from the Irish Wildlife Manual 162 *'The status and distribution of wintering waterbirds in Ireland in 2023: results from the Irish Wetland Bird Survey (I-WeBS)'* (Burke *et al.,* 2025) which presents data from the 2016/17-22/23 winter seasons. Within this document, aside from the SCI species tufted duck, Lough Mask is shown to support nationally important populations (i.e.>1% of the national population) of mute swan (*Cygnus olor*) and goldeneye (*Bucephala clangula*). These species are therefore considered further:

- **Mute swan:** During the extensive ornithological survey effort between October 2021 and September 2025 (the full results of which can be found Chapter 7 of the EIAR submitted with this planning application), mute swan were frequently recorded in small numbers (195 observations of up to six birds) at Drumady Lough located immediately to the east of the Site. However, there were only two observations of this species within the Site, on both occasions when birds were commuting over the Site in the direction of Drumady Lough. As mute swan were never recorded utilising the habitats within the Site, the Site is not considered to be of No Ecological Importance to this species. Additionally, they are a common, widespread species that do not generally show large commuting distances from their roosting to their foraging grounds, therefore it is unlikely that the birds observed at Drumady Lough adjacent to the Site are associated with the population within Lough Mask SPA. As such, there is no potential for adverse effects on the Lough Mask population of this species as a result of the Proposed Project and no further consideration is required.

- **Goldeneye:** This species was never recorded during any of the surveys undertaken at the Site or wider hinterland between October 2021 and September 2025. Therefore, the Site is considered to be of No Ecological Importance to this species. As such, there is no potential for adverse effects on the Lough Mask population of this species as a result of the Proposed Project and no further consideration is required.

Therefore, no additional species were identified that could introduce further potential pathways for effects beyond those already assessed for the SCI species.

Table 5-13 below lists the Special Conservation Interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.3.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 5-13 Assessment of Qualifying features potentially affected in Lough Mask SPA

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2025[21]),	Rationale	Potential for Adverse Effects Yes/No
[A061] Tufted Duck (*Aythya fuligula*)	To restore the Favourable conservation condition of Tufted Duck in Lough Mask SPA	Tufted duck were not recorded within the Site over the four years of detailed ornithological surveys, with the closest observations being at Drumady Lough, adjacent to the Site. The Site is therefore not considered to be of significant ecological importance to this species given how infrequently the Site is utilised by this species. The potential for direct habitat loss, disturbance/displacement and collision risk are therefore limited and there is no evidence to suggest that the Site is of significance to this species. As such, there is no potential for adverse effects on this SCI species and no further assessment is required.	No
[A179] Black-headed Gull (*Chroicocephalus ridibundus*)	To restore the Favourable conservation condition of Black-headed Gull in Lough Mask SPA	Black-headed gull were only observed on nine occasions, despite undertaking a comprehensive suite of surveys over four years. The Site is therefore not considered to be of significant ecological importance to this species, given how infrequently the species was observed. Additionally, the Site is located beyond the core foraging range for black-headed gull (11.4km; Thaxter *et al.,* 2012), therefore it is unlikely that the individuals observed within the Site are associated with the Lough Mask SPA, located approximately 14.5km southwest. The potential for direct habitat loss, disturbance/displacement and collision risk are therefore limited and there is no evidence to suggest that the Site is of	No

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2025[21]),	Rationale	Potential for Adverse Effects Yes/No
		significance to this species. As such, there is no potential for adverse effects on this SCI species and no further assessment is required.	
[A188] Common Gull (*Larus canus*)	To restore the Favourable conservation condition of Common Gull in Lough Mask SPA	Common gull were recorded within the Site on only two occasions over the four years of surveying. The Site is therefore not considered to be of significant ecological importance to this species given how infrequently the Site is utilised by this species. The potential for direct habitat loss, disturbance/displacement and collision risk are therefore limited and there is no evidence to suggest that the Site is of significance to this species. As such, there is no potential for adverse effects on this SCI species and no further assessment is required.	No
[A183] Lesser Black-backed Gull (*Larus fuscus*)	To maintain the Favourable conservation condition of Lesser Black-backed Gull in Lough Mask SPA	Lesser black-backed gull were frequently observed during the breeding season commuting over the Site and occasionally observed foraging within the Site. The Site is located within the core foraging range of lesser black-backed gulls (71.9km; Thaxter *et al.,* 2012), therefore there is potential connectivity between the Site and the SPA population. On a precautionary basis, it is considered that lesser black-backed gulls using the Site may be associated with Lough Mask SPA. Therefore, the potential for adverse effects on this SCI species in the form of collision risk, displacement and barrier effects, ex situ habitat loss and disturbance, cannot be excluded. **These pathways are further assessed in this NIS.**	**Yes**
[A193) Common Tern (*Sterna hirundo*)	To maintain the Favourable conservation condition of Common Tern in Lough Mask SPA	Common tern were not recorded on any occasion over the four years of surveying. The Site is of No Ecological Importance to this species given the lack of any records of the species during the extensive ornithological survey effort. The potential for direct habitat loss, disturbance/displacement and collision risk are therefore limited and there is no evidence to suggest that the Site is of significance to this species. As such, there is no potential for adverse effects on this SCI species and no further assessment is required.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2025[21]),	Rationale	Potential for Adverse Effects Yes/No
[A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*)	To restore the Favourable conservation condition of Greenland White-fronted Goose at Lough Mask SPA	Greenland white-fronted goose were not recorded within the Site over the four years of surveying, with only one observation of birds on Drumady Lough, adjacent to the Site. The Site is therefore not considered to be of significant ecological importance to this species given how infrequently the Site is utilised by this species. Additionally, the Site is located beyond the core foraging range for Greenland white-fronted goose (5-8km; SNH, 2016), therefore it is unlikely that the individuals observed within the Site are associated with the Lough Mask SPA, located approximately 14.5km southwest. The potential for direct habitat loss, disturbance/displacement and collision risk are therefore limited and there is no evidence to suggest that the Site is of significance to this species. As such, there is no potential for adverse effects on this SCI species and no further assessment is required.	No
[A999] Wetlands	To maintain the Favourable conservation condition of Wetland habitats in Lough Mask SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas	The River Robe flows in a southerly direction approx. 50m from the eastern boundary of the Site, with surface water drainage from the eastern portion of the Site flowing towards the River Robe. Lough Mask SPA is located over 39km downstream of the Site via the River Robe. Due to the length of the hydrological flowpath between the Site and this SPA and the assimilative capacity of the intervening watercourse, there is no potential for indirect adverse effects on the wetland supporting habitats a result of water quality deterioration arising from Proposed Project. As such, there is no potential for adverse effects on this SCI habitat and no further assessment is required.	No

5.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form for the SPA, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Project. These are provided in Table 5-14 below.

Table 5-14 Site-specific threats, pressures and activities in Lough Mask SPA

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Low	B	Sylviculture, forestry	Outside
Medium	A10	Restructuring agricultural land holding	Outside
High	F02.03	Leisure fishing	Inside
Medium	A08	Fertilisation	Outside

No potential pathways for effect associated with the Proposed Project with regard to site-specific threats, pressures and activities were identified.

5.1.3.3 SCI-Specific Information

5.1.3.3.1 *Lesser Black-backed Gull (Larus fuscus) [A183]*

According to the Site-Specific Conservation Objectives (NPWS, 2025[21]), an estimated 366 pairs of lesser black-backed gull were recorded at this SPA in 1977, increasing to 447 and 361 pairs in 1988 and 1993 respectively , indicating a stable population. The population appeared to decline in 1999 and 2006 when breeding numbers dropped to 286 and 282 pairs, however since then the population has increased with approximately 557 recorded between 2016 and 2018 and 608 and 563 pairs recorded in 2021 and 2022. The most recent population estimate of 668 pairs in 2023 is the highest for the site and represents a population increase of 83% since 1977. The natural-nesting population in Ireland has increased by 163% between surveys in 1998 - 2002 and 2015 - 2021

As per the latest national estimates provided in the National Seabird Census (Burnell *et al.*, 2023), the national population of lesser black-backed gull in the Republic of Ireland is 11,425 and the County Mayo population is 1,164 pairs (or 2,328 birds). This is an increase on the estimated national breeding population reported in the last Article 12 reports for Ireland (2008-2012) of 4,239 pairs (or 8,478 birds).

Using the National Seabird Census as the most up-to-date data, there was one observation of a flock of national importance (1% of the national population; 114 birds) recorded within 500m of the Site. Flocks of county importance (1% of the county population; 23 birds) were observed on only two occasions at the Site. The remainder of observations on, or within 500m of, the Site had an average of two individuals, however, there were frequently more than one observation during surveys and the total number of individuals observed during a single survey was of county importance on numerous occasions. While it cannot be determined which birds observed at the Site are associated with Lough Mask SPA, on a highly precautionary basis and for the purposed of this impact assessment, it is assumed that all birds observed on site during the breeding season have the potential to be associated with the SPA.

Targets and Attributes

The conservation objective for this QI is:

> *'To maintain the Favourable conservation condition of Lesser Black-backed Gull in Lough Mask SPA'*

The attributes and targets for this species as per the SSCOs for the SPA are provided in Table 5-15 below. The table also provides an assessment of whether there is potential for the Proposed Project to undermine each Conservation Objective target in the absence of mitigation.

Table 5-15 Targets and Attributes associated with nominated site-specific conservation objectives for lesser black-backed gull in Lough Mask SPA

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
Breeding population size	Long term SPA population trend is stable or increasing	**Yes** – On a precautionary basis, due to the observations of lesser black-backed gulls flying within the Site at potential collision height during vantage point surveys, there is potential for collision risk and direct mortality as a result of the Proposed Project, which has the potential to undermine this target.
Productivity rate	Sufficient to maintain a stable or increasing population	**Yes** - On a precautionary basis, due to the observations of lesser black-backed gulls flying within the Site at potential collision height during vantage point surveys, there is potential for collision risk and direct mortality as a result of the Proposed Project, which has the potential to undermine this target.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	No – The Proposed Project does not have the potential to result in a reduction in the availability of nesting sites within the SPA, as the Site is located entirely outside of the SPA and there is no potential for significant adverse effects on the wetland supporting habitats. Therefore the Proposed Project has no potential to undermine this target.
Forage spatial distribution, extent, abundance and availability	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	**Yes** – On a precautionary basis, the Proposed Project has the potential to result in a reduction in the area of forging habitat for lesser black-backed gulls due to *ex-situ* direct habitat loss, which has the potential to undermine this target.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	No – The Proposed Project does not have the potential to result in an increase in disturbance at their breeding sites, as the Site is located entirely outside of the SPA. Additionally, this species was not recorded breeding within or in close proximity to the Site during the surveys undertaken.

Attribute	Target	Potential for the Proposed Project to Undermine Conservation Objective Target in the Absence of Mitigation
		Therefore the Proposed Project has no potential to undermine this target.
Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on breeding population	**Yes** – On a precautionary basis, there is potential for *ex-situ* disturbance and displacement of lesser black-backed gulls commuting over or utilising the Site for foraging during construction and operation of the Proposed Project, which has the potential to undermine this target.
Barriers to connectivity	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	**Yes** – On a precautionary basis, the Proposed Project has the potential to impact access to the SPA by SCI lesser black-backed gulls by creating a barrier to connectivity during operation, which has the potential to undermine this target.

6. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of this NIS presents the data and information on the Proposed Project and provides an analysis comprising the scientific examinations of the Proposed Project and its implications for the European sites referred to above in view of their conservation objectives, and provides an analysis of whether the Proposed Project, in light of best scientific information, individually or in combination with other plans or projects, would adversely affect the integrity of a European Site. Potential adverse effects are assessed in view of best scientific knowledge, based on objective information in relation to the Proposed Project including the proposed avoidance, reduction, and preventive measures.

The following sections provide a review of the potential impact pathways for each of the European Sites for which potential pathways for effect have been identified (Section 4.1 and 5.1). Mitigation measures for the avoidance of impact are then provided, followed by an assessment of potential effects, post implementation of the mitigation measures.

6.1 Collision Risk

A potential pathway for effects on Lough Mask SPA in the form of collision mortality for lesser black-backed gull during the operational phase of the Proposed Project was identified. The SPA is designated for breeding lesser black-backed gull. As detailed in Section 5.1.3.1, no other species associated with Lough Mask SPA were recorded using the Site or surrounding area in significant numbers.

The species was recorded on a number of occasions within/flying over the Site and given the Site is within the core foraging range for this species, there is potential for lesser black backed gull recorded utilising the Site during the surveys undertaken to be part of the SPA population. Collision risk may arise where flight trajectories intersect with the rotor sweep of turbines or where birds utilise the site during movements between breeding and foraging areas. Collision risk modelling was undertaken for this species and is detailed in Chapter 7 'Birds' of the EIAR which accompanies this planning application, and is included in Appendix 5 of this NIS. The assessments in this section are informed by these findings.

Collision risk is calculated using a mathematical model to predict the number of individual birds of a particular species that may be killed by collision with moving wind turbine rotor blades. The modelling method used in this collision risk calculation follows the Band Model (Band 2024), as recommended by NatureScot guidance (2024). The Band Model first determines the number of birds transits through the air space swept by the rotor blades of the wind turbines. Then it calculates the collision risk for the birds. The product of the transits multiplied by the collision risk provides a collision rate. An avoidance factor is applied to this to account for birds actively avoiding turbines, providing a final 'real world' annual collision rate for each species. Uncertainty around the final collision rate is also presented.

Given that Lough Mask SPA is the nearest significant breeding location for this species to the Site, it is assumed that all individual lesser black-backed gulls observed during vantage point surveys could, on a highly precautionary basis, be associated with the Lough Mask SPA, Therefore, for the purposes of this NIS, on this highly precautionary basis, the reference population for the collision risk assessment is considered to be the Lough Mask SPA breeding population. Additionally, given the intrinsic links between breeding and wintering populations, both breeding and wintering observations of lesser-black backed gulls are included in the collision risk assessment.

The species was recorded flying within potential collision height during vantage point surveys of the Site. A non-directional collision risk analysis has been undertaken (full details provided in Appendix 5). The collision risk has been calculated at a rate of 0.22 collisions per year, or one bird every five years.

Annual mortality of adult lesser black-backed gull has been calculated at 9% per annum (Wanless *et al.*, 1996). If 0.22 collisions were to occur per year, it would mean that the losses at the Proposed Wind Farm would increase the annual mortality of the Lough Mask SPA population (c.668 pairs in 2023, i.e. 1,336 birds) by 0.2%. The predicted collision risk is therefore of negligible magnitude as per Percival (2003) criteria. Therefore, no adverse effects are predicted in relation to collision mortality for lesser black-backed gull and no mitigation is required in this regard.

6.2 Displacement and Barrier Effects

A potential pathway for effects on Lough Mask SPA in the form of displacement and barrier impacts affecting breeding populations of lesser black-backed gulls associated with Lough Mask SPA during the operational phase of the Proposed Project is considered on a precautionary basis.

The majority of observations of lesser black-backed gulls were of birds commuting over the Site, with birds only occasionally observed utilising the habitats within the Site. Displacement of lesser black-backed gull due to the presence of turbines has not been reported within literature. However, lesser black-back gull are a wide-ranging species in both the breeding and winter season, and therefore if displacement were to occur within the Site, it would not mean the loss of a scarce resource for the local population. Furthermore, the suitable habitats present (agricultural grassland and peatland) within the Site are not unique to the Site and are abundant in the wider surroundings.

There is no evidence to suggest that the Site lies on a migratory/ regular commuting route for the species given that the flights across the Site appear random in nature, therefore barrier effect is not anticipated. Any minor alterations to the flight paths of local commuting birds due to the presence of turbines is not likely to result in adverse effects on lesser black backed gull associated with the SPA and no mitigation is required is this regard.

6.3 Disturbance

A potential pathway for effects on Lough Mask SPA via disturbance of SCI species during the construction stage was also identified. These potential effects are limited to the SCI species lesser black-backed gulls associated with Lough Mask SPA, which as mentioned in the preceding sections have been recorded using habitats within the Site and may be associated with the SPA population. On a precautionary basis, a pathway for disturbance of these species from machinery, personnel, noise and general activity has been identified.

The majority of observations of lesser black-backed gull were of birds commuting over the Site, with birds only occasionally observed utilising the habitats within the Site. Given how infrequently this species was recorded utilising the habitats within the Site, it is likely that this species is not dependent on the habitats within the Site. Additionally, this species was not recorded breeding within the Site during any of the surveys undertaken between October 2021 and September 2025. Disturbance from the construction of the Proposed Project is unlikely to give rise to adverse effects on the populations of this species associated with Lough Mask SPA, given the abundance of suitably similar habitats (grassland and peatland habitats) in the wider area surrounding the Site. Furthermore, lesser black-back gull are a wide-ranging species in both the breeding and winter season, and therefore if disturbance were to occur within the Site, it would not mean the loss of a scarce resource for the local population. Significant disturbance is not anticipated and no mitigation measures are required in this regard.

6.4 Ex-situ Habitat Loss

A potential pathway for effects in the form of *ex situ* habitat loss on populations of lesser black-backed gull that may be associated with the Lough Mask SPA is considered on a precautionary basis. These potential effects are limited to the SCI species lesser black-backed gull only given, as identified in Section 5.1.3.1 above, there is potential for lesser black backed gulls recorded utilising the habitats

within and flying over the Site to be associated with the SPA population. No potential for habitat loss related impacts during the operational or decommissioning phases of the Proposed Project were identified as no new land-take will occur during these phases.

Lesser black-backed gull were frequently observed commuting over the Site and occasionally observed foraging within the Site. However, the majority of observations were of birds commuting over the Site. Given how infrequently this species was recorded utilising the habitats within the Site, it is likely that this species is not dependent on the habitats within the Site for foraging. Additionally, lesser black-backed gulls were primarily recorded utilising the grassland habitats within the Site, which is a habitat type that is widespread in the wider area surrounding the Site and not unique to the Site. Furthermore, the land which will be lost to the permanent footprint is small (i.e., 5ha/3%) relative to the total area within the Site. Extensive areas of suitable foraging habitat will remain post construction. No adverse effects on lesser black-backed gull as a result of ex-situ habitat loss are predicted and no mitigation is required in this regard.

6.5 Deterioration of Water Quality

There is hydrological connectivity between the Proposed Project and the River Moy SAC via drainage ditches within and the Meander River adjacent to and downstream of the Site, therefore in the absence of mitigation the potential for adverse effects on this European Site has been identified as a result of surface and groundwater quality deterioration. While hydrological connectivity was identified between the Proposed Project and other European Sites, e.g. Lough Carra/Mask Complex SAC, Lough Mask SPA, Lough Conn and Lough Cullin SPA, as outlined in Table 4-1 above, given the nature and scale of the works, the hydrological distance between the Site and these European Sites, i.e. >38km minimum, no potential pathways for likely significant effects on these European Sites was identified at the Screening stage and they have therefore not been included for further assessment within this NIS. Additionally, as outlined in Table 5-10 above, there is no potential for adverse effects on the integrity of Balla Turlough SAC due to the nature of the local hydrological and hydrogeological regime at the Site and the distance between the Proposed Project and the SAC.

There is potential for adverse effects on the integrity of the River Moy SAC as a result of the Proposed Project due to deterioration in water quality arising from run-off of and infiltration of pollutants, including silts, hydrocarbons and cementitious materials, to surface and ground waters during the construction, operational and decommissioning phases of the Proposed Project. Potential indirect effects on this European Site arising from deterioration of water quality are confined to aquatic QIs that may occur downstream of the Site, where hydrological connectivity exists. These are:

River Moy SAC [002298]

- [1092] White-clawed crayfish (*Austropotamobius pallipes*)
- [1095] Sea lamprey (*Petromyzon marinus*)
- [1096] Brook lamprey (*Lampetra planeri*)
- [1355] Otter (*Lutra lutra*)
- [7230] Alkaline fens
- [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. The footprint of the Proposed Project has been specifically designed to avoid significant impacts on watercourses. The key mitigation measure during the construction phase is the avoidance of sensitive aquatic areas by application of suitable buffer zones (i.e. 50m to main watercourses), with the exception of the stream along the proposed Turbine Delivery Route.

The environmental management framework to be adhered to during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures to ensure that there are no adverse effects on the integrity of any European Sites in light of their conservation objectives during the construction, operational or decommissioning phases of the Proposed Project. Measures for the protection of water quality during the project design as well as construction, operational and decommissioning phases of the Proposed Project are set out in the following subsections.

6.5.1 Construction Phase

6.5.1.1 Potential Effects from Tree Felling

A total of 0.7ha of coniferous forestry will be permanently felled within and around the footprint of the proposed infrastructure. Felling of trees along hedgerows will also be completed at the Site as part of the construction of the Proposed Project. In addition, 2.6ha of scrub and scrub mosaic habitats will be removed to facilitate the Proposed Project.

Felling of coniferous plantations required as part of the Proposed Project will be the subject of a Felling Licence application to the Forest Service, in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments.

Potential effects during tree felling occurs mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface watercourses;
- Entrainment of suspended sediment in watercourses due to vehicle tracking through watercourses;
- Damage to roads resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface watercourses;
- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

In the absence of mitigation, these effects have the potential to result in the deterioration of water quality and therefore adverse effects on downstream European Sites and their QIs as outlined in the preceding sections.

Proposed Mitigation Measures:

Tree felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and Department of Agriculture, Food and the Marine (DAFM) guidance documents, including the specific guidelines listed below, to ensure that felling, planting and other forestry operations result in minimal potential negative effects to the receiving environment.

- Forestry Standards Manual (Forest Service, 2015)
- Forest Protection Guidelines (Forest Service, 2002)
- Forest Operations and Water Protection Guidelines (Coillte, 2013)
- Forestry and Water Quality Guidelines (Forest Service, 2000b)
- Forestry and the Landscape Guidelines (Forest Service, 2000c)
- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018)
- Coillte Planting Guideline SOP
- Code of Best Forest Practice (Forest Service, 2000)

Mitigation by Avoidance:

There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document "Forestry and Water Quality Guidelines" are shown in Table 6-1.

