Planning and Environmental Consultants

Appropriate Assessment Screening Report and Natura Impact Statement

Proposed Clonberne Wind Farm, Co. Galway

DOCUMENT DETAILS

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Project Number:	**180740**
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Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of a proposed wind energy development and all associated infrastructure located in Clonberne, Co. Galway.

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.

This Natura Impact Statement (NIS) has been prepared in accordance with the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010) and the Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2 Statement of Authority

This report has been prepared by Pádraig Desmond (B.Sc.), Katy Beckett (B.A., M.Sc.) and Sarah Mullen (B.Sc., Ph.D., ACIEEM) and reviewed by Pat Roberts (B.Sc.Env., MCIEEM). Pádraig, Sarah and Pat are experienced ecologists with skills covering habitat and botanic assessments and specialist mammal surveys. They have prepared numerous Ecological Impact Assessment and Appropriate Assessments reports for public and private sector clients. Katy has relevant academic qualifications and is competent in undertaking habitat and ecological assessments.

The baseline ecological walkover surveys, mammal surveys and marsh fritillary surveys were undertaken by Sarah Mullen, Pat Roberts, Rachel Walsh (B.Sc.), Luke Dodebier (B.Sc.), Katy Beckett, Kate O'Donnell (B.Sc., ACIEEM) and Ciara Lynn Sheehan (B.Sc.) of MKO.

Aquatic surveys were undertaken by Triturus Environmental Ltd. and by Aran von der Geest Moroney (B.Sc.), Katy Beckett, and Ciara Lynn Sheehan (B.Sc.) of MKO. All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments.

1.3 References to Proposed Project

For the purposes of this NIS

- Where the 'Proposed Project' is referred to, this relates to all the project components, i.e., Wind Farm Site and Grid Connection, described in detail in Chapter 4 of the Environmental Impact Assessment Report (EIAR) which accompanies the planning application. Chapter 4 of the EIAR is also included as Appendix 2 to this NIS. The 'Proposed Project' is the construction footprint of the entire renewable energy development.

- For the purpose of this NIS, the term 'EIAR Site Boundary'/ 'Site Boundary'/ 'site' refers to the site boundary as shown in the site location map in Figure 3-1 below, which is also the primary study area for this NIS.
- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hard-standing areas, borrow pit, access roads, temporary construction compounds, turbine delivery accommodation works, peatland enhancement area, underground cabling, peat, spoil and overburden management, site drainage, tree felling and all ancillary works and apparatus. The Proposed Wind Farm Site is shown in Figure 1-1
- Where 'Proposed Grid Connection' is referred to, this refers to the onsite substation, and associated underground 220kV cabling connecting into the existing Cashla – Flagford 220kV overhead line at Laughil, subject to a planning application under Section 182A of the Planning and Development Act, 2000, as amended. The Proposed Grid Connection is shown in Figure 1-2.
- Collectively, Figures 1-1 and 1-2 show the Proposed Project construction footprint.

1.4 Structure and Format of this Document

- Section 2 outlines the methodology and guidance followed during the Appropriate Assessment process and the ecological surveys associated with the Proposed Project.
- Section 3 provides a full description of all elements of the Proposed Project.
- In Section 4, the characteristics of the receiving environment are fully described.
- In Section 5, a Stage 1 Screening is undertaken to identify 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.
- Section 6, the Natura Impact Statement provides a detailed consideration of the Screened In European Sites and identifies the relevant qualifying features and how they may be affected in light of their conservation objectives.
- Section 7 provides an assessment of the potential for adverse effects on the identified European Sites as a result of the Proposed Project and in the absence of mitigation. This section also prescribes mitigation to robustly block any identified pathways for impact for effect.
- Section 8 provides an assessment of residual effects taking into consideration the proposed mitigation.
- In Section 9, the potential in combination effects of the Proposed Project on European Sites, when considered in combination with other plans and projects were assessed.
- A concluding statement is provided in Section 10.

Map Legend

- Proposed Wind Farm
- Proposed Turbine Layout
- Proposed Turbine Foundations
- Proposed Crane Platform Hardstanding
- Proposed New Roads
- Proposed Existing Roads to be Upgraded
- Proposed Turbine Delivery Accommodation Areas
- Proposed Passing Bays
- Proposed Peat Repository Areas
- Proposed Spoil Storage Area
- Proposed Spoil Repository Access Road
- Proposed Peatland Enhancement Area
- Proposed 38kV Line to Cable Interface End Masts
- Proposed Construction Compounds
- Proposed Borrow Pit

Drawing Title	Proposed Wind Farm
Project Title	Clonberne WF
Drawn By: JF	Checked By: OC
Project No.: 180740	Drawing No.: Fig. 1-1
Scale: 1:25,000	Date: 2024-06-20

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Map Legend

- Proposed Grid Connection
- Proposed Substation
- Proposed Cable Route and Cable
- Proposed Operational Access Road
- Proposed Grid Connection Masts
- Proposed Grid Connection Compounds
- Proposed Cable in the Public Road

N

Drawing Title

Proposed Grid Connection

Project Title

Clonberne WF

Drawn By	Checked By
JF	OC
Project No.	Drawing No.
180740	Fig. 1 -2
Scale	Date
1:8,000	2024-06-27

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2. METHODOLOGY

2.1 Appropriate Assessment Process

Screening - The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, either alone or in combination with other plans or projects, is likely to have significant effects on a European site in view of the site's 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.