The setback distance from sensitive hydrological features means that adequate room is maintained for the proposed mitigation measures (discussed below) to be properly installed and operate effectively. The buffer/setback zone will:

- Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment;
- Avoid soil disturbance and compaction within close proximity to surface watercourses;
- Avoid the entry of suspended sediment from works into watercourses; and,
- Avoid the entry of suspended sediment from the drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation of the buffer zone.

Table 6-1 Minimum Buffer Zone Widths (Forest Service, 2000)

Average slope leading to the aquatic zone		Buffer zone width on either side of the aquatic zone	Buffer zone width for highly erodible soils
Moderate	(0 – 15%)	10 m	15 m
Steep	(15 – 30%)	15 m	20 m
Very steep	(>30%)	20 m	25 m

In addition to the application of buffer/setback zones, the following supplementary mitigation measures will be employed during tree felling works:

Mitigation by Design:

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance;
- All machinery will be operated by suitably qualified personnel;
- Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works;
- Machines will traverse the Site along specified off-road routes (referred to as racks);
- The location of racks will be chosen to avoid wet and potentially sensitive areas;
- Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall;
- Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide

surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected spoil repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;

- In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed onsite during construction;
- Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses;
- Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded;
- Timber will be stacked in dry areas, and outside watercourse buffer zones. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites;
- Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff;
- All refuelling will be completed outside of the designated 50m hydrological buffer zones. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and,
- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.

Silt Traps:

Silt traps will be strategically placed down-gradient within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.

Pre-emptive Site Drainage Management:

The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily/weekly basis, as required, to allow site staff to direct proposed and planned construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Éireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,
- Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest.

Using the safe threshold rainfall values will allow planned works to be safely executed (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.

Works will be suspended if forecasting suggests any of the following is likely to occur:

- >10 mm/hr (i.e. high intensity local rainfall events);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Timing of Proposed Project Felling Works:

Felling will only be carried out during periods of no or low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses.

Drain Inspection and Maintenance:

The following items will be carried out during pre-felling inspections and after:

- Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines;
- Inspection of all areas reported as having unusual ground conditions;
- Inspection of main drainage ditches and outfalls. During pre-felling inspections the main drainage ditches will be identified. Ideally the pre-felling inspection will be carried out during rainfall;
- Following tree felling all main drains will be inspected to ensure that they are functioning;
- Extraction tracks within 10m of drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground;
- Culverts on drains exiting the site, if impeded by silt or debris, will be unblocked; and,
- All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.

Surface Water Quality Monitoring:

Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The 'before' sampling will be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The "during" sampling will be undertaken once a week or after rainfall events. The 'after' sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e. where an impact has been shown).

Details of the proposed surface water quality monitoring programme are outlined in the CEMP which has been prepared for the Proposed Project (refer to Appendix 7).

Criteria for the selection of water sampling points include the following:

- Avoid man-made ditches and drains, or watercourses that do not have year round flows, i.e. avoid ephemeral ditches, drains or watercourses;
- Select sampling points upstream and downstream of the forestry activities;
- It is advantageous if the upstream location is outside/above the forest in order to evaluate the impact of land-uses other than forestry;

- Downstream locations will be selected: one immediately below the forestry activity, the second at exit from the forest, and the third some distance from the second (this allows demonstration of no impact through dilution effect or contamination by other land-uses where impact increases at third downstream location relative to second downstream location); and,
- The above sampling strategy will be undertaken for all on-site sub-catchments streams where tree felling is proposed.

Also, daily surface water monitoring forms (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to tree felling associated with the Proposed Project.

6.5.1.2 Potential Effects from Earthworks Resulting in Suspended Solids Entrainment in Surface Waters

Construction phase activities including access road construction, turbine foundation/hardstanding construction, temporary construction compound construction, met mast construction, substation construction, storage of peat and spoil in the designated peat and spoil management areas, the opening of the borrow pit, and the underground cabling works will require varying degrees of earthworks resulting in excavation of soils and subsoils. It is estimated that a total of 94,200m^3 of peat and spoil will be excavated during the construction phase.

Potential sources of sediment-laden water include:

- Drainage and seepage water resulting from excavations;
- Stockpiled excavated material providing a point source of exposed sediment; and,
- Erosion of sediment from emplaced site drainage channels.

These activities can result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. In addition, the tree planting associated with the biodiversity enhancement works will have the potential to release suspended solids to surface waters.

In the absence of mitigation, these activities therefore have the potential to result in the deterioration of water quality and therefore adverse effects on downstream European Sites and their QIs as outlined in the preceding sections.

Proposed Mitigation Measures:

Mitigation by Avoidance:

The key mitigation measure during the construction phase is the avoidance of sensitive hydrological features where possible, by application of suitable buffer zones. The design of the Proposed Project (Proposed Wind Farm and Proposed Grid Connection) has avoided the crossing of EPA mapped watercourses on site. The Meander River flows along the southern boundary of the Site, and is located c.372m southwest of Turbine 5 at its nearest point. No works are proposed within the 50m hydrological buffer associated with this watercourse.

Drumady Lough and Nambrackkeagh Lough are located immediately adjacent to the Site, both of which are located at least 200m away from any proposed infrastructure. No works are proposed within

the delineated 100m lake buffer with the exception of some treeline and hedgerow planting/ enhancement and native woodland planting. These works within the buffer zones identified do not pose a significant risk to the hydrological environment. Indeed, the presence of trees would protect water quality in the long-term by providing erosion interception and stability.

The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operate effectively. The proposed buffer zone will:

- Avoid physical damage (river/stream banks and river/stream beds) to watercourses and associated release of sediment;
- Avoid excavations within close proximity to surface watercourses;
- Avoid the entry of suspended sediment from earthworks into watercourses; and,
- Avoid the entry of suspended sediment from the construction phase drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation outside of the buffer zone.

Mitigation by Design:

- Source controls:
  - Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.
  - Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas.
- In-Line controls:
  - Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.
- Treatment systems:
  - Temporary sumps and ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems.

It should be noted for this site that an extensive network of forestry and roadside drains already exists, and these will be integrated and enhanced as required and used within the wind farm development drainage system. The integration of the existing forestry drainage network and the proposed wind farm network is relatively simple. The key elements being the upgrading and improvements to existing water treatment elements, such as in line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls.

The main elements of interaction with existing drains will be as follows:

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the proposed wind farm drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion;
- Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area;

- Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces;
- Buffered outfalls which will be numerous over the site will promote percolation of drainage waters across vegetation and close to the point at which the additional runoff is generated, rather than direct discharge to the existing drains of the site; and,
- Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters.

Pre-commencement Temporary Drainage Works:

Prior to the commencement of construction works, the following key temporary drainage measures will be installed:

- All existing dry forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps;
- Clean water interceptor drains will be installed upgradient of the works areas;
- Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains; and,
- A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone.

These details are included in the drainage plans attached as Appendix 10 of this NIS.

Silt Fences:

Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids such as those present in the subsoils/sandstone tills that overlie the site. This will act to prevent entry to watercourses of sand and gravel sized sediment, released from excavation of mineral sub-soils of glacial and glacio-fluvial origin, and entrained in surface water runoff. Inspection and maintenance of these structures during construction phase is critical to their functioning to stated purpose. They will remain in place throughout the entire construction phase. Double silt fences will be placed within any drains down-gradient of all work areas, where required inside the 100m lake buffer zones.

Silt Bags:

Silt bags will be used where small to medium volumes of water need to be pumped from excavations. As water is pumped through the bag, the majority of the sediment is retained by the geotextile fabric allowing filtered water to pass through. Silt bags will be used with natural vegetation filters or sediment entrapment mats, consisting of coir or jute matting, will be placed at the silt bag location to provide further treatment of the water outfall from the silt bag. Sedimats will be secured to the ground surface using stakes/pegs. The sedimat will extend to the full width of the outfall to ensure all water passes through this additional treatment measure.

Settlement Ponds:

The Proposed Project development footprint has been divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 10-year return period rainfall event were calculated for each catchment. These flows were then used to design settlement ponds for each drainage catchment. The settlement ponds are designed for 11hr or 24hr retention times used to settle out medium silt (0.006mm) and fine silt (0.004mm) respectively (EPA,

2006)[24]. Settlement ponds at the borrow pit are designed to allow 24hr retention and settlement ponds along access roads and at turbine hardstands will have 11hr retention as there is additional in-line drainage controls proposed along access tracks and at hardstands.

Level Spreaders and Vegetation Filters:

The purpose of level spreaders is to release treated drainage flow in a diffuse manner, and to prevent the concentration of flows at any one location thereby avoiding erosion. Level spreaders are not intended to be a primary treatment component for development surface water runoff. They are a secondary measure that manage how water is released from the drainage system and designed to reduce the impact of the already-controlled flow of treated water. They are not stand alone but occur as part of a treatment train of systems that will reduce the velocity of runoff prior to be released at the level spreader. In the absence of level spreaders, the potential for ground erosion is significantly greater than not using them.

Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the Site to provide a polishing filter for the wind farm drainage prior to reaching the downstream watercourses.

Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls→check dams→silt traps→settlement ponds→level spreaders →silt fences→vegetation filters).

Water Treatment Train:

A final line of defence will be provided by a water treatment train such as a "Siltbuster". If the discharge water from construction areas fails to be of a high quality during regular inspections, then a filtration treatment system (such as a 'Siltbuster' or similar equivalent treatment train (sequence of water treatment processes) will be used to filter and treat all surface discharge water collected in the dirty water drainage system. This will apply for all of the construction phase.

Pre-emptive Site Drainage Management

The works programme for the entire construction stage of the development will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;

[24] Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006).

- Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,
- Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest.

Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.

Works will be suspended if forecasting suggests either of the following is likely to occur:

- >10 mm/hr (i.e. high intensity local rainfall events);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures will be completed:

- All active excavations will be secured and sealed off;
- Temporary or emergency drainage will be installed to prevent back-up of surface runoff; and,
- No works will be completed during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

Management of Runoff from the Peat and Spoil Management Areas:

It is proposed that excavated peat/subsoil (spoil) will be used to reinstate the proposed borrow pit, for landscaping throughout the site and any excess spoil will be placed in the 10 no. peat and spoil management areas. All peat and spoil management areas are located outside the 50m stream buffer zone, with all peat and spoil management areas being located a minimum of 500m away from EPA mapped watercourses. The closest is located ~540m northwest of the Meander River as it outflows from Lough Nambrackkeagh. Furthermore, no peat and spoil management areas are located within the delineated 100m lake buffer. The closest is ~230m to the west of Drumady Lough.

Proposed surface water quality protection measures regarding the peat and spoil management areas are as follows:

- Where applicable the vegetative topsoil layer of the peat and spoil management areas will be rolled back to facilitate placement of excavated spoil up to a maximum height of 1.2 to 1.5 metres, following which the vegetative-top soils layer will be reinstated;
- Where reinstatement is not possible, peat and spoil management areas will be sealed with a digger bucket and seeded as soon as possible to reduce sediment entrainment in runoff;
- An interceptor drain will be installed upslope of the identified peat and spoil management areas to divert any surface water away from these areas where necessary;
- Silt fences and double silt-fences will be emplaced down-gradient of the designated peat and spoil management areas and will remain in place throughout the entire construction phase, or until reseeding has been established to a sufficient level;
- Once the peat and spoil management area has been seeded and vegetation is established the risk to downstream surface water is significantly reduced.

Therefore, at each stage of the peat management development the above mitigation measures will be deployed to ensure protection of downstream water quality.

The peat and spoil management area settlement ponds have been designed to allow a 24hr retention time as per EPA guidance (2006) which is the highest level of protection recommended by the EPA with regard to retention time.

Timing of Site Construction Works:

Construction of the site drainage system will only be carried out during periods of low rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses. Construction of the drainage system during this period will also ensure that attenuation features associated with the drainage system will be in place and operational for all subsequent construction works.

Allowance for Climate Change

Climate Change rainfall projections are typically for a mid-century (2050) timeline. The projected effects of climate change on rainfall are therefore modelled towards the end of the life cycle of the proposed development, as the turbines have a life span of 35 years. It is likely that the long-term effects of climate change on rainfall patterns will not be observed during the lifetime of the Proposed Wind Farm. As outlined in the above sections the settlement ponds have been designed for a 1 in 10-year return flow. This approach is conservative given that the project will likely be built over a much shorter period (12-18 months), and therefore this in-built redundancy in the drainage design more than accounts for any potential short term climate change rainfall effects.

However, the settlement ponds are designed for 1 in 10 years flows with built in redundancy (+20%) to account for climate change effects on rainfall.

Monitoring:

An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.

Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. Checks will be carried out on a daily basis.

During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards will be undertaken for each primary watercourse, and specifically following heavy rainfall events (as per the CEMP included in Appendix 7 of this NIS).

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to earthworks associated with the Proposed Project.

6.5.1.3 Potential Effects on Surface Water Quality from Excavation Dewatering

Some groundwater/surface water seepages will likely occur in turbine foundation excavations, substation compound excavations and sections of the internal cabling trenches, and this will create

additional volumes of water to be treated by the runoff management system. Groundwater inflows will likely be small however larger volumes of water may occur where excavations encounter granular subsoils. Inflows will require management and treatment to reduce suspended sediments. No contaminated land was noted at the Site and therefore pollution issues arising from such sources will not occur.

Proposed Mitigation Measures:

Management of groundwater seepages and subsequent treatment prior to discharge into the drainage network will be undertaken as follows:

- Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place;
- If required, pumping of excavation inflows will prevent build-up of water in the excavation;
- The interceptor drainage will be discharged to the site constructed drainage system or onto natural vegetated surfaces and not directly to surface waters;
- The pumped water volumes will be discharged via volume and sediment attenuation ponds adjacent to excavation areas, or via specialist treatment systems such as a Siltbuster unit;
- The borrow pit settlement ponds have been designed to allow a 24hr retention time as per EPA guidance (2006) which is the highest level of protection recommended by the EPA with regard to retention time;
- There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur;
- Daily monitoring of excavations by the appointed Environmental Clerk of Works will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken; and,
- A mobile 'Siltbuster' or similar equivalent specialist treatment system will be available on-site for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as a final line of defence if needed.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to excavation dewatering associated with the Proposed Project.

6.5.1.4 Potential Effects from Hydrocarbons

Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a significant pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology. The accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk. Hydrocarbon has a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms.

Surface waters are the primary receptor due to the local hydrogeological regime (high rates of surface water runoff and restricted groundwater recharge). It is noted that many of the turbine foundations will be constructed within granular subsoils underlying the peat and cohesive clay and silt deposits. These deeper excavations have the potential to temporarily increase connectivity with the deeper underlying groundwater system, which is otherwise protected by the overlying low-permeability strata. However,

such excavations will be localised, limited in spatial extent and duration, limiting the potential for effects on groundwater quality.

In the absence of mitigation, the release of hydrocarbons therefore has the potential to result in the deterioration of water quality and therefore adverse effects on downstream European Sites and their QIs as outlined in the preceding sections.

Proposed Mitigation Measures:

Mitigation measures proposed to avoid release of hydrocarbons are as follows:

- Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles.
- All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site.
- On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site.
- Heavy plant and machinery will be refuelled on-site by a fuel truck, with spill kits kept onboard, that will come to the Site as required on a scheduled and organised basis.
- Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area in the construction compound when not in use
- Only designated trained operatives will be authorised to refuel plant on-site;
- Refuelling or maintenance of machinery will not occur within the delineated hydrological buffer zones;
- Fuels stored on the Site will be minimised;
- Any diesel or fuel oils stored at the temporary construction compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; and,
- An emergency plan for the construction phase to deal with accidental spillages is contained within the Construction and Environmental Management Plan (Appendix 7). Spill kits will be available to deal with accidental spillages.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to the release of hydrocarbons associated with the Proposed Project.

6.5.1.5 Potential Effects from Cement-Based Products

Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. They generate very fine, highly alkaline silt (pH 11.5) that can physically damage fish by burning their skin and blocking their gills. A pH range of $\geq 6 \leq 9$ is set in S.I. No. 293 of 1988 Quality of Salmonid Water Regulations, with artificial variations not in excess of ± 0.5 of a pH unit. Entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to the aquatic environment. Peat ecosystems are dependent on low pH hydrochemistry. They are extremely sensitive to introduction of high pH alkaline waters into the system.

Batching of wet concrete at the Site and washing out of transport and placement machinery are the activities most likely to generate a risk of cement-based pollution. Placed concrete in foundations (turbine, met mast and substation foundations) and the use of lean mix concrete can also have minor local effects on groundwater quality over time. However, due to the contained shuttering that concrete pours are put in, and the limited surface area of exposed concrete, the anoxic conditions below ground,

and the higher rate of wider groundwater recharge and flow relative to the small volumes of shallow groundwater that would come in contact with the cured concrete, the potential for impacts are low.

Surface waters are the primary receptor due to the local hydrogeological regime (high rates of surface water runoff and restricted groundwater recharge). It is noted that many of the turbine foundations will be constructed within granular subsoils underlying the peat and cohesive clay and silt deposits. These deeper excavations have the potential to temporarily increase connectivity with the deeper underlying groundwater system, which is otherwise protected by the overlying low-permeability strata. However, such excavations will be localised, limited in spatial extent and duration, limiting the potential for effects on groundwater quality.

In the absence of mitigation, the release of cement-based products has the potential to result in the deterioration of water quality and therefore adverse effects on downstream European Sites and their QIs as outlined in the preceding sections.

Proposed Mitigation Measures:

- No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;
- Where possible pre-cast elements for culverts and concrete works will be used;
- Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined concrete washout ponds;
- Weather forecasting will be used to plan dry days for pouring concrete; and,
- The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; and,
- At proposed turbine foundations, sand blinding, DPM, and lean-mix blinding are used to vertically contain the concrete. While the concrete is contained laterally by temporary/permanent shuttering. The concrete cures within 72hrs.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to the release of cement-based products associated with the Proposed Project.

6.5.1.6 Potential Effects from Wastewater

Release of effluent from on-site temporary wastewater treatment systems has the potential to impact on groundwater and surface water quality if site conditions are not suitable for an on-site percolation unit. Welfare facilities will be located at the proposed temporary construction compounds at the Site. Impacts on surface water quality could affect fish stocks and aquatic habitats within the River Moy SAC downstream.

Proposed Mitigation Measures:

- During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds, maintained by the providing contractor, and removed from site on completion of the construction works;
- Water supply for the site office and other sanitation will be brought to site and removed after use from the site to be discharged at a suitable off-site treatment location; and,
- No water or wastewater will be sourced on the site, nor discharged to the site.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to wastewater arising from the Proposed Project.

6.5.1.7 Potential Effects from Morphological Changes to Surface Watercourses & Drainage Patterns within the Site

Diversion, culverting and bridge crossing of surface watercourses can result in morphological changes, changes to drainage patterns and alteration of aquatic habitats. Construction of structures over watercourses has the potential to significantly interfere with water quality and flows during the construction phase, which may result in adverse effects on downstream European Sites, as outlined in the preceding sections.

No new crossings of natural watercourses are required as part of the Proposed Project.

Proposed Mitigation Measures:

In relation to the new proposed culverts and proposed culvert upgrades at field drain crossings, the culverts will be suitably sized for the expected peak flows in the relevant drain. All culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller drain crossings will simply consist of an appropriately sized pipe buried in the sub-base of the access track at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to morphological changes to surface watercourses and drainage patterns associated with the Proposed Project.

6.5.1.8 Potential Effects from the Use of Siltbuster

Siltbusters are regularly used to remove suspended sediments on construction sites by means of chemical dosing and sedimentation (i.e. use of coagulants and flocculants to accelerate the settlement process). The benefits of using enhanced settlement systems on downstream surface water quality are widely known and provide a positive effect. However, potential overdosing with chemical agents means there is a perceived risk of chemical carryover in post treatment water which could result in negative effects on downstream water quality, and therefore on downstream European Sites.

Wind farm construction water (i.e. surface water runoff or pumped groundwater) has sometimes very fine particles, particularly clays and peat, with slow settling velocities which do not settle out efficiently, even in a lamella clarifier at normal flow rates. In these cases, chemical dosing can be used to aggregate the particles (i.e. force them to combine and become heavier), increasing the particle settling rate and cleaning the water via gravity separation techniques. Agents commonly used include poly aluminium chloride (PAC), aluminium sulphate, ferric iron and ferrous iron. These agents are commonly used in drinking water treatment plants. Their use is widespread, and there is significant scientific knowledge around their use and control.

The benefits of using a Siltbuster system in emergency scenarios where all other water treatment systems have proven ineffective are considerable. Note that the Siltbuster system will not be used under normal conditions during the construction phase. The mitigation proposed to protect water quality is already outlined above in Section 6.5.1.2 and 6.5.1.4 above. The use of Siltbuster is only proposed as an emergency back up in the event of failure of al other proposed water treatment mitigation measures,

e.g. in the vent of landslide failure. The Siltbuster system is a proven and effective method of water quality reatment during these events. Given the relatively flat topography of the Site, the risk of a landslide is considered to be low. Therefore, it is extremely unlikely that the Siltbuster system will be utilised.

Proposed Mitigation Measures:

Measures employed to prevent overdosing and potential chemical carryover:

- The Siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur;
- Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system;
- Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment;
- Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and,
- Use of biodegradable chemical agents can be used at very sensitive sites.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to the use of a Siltbuster associated with the Proposed Project.

6.5.1.9 Potential Effects from Biodiversity Management and Enhancement

The Biodiversity Management and Enhancement Plan (BMEP) which has been prepared for the Proposed Project details the proposed biodiversity enhancement measures for the Site to offset the loss of habitats within the Site and to further enhance the biodiversity of the Site. The proposed works include planting 2.5km of linear hedgerow habitat and 3.5ha of native trees which over time will develop into native scrub and woodland.