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 the integrity of 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]).

2.2 Ecological Survey Methodologies

The following sections describe the methodologies followed to establish the baseline ecological condition of the site and surrounding area.

[1] *IROPI - 'imperative reasons of overriding public interest', the test found in Article 6(4) of the Habitats Directive.*

2.2.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with relevant European Sites within the likely zone of impact of the Proposed Project. Sources of data included the following:

- Review of NPWS Conservation Objectives, Site Synopses, Standard Data Forms and supporting documents for the European Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Review of NPWS Article 17 metadata and GIS database.

2.2.2 Ecological Multidisciplinary Walkover Surveys

Multidisciplinary walkover surveys were undertaken on the 28th June 2019, 15th July 2019, 19th August 2019, 5th August 2021, 24th August 2021, 25th August 2021, 24th January 2022, 30th September 2022, 1st October 2022, 26th June 2023, 1st September 2023, 23rd November 2023 and the 18th January 2024. The majority of the survey timings fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011). A comprehensive walkover of the site was completed including turbine bases, hard standing areas, proposed substations, site compound, new internal roads and borrow pit. The multi-disciplinary ecological walkover survey also included the proposed grid connection route, access route and turbine delivery route land take areas. Incidental records were also incorporated from other dedicated species/habitat specific surveys including for otter, bats, aquatic invertebrate surveys and quadrat surveys.

The multi-disciplinary ecological walkover surveys were undertaken in accordance with NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). These surveys provided baseline data on the ecology of the study area and assessed whether further, more detailed habitat or species specific ecological surveys were required.

Habitats were classified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al.*, 2011).

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).

The walkover surveys were designed to detect the presence, or likely presence of a range of protected habitats and species that may occur in the vicinity of the Proposed Project.

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011), was also conducted.

2.2.2.1 Otter (*Lutra lutra*) Surveys

All watercourses within the Proposed Wind Farm site, and along the Proposed Grid Connection route were identified as providing potential habitat for otter and were subject to targeted surveys for this species. The otter surveys were conducted on 28th June, 15th July and 19th August 2019, 26th June 2023 and 18th January 2024.

The otter surveys were conducted as per NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved a search for

all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts. In addition to the width of the rivers/watercourses, a 10m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS 2009). The dedicated otter survey also followed the guidance as set out in NRA (2008) *'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes'* and following CIEEM best practice competencies for species surveys (CIEEM, 2013).

2.2.2.2 Aquatic surveys

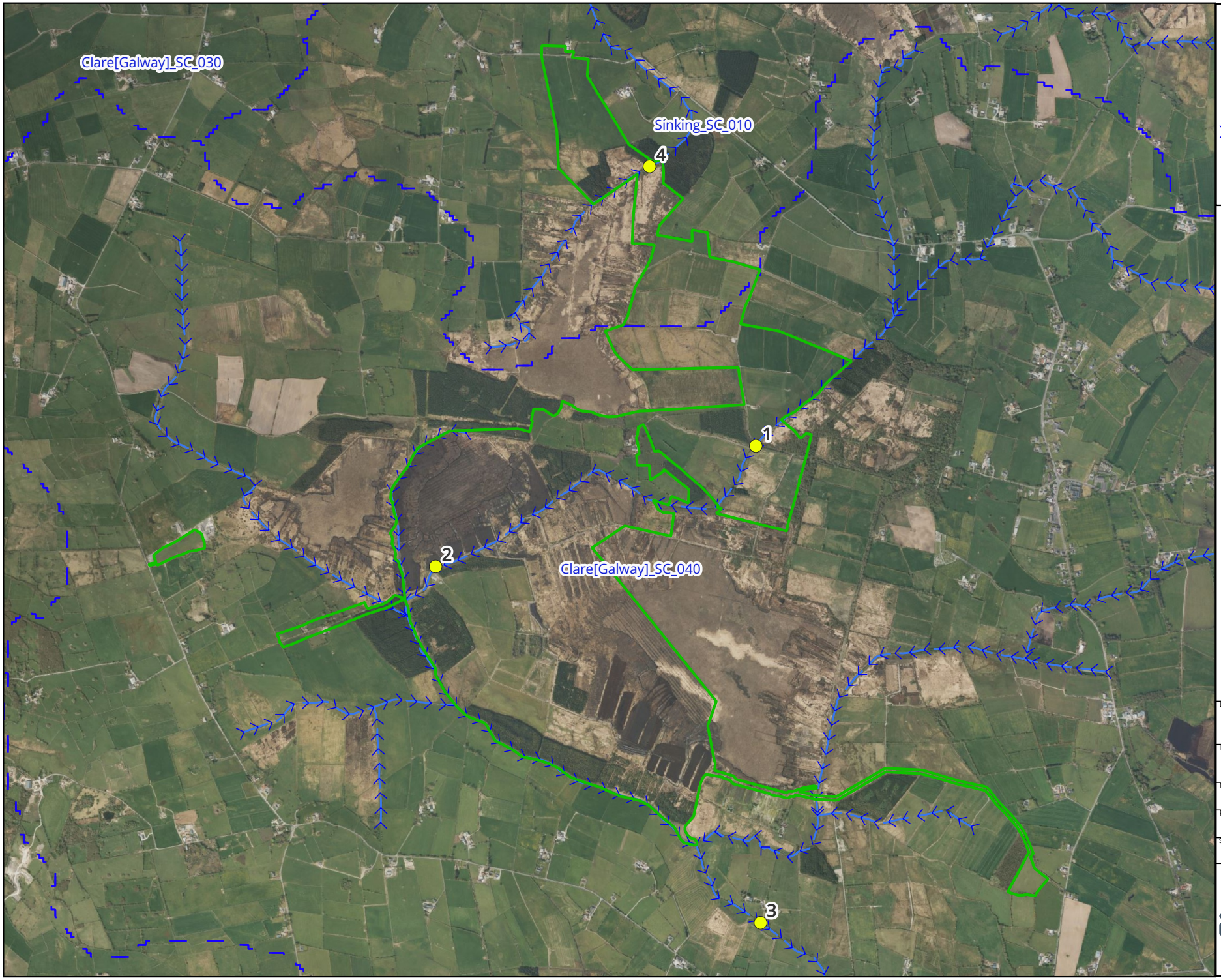
2.2.2.2.1 *Triturus Environmental Ltd. (2021)*