Some of these proposals will disturb local peat, soil and subsoil deposits and increase the likelihood of erosion of peat and subsoils and have the potential for the entrainment of suspended solids in runoff. However, due to the largely non-invasive nature of the works the potential for effects on European Sites are limited. The works will have a long-term positive effect by providing stability to the soils and reducing potential erosion.

Proposed Mitigation Measures:

All proposed habitat management and enhancement works will be in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte, DAFM and NatureScot guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment.

Given the nature of the restoration measures the following mitigation measures are proposed:

- Before any works are commenced, silt fences will be installed downgradient to the enhancement works to limit the movement of entrained sediment in surface water runoff;
- Proposed off-road routes will be walked in advance of any machinery;
- All machinery operators will be experienced;

- Bog mats will be used where the excavator is required to travel over wet ground; and,
- A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to the implementation of the BMEP prepared for the Proposed Project.

6.5.2 Operational Phase

The Proposed Project will result in an overall increase in the area of non-permeable hard-surfaces which has potential to result in increased surface water run-off from the Proposed Project site, which in turn has potential to cause erosion of watercourses and impact water quality downstream. In the absence of mitigation, this has the potential to cause significant adverse effects on the aquatic habitats and species associated with the River Moy SAC, as outlined above.

6.5.2.1 Potential Effects from the Replacement of Natural Surfaces with Lower Permeability Surfaces

Progressive replacement of the peat or vegetated surface with impermeable surfaces could potentially result in an increase in the proportion of surface water runoff reaching the surface water drainage network. This could potentially increase runoff from the site and increase flood risk downstream of the Site. In reality, the access tracks will have a higher permeability than the underlying peat. However, it is conservatively assumed in this assessment that the proposed access tracks and hardstands are impermeable. The assessed footprint comprises turbine bases and hardstandings, access tracks, amenity links, site entrances, substation and temporary construction compounds. During storm rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on aquatic ecosystems. In the absence of mitigation, the has the potential to result in the deterioration of water quality and therefore adverse effects on downstream European Sites and their QIs as outlined in the preceding sections.

The emplacement of the permanent Proposed Project footprint (5ha), as described in Chapter 4 of the EIAR which accompanies this planning application, (assuming emplacement of impermeable materials under a precautionary scenario) could result in an average total site increase in surface water runoff of approximately 290m^3/month. This increase is small given the scale of the Proposed Project footprint in comparison to the overall site area. Furthermore, baseline runoff rates are very high due to the presence of low permeability peat soils across much of the Site. Therefore, the replacement of natural surfaces with impermeable surfaces at the Proposed Project footprint will not result in any significant increase in runoff. The runoff during the operational phase, in the absence of drainage controls, represents only a 0.13% increase in runoff in comparison to the baseline runoff rates across the Site.

Table 6-2 Baseline Site Runoff vs Operational Phase Runoff

Site Baseline Runoff/month (m^3)	Baseline Runoff/day (m^3)	Permanent Hardstanding Area (m^2)	Hardstanding Area 100% Runoff (m^3)	Hardstanding Area 96% Runoff (m^3)	Net Increase/month (m^3)	Net Increase/day (m3)	% Increase from Baseline Conditions (m^3)
215,716	6,959	5,000	7,250	6,960	290	9.35	0.13%

The additional volume is low due to the fact that the runoff potential across the majority of the Site is naturally high. Also, the calculation assumes that all hardstanding areas will be impermeable which will not be the case as access tracks will be constructed of permeable stone aggregate. Furthermore, the assessment does not consider the existing roads and hardstand areas present across the Site. The increase in runoff from the Proposed Project will, therefore, be negligible. This is even before mitigation measures will be put in place.

Proposed Mitigation by Design:

The operational phase drainage system of the Site will be installed and constructed in conjunction with the track and hardstanding construction work as described below and as shown on the Drainage drawings submitted with this planning application (Appendix 10):

- Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it can be re-distributed over the ground by means of a level spreader;
- Swales/track side drains will be used to collect runoff from access tracks and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling;
- On steep sections of access track transverse drains ('grips') will be constructed in the surface layer of the track to divert any runoff off the track into swales/track side drains;
- Check dams will be used along sections of access track drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock;
- Settlement ponds, emplaced downstream of track swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and,
- Settlement ponds have been designed in consideration of the greenfield runoff rate.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to the replacement of natural surfaces with lower permeability surfaces associated with the Proposed Project.

6.5.2.2 Potential Effects from Runoff Resulting in Contamination of Surface Waters

During the operational phase, the potential for silt-laden runoff is much reduced compared to the construction phase. In addition, all permanent drainage controls will be in place and the disturbance of

ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of site entrances, internal roads, hardstand areas and amenity pathways. These works would be of a very minor scale and would be very infrequent. Potential sources of sediment laden water would only arise from surface water runoff from small areas where new material is added during maintenance works.

These minor activities could, however, result in the release of suspended solids to surface water and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality of downstream water bodies and European Sites. Potential effects could be significant if not mitigated.

During such maintenance works there is a small risk associated with the release of hydrocarbons from site vehicles, although it is not envisaged that any significant refuelling works will be undertaken on site during the operational phase.

Maintenance works will be contained within the Site.

Proposed Mitigation Measures:

Mitigation measures for sediment control are the same as those detailed above for the construction phase in Section 6.5.1.

With regards to hydrocarbons:

- Onsite re-fuelling of normal operational vehicles will not be carried out during the operational phase of the Proposed Project. These vehicles will be refuelled offsite;
- Fuels stored on site will be minimised and any hydrocarbons stored on-site will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity;
- The substation will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor;
- Oil in the turbine transformers will be fully bunded within the enclosed turbine and as such, there is no potential pathway to the water environment i.e. the pathway has been blocked;
- Any plant used during the operational phase will be regularly inspected for leaks and fit for purpose; and,
- Spill kits will be available to deal with accidental spillages.

Residual adverse effects: Once the above listed mitigation measures are implemented, there will be no potential for residual adverse effects on European Sites as a result of the deterioration of water quality due to runoff associated with the Proposed Project.

6.5.3 Decommissioning Phase

A Decommissioning Plan has been prepared for the Proposed Project (provided here as Appendix 8).

The proposed wind turbines as part of the Proposed Project are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the equipment may be replaced with a new technology, subject to planning permission being obtained, or the Proposed Wind Farm may be decommissioned fully.

Upon decommissioning of the Proposed Wind Farm, the wind turbines and the meteorological mast would be disassembled in reverse order to how they were erected. All above ground turbine and mast components would be separated and removed off-site for recycling. Turbine and mast foundations

would remain underground and would be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in significant temporary environment disturbances such as noise, dust and/or vibration. Site access tracks will be used during the operational phase by farm machinery and will provide a useful means of extracting the forestry crop which exists on the Site and therefore will be retained post decommissioning to facilitate these activities.

The underground electrical cabling connecting the turbines to the proposed 110kV substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at the original cable jointing pits which will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance. The cable materials will be transferred to a suitable recycling or recovery facility.

The Proposed Grid Connection underground electrical cabling and proposed 110kV substation will remain in place as it will be part of the Electricity Grid under the ownership and control of ESB Networks and Eirgrid.

A Decommissioning Plan has been prepared (Appendix 8). The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Wind Farm has been fully assessed in this NIS.

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

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

The potential impacts associated with decommissioning of the Proposed Project will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.

The electrical cabling connecting the site infrastructure to the on-site substation will be removed, while the ducting itself will remain in-situ rather than excavating and removing it, as this is considered to have less of a potential environmental impact, in terms of soil exposure, and thus on the possibility of the generation of suspended sediment which could enter nearby watercourses.

The turbines will be removed by disassembling them in a reverse order to their erection. This will be completed using the same model cranes as used in their construction. They will then be transported off-site along their original delivery route. The disassembly and removal of the turbines will not have an impact on the hydrological/hydrogeological environment at the Site.

Other impacts such as possible soil compaction and contamination by fuel leaks will remain but will be of reduced magnitude than the construction phase because of the smaller scale of the works and reduced volumes on-site.

Some of the impacts will be avoided by leaving elements of the Proposed Project in place where appropriate. The onsite 110kV substation and electrical cabling will be retained as a permanent part of the national grid. Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures.

No adverse effects on the hydrological and hydrogeological environment will occur during the decommissioning phase of the Proposed Project.

6.6 Invasive Species

Large stands of Japanese knotweed (*Reynoutria japonica*) occur frequently throughout the south of the Site and show significant evidence of recent spread. This species was recorded within the footprint of the Proposed Project along the main site access route, where the public road is proposed for upgrade. Japanese knotweed has spread widely through the south of the Site in areas of cutover bog and wet grassland on cutover bog. Several large stands are present, measuring up to 50m in extent, with significant numbers of seedlings in the surrounding area, possibly spread through local machinery tracking and turbary activities.

There is potential for the disturbance and spread of this species to the River Moy SAC downstream as a result of the construction of the Proposed Project due to the proposed upgrades to the existing access track, as well as the regular tracking of construction vehicles along this road. In the absence of mitigation, this has the potential to lead to the degradation of habitats within the SAC downstream. While this European Site is located approximately 4.9km downstream of the Site via the Meander River, Japanese knotweed can spread through extremely small rhizomes, stem fragments and seeds.

Due to its presence within the footprint of the Proposed Project and adjacent areas as outlined above, a site-specific Invasive Species Management Plan (ISMP) has been prepared and is presented in Appendix 11 of this NIS. The management plan includes detailed measures for the treatment of Japanese knotweed within and adjacent to the construction footprint, including excavation, chemical treatment and ongoing monitoring over a number of years to monitor for and treat any regrowth.

There is potential for Japanese knotweed to continue to spread through the Site over the lifetime of the Proposed Project, therefore the ISMP also allows for the monitoring of areas outside the Proposed Project footprint, and their treatment, subject to the necessary permissions being in place.

Following the implementation of the site-specific ISMP, there is no potential for significant residual effects on downstream receptors within the River Moy SAC.

7. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for residual adverse effects on each of the individual relevant Qualifying Features of the Screened In European Sites following the implementation of mitigation, is assessed in this section of the report.

Based on the above, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effects on the identified QIs/SCIs and their associated targets and attributes, or on any European Site. Potential pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the Proposed Project design which are considered in the preceding section, the Proposed Project will not have an adverse effect on the integrity of any European Site.

The Proposed Project will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive.

The definition of Favourable Conservation Status for habitats per Article 1(e) of the EU Habitats Directive is as follows:

> *"conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2. The conservative status of a natural habitat will be taken as 'favourable' when:*
>
> - *its natural range and areas it covers within that range are stable or increasing, and*
> - *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, and*
> - *the conservation status of its typical species is favourable as defined in (i)"*

The definition of Favourable Conservation Status for species per Article 1(i) of the EU Habitats Directive is as follows:

> *"conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as '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, and*
> - *The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
> - *There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."*

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Site.

8. ASSESSMENT OF CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified in Section 4 of this report. This included a review of online Planning Registers, Development Plans and other available information and served to identify existing, consented and proposed plans and projects, their activities and their predicted environmental effects.