Dedicated aquatic baseline surveys were undertaken by Triturus Environmental in August 2021. The baseline assessment focused on aquatic ecology including fisheries and biological water quality, as well as protected aquatic species and habitats in the vicinity of the Proposed Wind Farm. Undertaken on a catchment-wide scale, the baseline surveys focused on aquatic habitats in relation to fisheries potential (including both salmonid and lamprey habitat), white-clawed crayfish (*Austropotamobious pallipes*), otter (*Lutra lutra*), macro-invertebrates, macrophytes, aquatic bryophytes, aquatic invasive species and fish of conservation value which may use the watercourses in the vicinity of the proposed project.

This holistic approach informed the overall aquatic ecological evaluation of each site in the context of the Proposed Project and ensured that any habitats and species of high conservation value would be detected. Full details of the methodology followed for the aquatic surveys as well as details of the locations of survey sites is provided in the Aquatic Report, Appendix 1.

2.2.2.2.2 *Aquatic and River Habitat Surveys (2024)*

In addition to the above, invertebrate kick sampling surveys of watercourses within and downstream of the Site Boundary were undertaken on the 7th February 2024 by MKO in order to obtain updated water quality information and to provide a baseline against which water quality in the watercourses downstream of the site can be monitored throughout construction and operation. Kick sampling was carried out within and downstream of the site at the locations provided on Figure 2-1.



Map Legend

- Site Boundary
- WFD Hydrological Subcatchments
- WFD River Waterbodies
- Kick Sampling Sites

N

Drawing Title

Kick Sampling Locations

Project Title	
Proposed Clonberne Wind Farm, Co. Galway	
Drawn By: KB	Checked By: KOD
Project No.: 180740	Drawing No.: Figure 2-1
Scale: 1:25,000	Date: 21.03.2024

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3. DESCRIPTION OF PROPOSED PROJECT

3.1 Site Location

The Proposed Wind Farm site is located in Clonberne Co. Galway, approximately 14km to the north-east of Tuam and 6.5km to the south-east of Dunmore in Co. Galway. The ITM co-ordinates for the approximate centre of the Proposed Wind Farm site are X554464, Y756549. The Proposed Wind Farm site will be accessed from the north via a site entrance off the R328 Regional Road. The Wind Farm site is further served by a number of existing forestry and agricultural roads and tracks.

It is proposed to connect the Proposed Project to the national electricity grid via a 220kV underground grid connection route (UGC). The proposed UGC is approximately 2.8km in length of which 1.4km is located within the public road network (L6501 local road to the south east of the Proposed Wind Farm Site). The Proposed Grid Connection will connect the Proposed Project into the National Grid via connecting into the existing 220kV Cashla – Flagford Overhead Line at Laughil. Once operational, the substation will be accessed via the new access track and public road to the east.

The townlands in which the Proposed Project is located are listed in Table 3-1

Table 3-1 Townlands within which the Proposed Project is Located

Development Works	Townland
Proposed Wind Farm Site	
Proposed Wind Turbines, Hardstands, Site Access Roads, New Site Entrance off the R328, borrow pit, Temporary Construction Compounds, Underground 33kV cabling, Peat, Spoil and Overburden Management Areas, Turbine Delivery Accommodation works, Tree Felling, Site Drainage, Operational Site Signage, all associated infrastructure.	Killavoher, Gortagarraun, Cloonarkan, Lomaunaghroe, Clonbern, Ballagh West and Lissybroder.
Proposed Grid Connection	
On-site 220kV Substation, Underground 220kV Cabling Route, 2 no. new interface towers, Tree Felling, Site Drainage, Operational Site Signage, all associated infrastructure.	Cloonarkan, Clonbern, Laughil.

3.2 Characteristics of the Proposed Project

A full description of the Proposed Project (Proposed Wind Farm and Proposed Grid Connection) is provided in Chapter 4 of the Environmental Impact Assessment Report (EIAR) which accompanies this planning application (included in this NIS as Appendix 2) and summarised below. Two separate planning applications relating to the Proposed Project, one for the Proposed Wind Farm and one for the Proposed Grid Connection will be made to An Bord Pleanála.

3.2.1 Proposed Wind Farm

The proposed development will consist of the provision of the following:

i. *11 no. wind turbines with an overall turbine tip height of 180 metres; a rotor blade diameter of 162 metres; and hub height of 99 metres, and associated foundations, hard-standing and assembly areas;*
ii. *Underground electrical cabling (33kV) and communications cabling;*
iii. *Provision for the undergrounding of a section of proposed 38kV overhead electrical cabling and the provision of 2 no. 38kV Line to Cable Interface End Masts to facilitate the undergrounding of the proposed 38kV cabling.*
iv. *Upgrade of existing tracks/ roads and provision of new site access roads, junctions and hardstand areas;*
v. *Construction of 1 no. new gated site entrance off the R328 Regional Road to facilitate the delivery of the construction materials and turbine components to site;*
vi. *Construction of 2 no. temporary construction compounds and associated ancillary infrastructure including temporary site offices, staff facilities and car-parking areas for staff and visitors, all to be removed at end of construction phase;*
vii. *Development of 1 no. borrow pit;*
viii. *Provision of 3 no. passing bays adjacent to the L22321 Local Road and an existing access track to facilitate the transport of stone material to the site;*
ix. *Peat and spoil management including the provision of 4 no. peat repository areas and 1 no. spoil repository area;*
x. *Junction accommodation works including temporary accommodation areas adjacent to the N83 National Secondary Road, R328 Regional Road and L6466 Local Road to facilitate the delivery of turbine components to site;*
xi. *Site Drainage;*
xii. *Peatland Enhancement Area;*
xiii. *Biodiversity Enhancement Measures (including the planting of woodland, linear habitat, grassland management and invasive species removal);*
xiv. *Tree felling and hedgerow removal to facilitate construction and operation of the proposed development;*
xv. *Operational stage site signage; and*
xvi. *All ancillary works and apparatus.*

A thirty five-year operational life from the date of full commissioning of the entire wind farm is being sought and the subsequent decommissioning.

The application is seeking a ten-year planning permission. A concurrent planning application in relation to a proposed substation which will comprise of a 220kV Gas Insulated Switchgear (GIS) building, an Independent Power Producer (IPP) compound, a Battery Energy Storage System (BESS) compound, underground grid connection and associated cabling to connect the proposed Clonberne Wind Farm to the national grid via the existing Flagford to Cashla 220kV overhead line in the townland of Laughil is also being lodged to An Bord Pleanála.

3.2.2 Proposed Grid Connection

The proposed development will consist of the provision of the following:

i. *Construction of a permanent substation which will comprise of a 220kV Gas Insulated Switchgear (GIS) building, an Independent Power Producer (IPP) compound, a Battery Energy Storage System (BESS) compound, including 4 no. 18-metre high Lightning Monopoles, welfare facilities, car parking, wastewater holding tank, 36-metre-high Telecommunications Mast, 2.6-metre high palisade*

fencing, external lighting, underground cabling, and all associated infrastructure and apparatus;

ii. *All works associated with the connection of the proposed Clonberne Wind Farm to the national electricity grid, including the provision of underground electrical cabling (220kV) to the existing Flagford to Cashla 220kV overhead line, in the townland of Laughil;*

iii. *The provision of 2 no. loop-in towers, 2 no. gantries within 2 no. cable compounds to facilitate the connection of the proposed substation to the existing Flagford to Cashla 220kV overhead line;*

iv. *Construction of 2 no. gated permanent site entrances off the L6501 Local Road to facilitate access to the proposed development and the proposed Clonberne Wind Farm;*

v. *Provision of 4 no. joint bays, communication chambers and earth sheath links along the underground electrical cabling route and temporary accommodation areas to facilitate underground cabling works;*

vi. *Provision of a cable access track to facilitate the installation and maintenance of cabling and provide access to the proposed substation;*

vii. *Reinstatement of the road or track surface above the proposed cabling trench along existing roads and tracks;*

viii. *Operational access road to the proposed development and the proposed Clonberne Wind Farm;*