8.1 Plans

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

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

The review focused on policies and objectives that relate to European Sites. 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 8-1. No potential for cumulative effects when considered in-combination with the Proposed Project has been identified, and the Proposed Project is in compliance with the relevant objectives of the Plans.

Table 8-1 Assessment of Plans

Plans	Key Policies/Issues/Objectives Directly Related To Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy, and potential to result in cumulative effects
Mayo County Development Plan 2022-2028	Designated Sites: **Natural Environment Policy 1:** To support the protection, conservation and enhancement of the natural heritage and biodiversity 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). **Natural Environment Policy 2:** To protect and enhance the county's natural heritage and biodiversity by supporting the implementation of the National Biodiversity Action Plan 2017-2021, the National Pollination Plan 2015-2020 and County Mayo Biodiversity Plan 2015- 2020 and any future editions, in partnership with relevant stakeholders, subject to available resources. **Natural Environment Policy 10:** To recognise the role of peatlands as carbon sinks to combat climate change and ensure that peatland areas, including those designated or proposed for designation (pNHA, NHA or SAC), are conserved for their ecological, climate regulation, archaeological, cultural and educational significance. **Natural Environment 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. **Natural Environment Objective 8:** To maintain, protect and where possible enhance the natural heritage and biodiversity of bogs, fens and turloughs, where appropriate, in County Mayo. **Natural Environment Objective 11:** To ensure that the impact of development within or adjacent to national designated sites, Natural Heritage Areas, Ramsar Sites and Nature Reserves likely to result in significant adverse effects on the designated site is assessed by requiring the submission of an Ecological Impact Assessment report (EcIA), Environmental Report (ER), an Environmental Impact Assessment Report (EIAR), if deemed necessary, and/ or a Natura Impact Assessment (NIS), if deemed necessary, prepared by a suitably qualified professional, which should accompany planning applications.	The Mayo County Development Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no residual adverse effects on European Sites as a result of the Proposed Project. The Proposed Project has been designed to avoid, in so far as possible, any residual adverse effects on QIs and SCI species. A range of mitigation measures are in place to ensure that there will be no adverse effects on habitats, species, or water quality that could undermine the integrity of any European Sites. The Proposed Project is not considered to be in contravention of the policies and objectives within the development plan. No potential for negative cumulative impacts were identified. On review of the Mayo County Development Plan, no potential for cumulative effect when considered in-combination with the Proposed Project was identified.

	Natural Environment Objective 14: To protect and enhance the ecological network throughout the county to improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. Invasive Species: **Natural Environment Policy 8:** To support measures for the prevention and/or eradication of invasive species as appropriate within the county. **Natural Environment Objective 16:** To ensure that where the presence of invasive species is identified at the site of any proposed development or where the proposed activity has an elevated risk of resulting in the presence of these species, details of how these species will be appropriately managed and controlled will be required. Water Quality: **Natural Environment Policy 19:** To protect existing groundwater sources and aquifers in the county and to manage development in a manner consistent with the protection of these resources. **Natural Environment 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.	
Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032	**Regional Policy Objective 5.4:** Encourage the prioritisation of Site-Specific Conservation Objectives (SSCO) for all sites of Conservation Value, designated in EU Directive (i.e. SACs, SPAs) to integrate with the development objectives of this Strategy. **Regional Policy Objective 5.5:** Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European Sites and their integrity. **Regional Policy Objective 5.7:** Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate	The Regional Strategy was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no adverse effects on European Sites as a result of the Proposed Project. The Proposed Project has been designed to avoid, in so far as possible, any adverse effects on QIs and SCI species. A range of mitigation measures are in place to ensure that there will be no adverse effects on habitats, species, or water

	Regional Policy Objective 5.22: To protect and conserve our designated peatlands and bogs for reasons of biodiversity, ecosystem services, carbon sinks, areas of habitat importance, amenity and landscape value.	quality that could undermine the integrity of any European Sites The Proposed Project is not considered to be in contravention of the policies and objectives within the strategy. No potential for negative cumulative impacts were identified.
Ireland's 4th National Biodiversity Action Plan 2023-2030	**Objective 1:** Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan. **Objective 2:** Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government. **Objective 3:** Secure Nature's Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy. **Objective 4:** Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts. **Objective 5:** Strengthen Ireland's Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.	The 4th National Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. There will be no adverse effects on European Sites as a result of the Proposed Project. The Proposed Project has been designed to avoid, in so far as possible, any adverse effects on QIs and SCI species. A range of mitigation measures are in place to ensure that there will be no adverse effects on habitats, species, or water quality that could undermine the integrity of any European Sites The Proposed Project is not considered to be in contravention of the policies and objectives within the biodiversity action plan. No potential for negative cumulative impacts were identified.

8.2 Projects

Assessment material for this in combination impact assessment was compiled on the relevant developments within the vicinity of the Site. These include planning applications in the vicinity of the Site, within the ZoI of all habitats and species considered in this chapter, and other wind energy applications within the wider area. The cumulative study areas considered within this NIS are outlined as follows:

Birds

Proposed, permitted and existing wind farms within 25km of the Proposed Wind Farm turbine locations are considered for their potential cumulative impacts on SCI bird species. NatureScot (formerly SNH) guidance '*Assessing the Cumulative Impacts of onshore Wind Energy Developments*' (SNH, 2012; 2018; 2025) was consulted while undertaking the cumulative assessment. SNH (2012; 2018; 2025) emphasises that its priority is to *"maintain the conservation status of the species population at the national level."* However, it is acknowledged that consideration should also be allowed for impacts at the regional level *"where regional impacts have national implications (for example where a specific region holds the majority of the national population)".* Following the guidance of SNH (2012), the cumulative impact assessment has been carried out at the scale of the importance rating of the receptor. A 25km radius of the Proposed Wind Farm turbines was considered a reasonable approximation of the size of a county and a 25km radius of the Proposed Wind Farm turbines was considered a reasonable approximation for the local level. This 25km radius also allows a highly precautionary area for the consideration of cumulative effects of wind farms on terrestrial and aquatic qualifying features of European Sites within the likely ZoI.

Flora and Fauna (excluding birds)

Using the precautionary approach and given the nature and scale of the Proposed Project, the geographical boundary for terrestrial ecological aspects, i.e. habitats, is 10 km for cumulative assessment for the Proposed Project.

Water

The Site is located in 2 no. WFD Catchments and the hydrological cumulative study area is delineated as follows:

- A quantitative assessment was completed based on flow volumes obtained from the EPA HydroTool Nodes downstream of the Site in the Moy and Killala Bay Catchment. This assessment concludes that the due to dilution no hydrological cumulative effects will occur beyond EPA Hydrotool Node 34_3632 on the Manulla River near Belcarra. At this location, the Manulla River has a total upstream catchment area of 108km^2. There will be no potential for cumulative effects beyond this cumulative study area due to increases in flow volumes (as the catchment area increases) and increasing distance from the Site.
- A further assessment has been completed within the Corrib Catchment. This assessment concludes that the due to dilution no hydrological cumulative effects will occur beyond EPA Hydrotool Node 30_2656 on the River Robe near Hollymount. At this location, the River Robe has a total upstream catchment area of 184km^2. There will be no potential for cumulative effects beyond this cumulative study area due to increases in flow volumes (as the catchment area increases) and increasing distance from the Site.
- The Cong-Robe and Swinford GWBs underlying these areas have also been included for the purposes of a conservative cumulative impact assessment.

The material for assessment was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities and their environmental impacts. All relevant projects within the above cumulative study area were considered in relation to the potential for in-combination effects, as outlined in the following sections. All relevant data was reviewed (e.g. individual AASR/NIS, layouts, drawings etc.) for all relevant projects where available.

The dominant land uses in the area were also considered in the assessment, these included forestry, pastoral agriculture and turbary.

8.2.1 Other Wind Farm Projects

On a precautionary basis a 25km ZoI was used to identify wind farm developments in the wider area. In total, 15 no. applications relating to wind energy were identified within 25km of the Proposed Wind Farm turbine locations. Each identified wind energy project is considered in further detail in the sections below.

Potential for the Proposed Project to result in cumulative impacts on non-SCI bird species and biodiversity, flora and fauna are assessed within Chapter 7 'Birds' and Chapter 6 'Biodiversity' of the EIAR accompanying this application, respectively, and are not repeated below.

Table 8-2 Wind farm projects within 25km of the Proposed Wind Farm turbines

County	Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Mayo	Mace Upper Wind Farm	Existing	3	c.7.5km
	Cloontooa Wind Farm	Existing	6	c.9.0km
	Ballykinava Wind Farm	Existing	6	c.10.1km
	Cuillalea Wind Farm	Existing	4	c.10.5km
	Magheramore Wind Farm	Existing	6	c.11.0km
	Cuillalea Wind Farm Extension	Existing	2	c.11.0km
	Connacht GAA Turbines	Permitted	3	c.14.9km
	Aghinish Domestic Turbine	Existing	1	c.16.8km
	Tonregee Single Turbine	Permitted	1	c.21.5km
	Raheen Bar Wind Farm	Existing	22	c.23.3km
	Derrynadivva Wind Farm Extension	Existing	5	c.23.9km
	Derrynadivva Wind Farm	Existing	9	c.24.4km
	Lenanavea Wind Farm	Existing	5	c.25.5km
	*Lyra Wind Farm	Proposed	13	>20km

County	Wind Farm	Planning Status	Number of Turbines	Separation Distance (turbine to turbine)
Galway	Shancloon Wind Farm	Proposed	11	c.22.3km

** At the time of writing, publicly available details for the proposed Lyra Wind Farm are limited and the wind turbine locations are not available. However, the boundary of the nearest townland (Aille) is located more than 20km away from the nearest Proposed Wind Farm turbine. As no further information is available, Lyra Wind Farm is not detailed within the following subsections*

8.2.1.1 Mace Upper Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Mace Upper Wind Farm was considered. The planning file[25] was consulted on the Mayo County Council Planning Register and the Environmental Impact Statement (EIS) was reviewed. No AA Screening Report or NIS was prepared with respect to this development.

The Wind Farm consists of 3 no. turbines on agricultural lands. In terms of ecology, the information provided within the EIS states *"The study site has no statutory Natural Heritage designation."* No further information is provided. With regard to hydrological impacts, *"From a geological point of view the topsoil is underlain by dense boulder clay. This boulder clay stratum possesses a low permeability. Thus any surface pollution would find great difficulty in getting into the underlying groundwater. In any case the constructional works carried out on this site will not produce any significant pollutional discharges... There will be no significant constructional impacts on the geology or hydrogeology of the site."*

There was no information regarding potential effects on bird species available, however, applying the precautionary principle and due to the location of Mace Upper Wind Farm within agricultural grassland, there is potential for bird species considered within the current NIS (i.e. lesser black-backed gull) to occur at Mace Upper Wind Farm. The potential for cumulative effects on SCI species are considered in further detail in Section 8.2.1.15 below.