ix. *Site Drainage;*

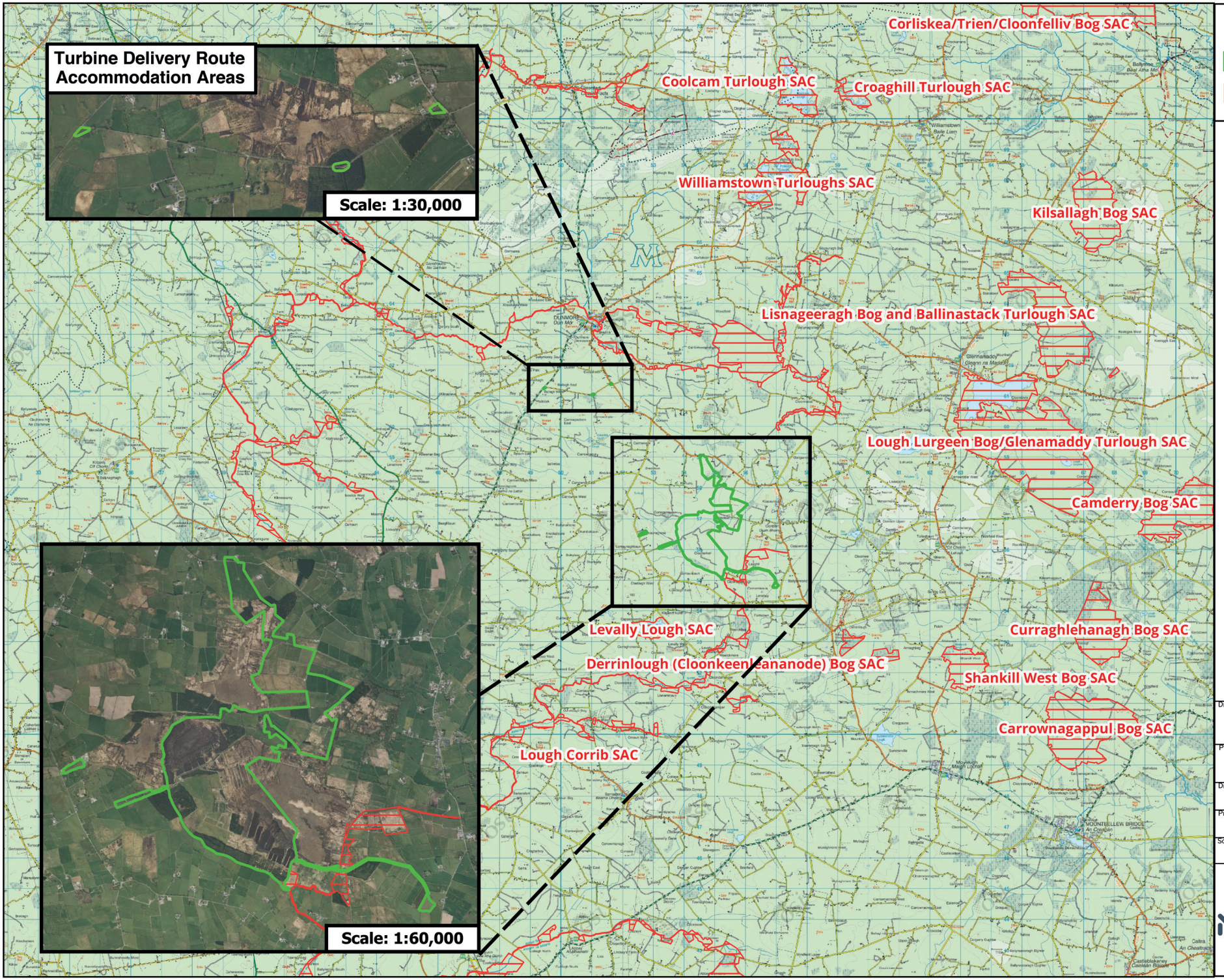
x. *Tree felling and hedgerow removal to facilitate construction and operation of the proposed development;*

xi. *Operational stage site signage; and*

xii. *All ancillary works and apparatus.*

The application is seeking a ten-year planning permission. The development subject of this application will facilitate the connection of the proposed 11 no. wind turbine Clonberne Wind Farm to the national electricity grid. A concurrent application in relation to proposed Clonberne Wind Farm is also being lodged to An Bord Pleanála.

All elements of the Proposed Project, i.e., the Proposed Wind Farm and Proposed Grid Connection, have been assessed as part of this NIS.



Map Legend

- EIAR Site Boundary
- Special Area of Conservation (SAC)

Drawing Title

Site Location

Project Title: Proposed Clonberne Wind Farm, Co. Galway	
Drawn By: KB	Checked By: KOD
Project No.: 180740	Drawing No.: Figure 3-1
Scale: 1:160,000	Date: 21.03.2024

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4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

4.1 Desk Study Results

4.1.1 Regional and Local Hydrology and Hydrogeology

The following summary of the local hydrology and hydrogeology in the vicinity of the Proposed Project is provided below, as extracted from Chapter 9 (Hydrology and Hydrogeology) of the EIAR submitted with the planning application and included here as Appendix 3.

The Site is located in the regional Lough Corrib (Corrib_030) surface water catchment within Hydrometric Area 30 of the Western River Basin District (WRBD).

On a more local scale the Site is located in the River Clare catchment wherein it exists within two surface water sub-catchments. The majority (80%) of the Wind Farm site which includes all 11 no. turbine locations, 1 no. temporary construction compound, borrow pit, peat repositories (4 no.) and spoil storage area (1 no.) are located in the Clare[Galway]_SC_040. The Wind Farm site drains to the River Clare, which is located approximately 23km downstream (southwest) of the Site, via the Grange River.

The northern portion of the Wind Farm site (20%) is located in the Sinking River sub-catchment (Sinking_SC_010). The Sinking River is located to the northwest and approximately 5.5km downstream of the Wind Farm site. Proposed infrastructure within the Sinking River sub-catchment is limited to the Wind Farm site entrance, ~1.6km of access road and 1 no. construction compound. The Sinking River drains into the River Clare approximately 22km downstream of the Site.

The downstream distance to Lough Corrib in the Clare[Galway]_SC_040 is approximately 50km while in the Sinking_SC_010 sub-catchment it is approximately 67km.

The portion of the Wind Farm site within the Clare[Galway]_SC_040 sub-catchment drains locally to the Levally Stream (Levally Stream_010 sub-basin) which has several tributaries that drain the Site. The portion of the Wind Farm site within the Sinking River sub-catchment drains locally to a headwater stream of the Sinking River (Sinking_020).

The proposed Grid Connection (including substation and 2 no. end masts) is located in the Clare[Galway]_SC_040 sub-catchment and is also drained locally by the Levally Stream.

With regard the TDR (Turbine Delivery Route) *works, 2 no. proposed road junction upgrades are located in the Clare[Galway]_SC_030 and 1 no. junction upgrade in the Sinking_SC_010 sub-catchment.*

The Proposed Project site is located in the Clare-Corrib Groundwater Body (IE_WE_G_0020) which has a mapped surface area of 1,344km^2.

The bedrock type of the Clare-Corrib GWB is predominantly Dinantian Pure Bedded Limestone (Burren Formation) which also underlies the Proposed Project site. The Burren Formation is classified by the GSI as a Regionally Important Karstified Aquifer which is dominated by conduit flow (Rkc).

Overall, groundwater flow directions within the GWB are reported to be to the southwest, with all groundwater discharging to Lough Corrib (GSI, 2004).

Its also worth noting that the overall surface water drainage pattern of the Levally Stream and its tributaries in the area of the Site is southerly. The hydrochemistry of the surface water (high electrical conductivity) suggests that there is a large groundwater component to the flow in the tributaries of the Levally Stream sub-basin in which the Site is located.

This suggests there is groundwater discharge (baseflow) from the underlying bedrock aquifer to the Levally Stream and therefore surface water flows patterns are likely to influence groundwater flow patterns to some extent.

4.1.1.1 Baseline Water Quality Data

EPA Q-rating data[3] (https://www.catchments.ie/data) is available for the Levally Stream, Grange River and Sinking River. 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). Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample.

Most recent data (2018) shows that the downstream EPA monitoring point on the Levally Stream has a Q3 rating (Poor Status) while further downstream the Grange River has a Q4 rating (Good Status). Monitoring points on the Sinking River immediately upstream of the Site have a 3-4 rating (Moderate Status) and then the rating improves to Q4 downstream of the Site.

The majority of the site is located within the Castlebridge Gravels Ground Waterbody, in an area of 'High' groundwater vulnerability with 'Good' Overall Groundwater Status in the Water Framework Directive (WFD) groundwater monitoring programme (2016-2021) and a WFD Risk status of 'Not at risk' as per EPA maps. A small area of the site along the northern and western boundaries is located in the Castlebridge North Ground Waterbody, containing a patchwork area of 'Low', 'Moderate', 'High', and 'Extreme' groundwater vulnerability. The Castlebridge North Ground Waterbody has an Overall Groundwater Status of 'Good' from 2016-2021 and a WFD Risk status of 'Not at risk'.

A Water Framework Directive Compliance Assessment was undertaken by Hydro-Environmental Services and is provided in Appendix 9-5 of Chapter 9 Hydrology and Hydrogeology of the EIAR. This provides further detail on the status of all river waterbodies in the Site.

Table 4-1 illustrates the respective Q-value status results from monitoring stations located along the Levally Stream, Grange River and Sinking River.

Table 4-1 Water quality monitoring stations, Q-values and statuses of watercourses in the vicinity of the Proposed Project

River Waterbody	Monitoring Station	Year	Location from Proposed Site	Q Values with Status
Levally Stream_010	Bridge N. of Mahanagh (RS30L070050)	1989	Downstream	3 (Poor)
Grange(Galway)_020	Bridge near Levally (RS30L070100)	2021	Downstream	4 (Good)
	GRANGE (GALWAY) - Ford N.N.W. of Cornacartan (RS30G020300)	2012	Downstream	4 (Good)
	Grange Bridge (RS30G020400)	2021	Downstream	4 (Good)

River Waterbody	Monitoring Station	Year	Location from Proposed Site	Q Values with Status
Sinking_020 and _030	SINKING - Dunmore Bridge (RS30S010200)	1989	Downstream	4 (Good)
	Dunmore WWTP – Upstream (RS30S010240)	No records	Downstream	-
	Br at Dunmore Castle (RS30S010300)	2021	Downstream	4 (Good)

4.1.2 Results of Consultation

MKO undertook a scoping exercise during preparation of the EIAR accompanying the planning application in 2020, 2021 and again in 2023. Table 4-2 provides a list of the organisations consulted with regard to biodiversity during the scoping process, and notes where scoping responses were received.

The recommendations of the consultees have been taken into consideration in the preparation of this NIS.

Table 4-2 Organisations consulted regarding biodiversity

Consultee	Response Yes/No	Response Details
Bat Conservation Ireland	Yes Received 15/12/2023	Bat Conservation Ireland does not have the administrative capacity to comment on planning applications. Please ensure that all bat surveys are undertaken according to best practice.
Birdwatch Ireland	Yes	Birdwatch Ireland provided species of interest that should be addressed in relation to the Proposed Project. White-fronted Geese, Whooper Swan, Crane, Curlew, Merlin and Hen Harrier were highlighted as species of concern in this area. PDFs of recent research papers in relation to disturbance distances and survey techniques were also provided.
Department of Agriculture, Food and the Marine	Yes Received 23/01/2024	If the Proposed Project will involve the felling or removal of any trees, the developer must obtain a Felling License from this Department before trees are felled or removed. As this development is within forest lands, particular attention should be paid to deforestation, turbulence felling and the requirement to afforest alternative lands.
Department of Housing, Local Government and Heritage (NPWS)	Yes Received 09/01/2024	A generic response document in relation to wind farm developments was received.