The Mace Upper Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project, and the lack of adverse effects predicted as a result of Mace Upper Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.2 Cloontooa Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cloontooa Wind Farm was considered. The planning file[26] was consulted on the Mayo County Council Planning Register and the EIS and NIS were reviewed.

Cloontooa Wind Farm consists of 6 no. turbines on lands comprising cutover bog, conifer plantation and agricultural grasslands. Within the EIS, impacts of habitat loss, disturbance/displacement and collision risk on birds were assessed. Impacts on flora, habitats and other faunal species were also discussed. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected on any ecological receptors.

The NIS for this project was also reviewed. The potential for likely significant effects were excluded due to the distance between the site and the SACs, and tenuous or lacking hydrological connections. The

[25] https://www.eplanning.ie/MayoCC/AppFileRefDetails/001954/0
[26] https://www.eplanning.ie/MayoCC/AppFileRefDetails/13633/0

Lough Corrib SAC is located over 37km downstream of the development site, therefore it was considered unlikely that any significant effects would occur, following the implementation of mitigation measures. No SPAs were located within the Likely Zone of Influence. Therefore, no significant or indeterminate effects were predicted on any QIs or SCIs associated with any European Sites in the vicinity of Cloontooa Wind Farm.

While Cloontoa Wind Farm is located in the same hydrological sub-catchment as part of the Proposed Project (the Robe_SC_10), given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Cloontoa Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.3 Ballykinava Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Ballykinava Wind Farm was considered. The planning file[27] was consulted on the Mayo County Council Planning Register and the EIS and NIS were reviewed.

Ballykinava Wind Farm consists of 6 no. turbines on lands comprising largely of agricultural grasslands. Within the EIS, impacts of habitat loss, disturbance/displacement and collision risk on birds were assessed. Impacts on flora, habitats and other faunal species were also discussed. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected on any ecological receptors.

The NIS for this project was also reviewed. The potential for likely significant effects were excluded due to the distance between the site and the SACs, and tenuous or lacking hydrological connections. The Lough Corrib SAC is located over 37km downstream of the development site, therefore it was considered unlikely that any significant effects would occur, following the implementation of mitigation measures. No SPAs were located within the Likely Zone of Influence. Therefore, no significant or indeterminate effects were predicted on any QIs or SCIs associated with any European Sites in the vicinity of Ballykinava Wind Farm.

While Ballykinava Wind Farm is located in the same hydrological sub-catchment as part of the Proposed Project (the Robe_SC_10), given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Ballykinava Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.4 Cuillalea Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cuillalea Wind Farm was considered. The planning file[28] was consulted on the Mayo County Council Planning Register and a document providing a high-level outline of the biodiversity, floral and faunal impacts of the development was reviewed.

Cuillalea Wind Farm consists of 4 no. turbines on lands comprising largely of blanket bog and wet heath. Detailed bird surveys were not undertaken, however it was noted that *"The working turbines are expected to have no impact on flora and fauna as there are no susceptible species of birds in the locality".* No effects on biodiversity, flora or fauna arising from the development were discussed in any greater detail.

No AA Screening Report or NIS was prepared with respect to this development, however it was noted that *"The site has not been included in any designated area (Natural Heritage Area, Special Area of Conservation etc.). The nearest such area is Balla turlough, a proposed candidate SAC."*

[27] https://www.eplanning.ie/MayoCC/AppFileRefDetails/13617/0
[28] https://www.eplanning.ie/MayoCC/AppFileRefDetails/981672/0

The Cuillalea Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Cuillalea Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.5 Magheramore Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Magheramore Wind Farm was considered. The planning files[29] were consulted on the Mayo County Council Planning Register, and the EIS and NIS were reviewed.

Magheramore Wind Farm consists of 6 no. turbines on lands comprising largely cutover bog habitats. Within the EIS, impacts of habitat loss, disturbance/displacement and collision risk on birds were assessed. Impacts on flora, habitats and other faunal species were also discussed. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected on any ecological receptors.

The NIS for this project was also reviewed. It was considered that, with the proposed drainage design and site management mitigations in place, any indeterminate or significant impacts on the River Moy SAC could be excluded. The Lough Corrib SAC is located over 37km downstream of the development site, therefore it was also considered unlikely that any significant effects would occur, following the implementation of mitigation measures. No SPAs were located within the Likely Zone of Influence. Therefore, no significant or indeterminate effects were predicted on any QIs or SCIs associated with any European Sites in the vicinity of Magheramore Wind Farm.

The Magheramore Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Magheramore Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.6 Cuillalea Wind Farm Extension

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Cuillalea Wind Farm Extension was considered. The planning file[30] was consulted on the Mayo County Council Planning Register, and the Environmental Study and report on the Ecological Aspect of Landscape and Site Management were reviewed.

Cuillalea Wind Farm Extension consists of 2 no. turbines on lands comprising largely cutover bog and upland blanket bog. Within the Environmental Study, peat erosion was considered unlikely and the mitigation measures included the drainage scheme for the new roads and stilling basins. It was stated that *"The working turbines are expected to have no impact on flora and fauna".* Considered cumulatively with the existing Cuillalea Wind Farm, *"The existing turbines have not noticeably altered the ecology or wildlife of the area and the two planned additions will not create a significant cumulative effect."*

There was no information regarding potential effects on bird species available, however, due to the location of Cuillalea Wind Farm Extension within upland bog habitats, there is limited potential for bird species considered within the current NIS (i.e. lesser black-backed gull) to occur at Cuillalea Wind Farm Extension.

No AA Screening Report or NIS was prepared with respect to this development, however it was noted that *"The site has not been included in any designated area (proposed Natural Heritage Area,*

[29] https://www.eplanning.ie/MayoCC/AppFileRefDetails/13631/0
[30] https://www.eplanning.ie/MayoCC/AppFileRefDetails/073371/0

candidate Special Area of Conservation etc.) and with the absence of active blanket bog is unlikely to be suggested. The nearest such area is Balla turlough, a candidate SAC (Code No 463).”

The Cuillalea Wind Farm Extension is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Cuillalea Wind Farm Extension or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.7 Connacht GAA Turbines

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the permitted Connacht GAA Turbines was considered. The planning file[31] was consulted on the Mayo County Council Planning Register, and the Planning Report was reviewed.

No separate AA Screening Report or NIS were prepared with respect to this development, however European Sites and Screening for Appropriate Assessment were addressed within the Planning Report. It was stated that, *“Considering the nature of the proposed development, its size, scale and location, it is concluded that the proposed development is unlikely to result in significant effects on the identified European Sites.”* No further information or ecological assessments are provided.

There was no information regarding potential effects on bird species available, however, due to the location of the Connacht GAA Turbines within an existing developed site associated with a sporting facility, there is limited potential for bird species considered within the current NIS (i.e. lesser black-backed gull) to occur at the site.

The Connacht GAA Turbines are small and located within a separate hydrological sub-catchment to the Proposed Project. Given the small scale of the development and distance from the Proposed Project, and the lack of residual adverse effects predicted as a result of Connacht GAA Turbines or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.8 Aghinish Domestic Turbine

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Aghinish Domestic Turbine was considered. The planning file[32] was consulted on the Mayo County Council Planning Register and the associated documents reviewed, however no information was available regarding European Sites, biodiversity, flora or fauna.

There was no information regarding potential effects on bird species available, however, applying the precautionary principle and due to the location of Aghinish Domestic Turbine within an agricultural landscape, there is potential for bird species considered within the current NIS (i.e. lesser black-backed gull) to occur at Aghinish Domestic Turbine. The potential for cumulative effects on SCI species are considered in further detail in Section 8.2.1.15 below.

The Aghinish Domestic Turbine is located within an agricultural landscape in a separate hydrological sub-catchment to the Proposed Project. Given the small scale of the development and distance from the Proposed Project, and the lack of residual adverse effects predicted as a result of the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

[31] https://www.eplanning.ie/MayoCC/AppFileRefDetails/23605680
[32] https://www.eplanning.ie/MayoCC/AppFileRefDetails/06387/0

8.2.1.9 Tonregee Single Turbine

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the Tonregee Single Turbine was considered. The planning file[33] was consulted on the Mayo County Council Planning Register, and the Ecological Impact Assessment (EcIA) and NIS were reviewed.

Toneregee Single Wind Turbine is located on lands comprising largely conifer plantation, cutover bog and agricultural grassland habitats. Within the EcIA, impacts on birds associated with turbine operation, including collision risk and displacement effects, were considered. Baseline surveys recorded very low levels of flight activity for bird species in the vicinity of the proposed turbine location, and the site was not considered to be relied upon by these species. The EcIA concluded that due to the small scale of the development, comprising a single wind turbine, significant impacts on bird species were not expected. Impacts on flora, habitats and other faunal species were also discussed. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected on any ecological receptors.

The NIS for this project was also reviewed. The potential for likely significant effects on the Lough Corrib SAC were considered due to the potential for water quality deterioration and the potential for the spread of non-native invasive species. These effects were considered in detail and, following implementation of the mitigation measures outlined within the NIS, significant adverse effects were not predicted. No SPAs were located within the Likely Zone of Influence. A cumulative assessment was also undertaken within the NIS and it was concluded that significant cumulative effects on Lough Corrib SAC were not expected.

The Toneregee Single Wind Turbine is located in a separate hydrological sub-catchment to the Proposed Project. Given the small scale of the development and the distance from the Proposed Project, and the lack of residual adverse effects predicted as a result of Toneregee Single Wind Turbine or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.10 Raheen Bar Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Raheen Bar Wind Farm was considered. The planning file[34] was consulted on the Mayo County Council Planning Register, however no information regarding European Sites, biodiversity, flora and fauna was available.

The Raheen Bar Wind Farm consists of 22 no. turbines within a landscape comprising predominately upland peatland. There was no information regarding potential effects on bird species available, however, due to the location of Raheen Bar Wind Farm within upland bog habitats, there is limited potential for bird species considered within the current NIS (i.e. lesser black-backed gull) to occur at Raheen Bar Wind Farm.

The Raheen Bar Wind Farm is located within a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

[33] https://www.eplanning.ie/MayoCC/AppFileRefDetails/2560272/0
[34] https://www.eplanning.ie/MayoCC/AppFileRefDetails/972237/0

8.2.1.11 Derrynadivva Wind Farm Extension

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the Derrynadivva Wind Farm Extension was considered. The planning file[35] was consulted on the Mayo County Council Planning Register and the EIS and NIS were reviewed.

Derrynadivva Wind Farm Extension consists of 5 no. turbines located on lands comprising largely cutover bog, degraded blanket bog and conifer plantation habitats. Bird surveys undertaken for the EIS recorded a range of common bird species associated with upland and forestry habitats. The assessment concluded that while there is potential for collision risk to bird species flying through or utilising habitat within the site, the loss of potential foraging habitat and disturbance associated with the development would not be significant due to the availability of extensive suitable habitat in the wider area. Impacts on flora, habitats and other faunal species were also discussed. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected.

The NIS for this project was also reviewed. The potential for likely significant effects on the River Moy SAC, Newport River SAC and Lough Conn and Lough Cullin SPA were considered due to the potential for water quality deterioration and disturbance/ displacement of SCI species. *Ex-situ* effects on each of the SCI species associated with Lough Conn and Lough Cullin SPA were assessed in detail and excluded due to the distance between the site and the SPA, lack of observations during preliminary bird surveys of the site, and lack of suitable habitat. Effects due to deterioration of water quality were also excluded following implementation of the mitigation measures outlined within the NIS, therefore no significant ecological residual impacts were predicted on any European Sites.

The Derrynadivva Wind Farm Extension is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Derrynadivva Wind Farm Extension or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.12 Derrynadivva Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the Derrynadivva Wind Farm was considered. The planning file[36] was consulted on the Mayo County Council Planning Register and the EIS was reviewed. No AA Screening Report or NIS were available for review.

Derrynadivva Wind Farm consists of 9 no. turbines located on lands comprising largely cutover bog, upland blanket bog and conifer plantation habitats. Within the EIS, impacts on habitats were considered in terms of direct habitat loss and erosion of peatland habitats. The assessment concluded that the site was not considered to be of particular importance for bird species associated with peatland habitats and significant impacts were not predicted. No impacts on fauna were predicted. Mitigation measures were prescribed to prevent erosion due to runoff.

The Derrynadivva Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Derrynadivva Wind Farm Extension or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

[35] https://www.eplanning.ie/MayoCC/AppFileRefDetails/12635/0
[36] https://www.eplanning.ie/MayoCC/AppFileRefDetails/05848/0

8.2.1.13 Lenanavea Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the existing Lenanavea Wind Farm was considered. The planning file[37] was consulted on the Mayo County Council Planning Register and the EIS was reviewed.

Lenanavea Wind Farm consists of 5 no. turbines located on lands comprising largely of upland blanket bog habitats. Within the EIS, impacts on habitats and flora during construction were considered in terms of runoff from the roadway, and impacts on fauna were considered but not deemed significant. Mitigation measures were prescribed to prevent erosion due to runoff. Bird surveys undertaken during site visits recorded only common bird species associated with the site. Hen harrier and merlin were noted as species that may occasionally hunt in the wider area, however they were not known to nest there. The assessment concluded that the site was not considered to be of particular importance for bird species and significant impacts were not predicted.

No AA Screening or NIS was prepared for the project, however it was noted within the EIS that *"The Lenanavea has not been proposed as a Special Area of Conservation nor Natural Heritage Area".*

The Lenanavea Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Lenanavea Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

8.2.1.14 Shancloon Wind Farm

The potential for the Proposed Project to result in significant cumulative or in-combination effects when assessed alongside the proposed Shancloon Wind Farm was considered. The planning file was consulted on the An Coimisiún Pleanála website[38] and the EIAR was reviewed.

Shancloon Wind Farm consists of 11 no. turbines located on lands comprising largely of agricultural grasslands and cutover bog habitats. Within the EIAR, impacts of disturbance, displacement and collision risk on birds were assessed. A cumulative assessment was carried out for wind energy developments within 25km and concluded *"a significant cumulative barrier effect is not anticipated".* Impacts on flora, habitats and other faunal species were also discussed and, following the implementation of mitigation, monitoring and a BMEP was produced, significant residual effects were excluded.

The NIS for this project was also reviewed. The potential for likely significant effects on the Lough Corrib SAC, Lough Corrib SPA and Lough Mask SPA were considered due to the potential for water quality deterioration, habitat loss and disturbance during construction, as well as collision risk of birds during operation. These effects were considered in detail and, following implementation of the mitigation measures outlined within the NIS, it was concluded that the Proposed Project will not adversely affect the integrity of any European Sites. A cumulative assessment was undertaken and it was concluded that significant cumulative effects were not expected.

The Shancloon Wind Farm is located in a separate hydrological sub-catchment to the Proposed Project. Given the distance from the Proposed Project and the lack of residual adverse effects predicted as a result of Shancloon Wind Farm or the Proposed Project, there is no potential for cumulative adverse effects on any European Sites.

[37] https://www.eplanning.ie/MayoCC/AppFileRefDetails/071569/0
[38] https://www.pleanala.ie/en-ie/case/323699

8.2.1.15 Cumulative Assessment of SCI Bird Species – Lesser Black-backed Gull

As per Article 12 reporting, wind, wave and tidal power are listed as the key threat to lesser black-backed gull, which is of medium importance. There are no key threats listed for this species. The plans and projects which relate to this pressure have been considered within this cumulative assessment.

The Site contains agricultural grassland habitats which are suitable for foraging lesser black-backed gull. Mace Upper wind farm, Cloontooa Wind Farm, Ballykinava Wind Farm, Shancloon Wind Farm, Derrymore 18m Domestic Turbine and Aghinish Domestic Turbine are located within, or partially within, grassland habitats. However, these habitats are not a scarce resource in the area. Agricultural grassland in particular (which is favoured by lesser black-backed gull) is abundant locally and is one of the most abundant habitat types within the county. This abundance limits the potential for significant habitat loss effects to result on an individual project basis or cumulatively. Furthermore, not only the quantity of the habitat but also the quality is important. Improved agricultural grassland is typically considered of low ecological value and there is little conservation value within the areas of improved agricultural grassland. In the context of the abundance of grassland in Co. Mayo significant cumulative habitat loss effect are highly unlikely. The remaining wind farms are located within commercial forestry or upland bog habitat which is of limited ecological value to this species.

No significant impacts on this species were identified at the local scale (5km), given there are no turbines within 5km of the proposed turbines and the abundance of suitable habitat in this area. Furthermore, no significant effects were reported for any of the wind farms located within a 25km radius (county scale) of the proposed turbines.

There is a low density of turbines within 25km of the Site (with the majority of turbines being greater than 20km from the Site), and extensive areas of suitable foraging habitat will remain in the surrounding area after construction of the wind farm.

Significant cumulative impacts are not predicted.

8.2.2 Other Large-scale Projects

A number of other large-scale projects (excluding wind farms) which have been subject to the EIA process and/or were identified within 10km of the Site and/or within the hydrological cumulative area as outlined in the Section 8.2 above. These included the following:

- Quarry of 13.0Ha. which will be subject to removal of overburden, extraction of rock down to 1mOD and processing of rock using mobile plant over a 25 yr period. (MCC 20/288)
- Anaerobic digestion facility to produce renewable biomethane, CO2 (which will be captured), and a bio-based fertiliser from organic material (MCC 2460419)
- Proposed deepening of an existing limestone quarry. (MCC 2560055)
- The development is 8.4 hectares and comprises of; removal of vegetation and overburden, extraction of rock by blasting and rock breaking means, landscaping and restoration of site, all associated ancillary facilities/works, 25 year permission. (MCC 20/77)
- Quarry. (ABP-SU0132)
- The removal of the existing fish screen (including automated debris rake) and supporting structure from the Cong Canal and the installation of a new fish screen(including automated debris rake) and supporting structure in the Cong Canal. (GCC 2561923)
- To retain and complete an extension to the rear and side of an existing dwelling house, and also seek permission for the construction of a new wastewater treatment system to replace existing defunct system. (GCC 2460440)

- Construction of 60 apartments with all associated site works. (ACP- 315133)
- Claremorris Closed Landfill Remediation Project. (ACP-313681)
- Continued use of existing communications structure with associated equipment. ESB's existing Dalton Substation. (ACP-247527)
- 10-year permission for construction of an energy storage facility, includes electrical substation building and electrical compound, electrical transformer/inverter station modules. (ACP-302850)
- Development at a quarry consisting of erection of a portal frame building 8.76 metres high for aggregate storage and stores. (ACP-246645)
- Further development of a quarry (10.58 Hectares) (ACP-QD0009)
- The development will consist of the deepening of 19 ha. of the existing permitted quarry extraction area (Plan File Ref. No. 20/77: ABP-308748-20 & Plan File Ref. No. PL16.SU0132: QD16.QD0009). The applicant is seeking a 25-year permission. This planning application is accompanied by an Environmental Impact Assessment Report. (ACP- 322336)
- Removal of vegetation and overburden, extraction of rock by blasting and rock breaking means, landscaping and restoration of site, all associated ancillary facilities/works (25 year permission) (ACP-308748)

The full list of projects considered is included in Appendix 9. Given the lack of residual adverse effects predicted as a result of the Proposed Project, and considering the nature, scale and locations of the above listed projects relative to the Proposed Project, no potential for adverse cumulative effects in combination with these projects is predicted for any European Sites.

8.3 Existing Habitats and Land Uses

The potential for in-combination effects on European Sites was considered with respect to existing land uses in the wider area.

The Proposed Project is located primarily on improved agricultural grassland (GA1), agricultural wet grassland (GS4) and cutover bog (PB4) with small areas of conifer plantation (WD4) habitats. The Proposed Project will result in the loss of some conifer plantation which has the potential to provide habitat for some protected species. However, the loss of this habitat within the Site will be minimal in the context of this habitat in the wider landscape. The loss of this habitat associated with other developments in the wider area will also be minimal and cumulative loss of this habitat type in the wider landscape is not considered significant. Furthermore, forestry re-planting is ongoing within the wider landscape and an offsite replanting plan will be implemented to replace areas lost within the Site. The Proposed Project is also located within improved agricultural grasslands and agricultural wet grasslands, which generally provides low value habitats for faunal species. Loss of cutover bog is restricted to areas that are generally highly drained and species-poor, and that continue to be subject to turbary activity contributing to their degraded state. The loss of linear habitats including treelines and hedgerow, as well as scrub habitats will be mitigated through the replanting measures described in the BMEP. The Proposed Project will not contribute to any overall loss of high value habitat, as it has been deliberately designed to be located on habitats of low value.

Additionally, there is peat cutting within and adjacent to Site which is ongoing. However, the area of active peat cutting is small relative to the total area within the Site and the majority of the peat within these areas has already been extracted. As these turf cutting areas are abandoned, they will either be turned into pastural farmland or scrub over. There ecological value is likely to remain neutral or slightly improve based on the land use. Owing to the scale and nature of these areas, significant cumulative impacts are not anticipated.

On this basis, there is no pathway through which the Proposed Project could act in combination with existing land uses the to give rise to adverse effects on the QIs/SCIs or conservation objectives of any European Site.

8.4 Conclusion of Cumulative Impact Assessment

Following the assessment provided in the preceding sections, it is concluded that the Proposed Project will not result in any residual adverse effects on the integrity of any European Sites. All pathways by which adverse effects could occur have been robustly blocked through the implementation of mitigation and best practice in the design of the development.

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

Having considered other projects in the area as listed above, no potential for the Proposed Project to contribute to any adverse cumulative effects on any European Sites was identified when considered in combination with other plans and projects.

9. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites, taking into account all relevant guidance including the European Commission's Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021).

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation and decommissioning of the Proposed Project will not have an adverse effect on the integrity of any European sites in light of their conservation objectives.

Following an examination, evaluation and analysis, in light of best scientific knowledge and the conservation objectives of the site, and, on the basis of objective information, having taken into account the relevant mitigation measures, it can be concluded beyond reasonable scientific doubt that the Proposed Project will not adversely affect the integrity of any European Sites, either alone or in combination with other plans or projects.

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