Consultee	Response Yes/No	Response Details
		Recommendations were made regarding elements to be addressed in the EIAR, including the National Biodiversity Action Plan, mitigation of habitat losses, construction management plans and mitigation, and cumulative and ex-situ effect, as well as guidance on appropriate assessment, post-construction monitoring and the need for licences. Guidance on the surveys and impact assessment of birds, bats, marsh fritillary, watercourses and wetlands, flood plains, hedgerows, scrub, grasslands and alien invasive species were specifically outlined.
Geological Survey of Ireland (GSI)	Yes Received 24/01/2024	Geological Survey Ireland would encourage use of and reference to their datasets. GSI records show that there are County Geological Sites (CGSs, as adopted under the National Heritage Plan) close to the proposed wind farm development area. These include Gortgarrow Spring, Park Esker, Levally Lough and Derrynagran Bog and Esker. With the current plan, there are no envisaged impacts on the integrity of the current CGSs by the Proposed Project. GSI asks ask that any proposed activities such as construction and modification of access roads and additional traffic due to access road construction and turbine installation in the area associated with the wind farm development do not impact on the CGSs. A karst spring and regionally important aquifer were identified within the zone of impact of the Proposed Project, which is located in an area of variable groundwater vulnerability. There are also groundwater drinking water abstractions for which there are zones of contribution/source protection areas within the area of the proposed wind farm development. Key to groundwater protection in general, and protection of specific drinking water supplies, is preventing ingress of runoff to the aquifer. Design of wind farm drainage will need to be cognisant of the group water scheme and the interactions between surface water and groundwater as well as run-off.

Consultee	Response Yes/No	Response Details
		Appropriate design should be undertaken by qualified and competent persons to include mitigation measures asnecessary, such as SUDs or other drainage mitigation measures
Inland Fisheries Ireland (IFI)	Yes Received 29/01/2024	IFI require that the EIAR/NIS prepared for the development will measure and identify its potential impacts on the aquatic environment and mitigate against these to ensure that any impact is minimal or non-existent. A number of survey recommendations were made. These included assessment of the aquatic diversity of all watercourses that will receive drainage from the construction site, the aquatic habitat and physical nature of any watercourse affected by the development, electrofishing surveys of all waters, and surveys of the soil types, strengths, structures and stabilities around all turbines, associated access roads and the site development. It was also noted that attention should be paid to drainage during both the construction phase and the operational phase, including waters being pumped from foundations or other excavations. Considerable attention to detail must be provided in relation to the interception of surface water flows, particularly during the construction of site roads. Serious consideration must also be given to the disposal of all waste materials such that they will not give rise to any risk. The EIS should indicate proposals to monitor the impact on all watercourses within the "development". In the event that environmental damage to the aquatic habitat and associated riparian zone is caused, the EIS should indicate the steps that may be taken to rectify any damage to the aquatic habitat including liaison with the appropriate authorities. In relation to wind farm structures and infrastructure it is important that a sufficient bank side riparian zone is maintained to absorb and attenuate overland flows.
Irish Red Grouse Association – Conservation Trust	Yes	Response received on 17th December 2023 asking for further details which were provided. No further response received to date.

Consultee	Response Yes/No	Response Details
Uisce Éireann	Yes Received 18/12/2023	At present, Uisce Éireann does not have the capacity to advise on the scoping of individual projects. However, general aspects of Water Services that should be considered in the scope of an EIA where relevant were outlined. This included mitigations for any potential negative impacts on any water source(s) which may be in proximity and included in the environmental management plan and incident response, any and all potential impacts on the nearby reservoir as public water supply water source(s) are assessed, including any impact on hydrogeology and any groundwater/surface water interactions and mitigation measures in relation to any of the above ensuring a zero risk to any Uisce Éireann drinking water sources (Surface and Ground water).
Waterways Ireland	Yes Received 21/12/2024	This is not within any Zone of Influence of their waterways so Waterways Ireland will not be commenting.

4.2 Results of Baseline Ecological Surveys

4.2.1 Multi-disciplinary Walkover Surveys

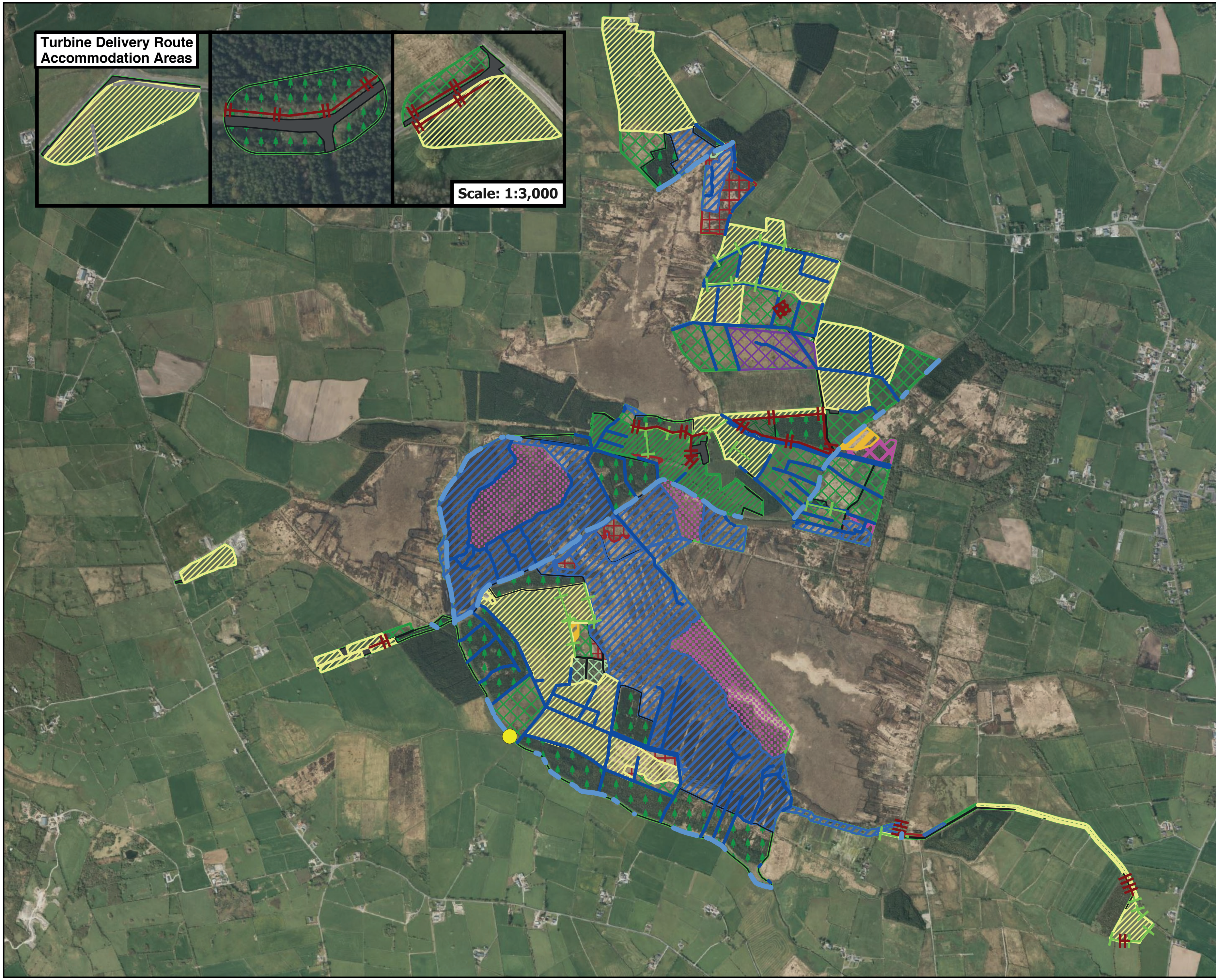
The habitats recorded within the Site Boundary are listed in Table 4-3 and described further in the sections below. Habitats recorded within the Proposed Wind Farm Site are described in Section 4.2.1.1. Habitats recorded along the proposed access route are described in Section 4.2.1.2, within the land-take areas along the proposed Turbine Delivery Route (TDR) in Section 4.2.1.3 and along the Proposed Grid Connection Route in Section 4.2.1.4 below. A habitat map of the site is provided in Figure 4-1. A habitat map is also provided with the proposed infrastructure footprint overlain in Figure 4-2.

No Annex I Habitats associated with any European Designated Sites were identified within or adjacent to the Site Boundary. While an area of the Annex I habitat 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation or aquatic mosses [3260]' was recorded on the Levally Stream during surveys undertaken by Triturus Environmental in 2021, this habitat was recorded outside of and approximately 1.16km downstream of the Site Boundary (refer to Aquatic report in Appendix 1). The habitat was not recorded within or adjacent to the Site Boundary itself.

In addition, while areas of habitats corresponding to the Annex I habitats '*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)' and 'Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels' were recorded within the Site Boundary, these areas are located entirely outside of and not associated with any European Sites.

Table 4-3 Habitats recorded within the Site Boundary

Habitat Name	Fossitt Code
Buildings and artificial surfaces	BL3
Spoil and bare ground	ED2
Recolonising bare ground	ED3
Tall-herb swamp	FS2
Depositing/lowland river	FW2
Drainage ditches	FW4
Improved agricultural grassland	GA1
Improved agricultural grassland / Wet grassland mosaic	GA1/GS4
Wet grassland	GS4
Wet grassland / Scrub mosaic	GS4/WS1
Raised bog	PB1
Cutover bog	PB4
Conifer plantation	WD4
Hedgerows	WL1
Treelines	WL2
Wet willow-alder-ash woodland	WN6
Bog woodland	WN7
Scrub	WS1
Immature woodland	WS2



Map Legend

- EIAR Site Boundary
- Stone walls and other stonework
- Depositing/ Lowland rivers
- Drainage ditches
- Hedgerows
- Treelines
- Buildings and artificial surfaces
- Spoil and bare ground
- Recolonising bare ground
- Improved agricultural grassland
- Imrpoved agricultural grassland/Wet grassland
- Wet grassland
- Wet grassland/Scrub
- Raised bog
- Cutover bog
- Conifer plantation
- Wet willow-alder-ash woodland
- Bog woodland
- Scrub
- Immature woodland
- Annex I Molinia Meadow
- Annex I Hydrophilous tall herb fringe communities

N

Drawing Title	Habitats within the Site
Project Title	Proposed Clonberne Wind Farm, Co. Galway
Drawn By: KB	Checked By: KOD
Project No.: 180740	Drawing No.: Figure 4-1
Scale: 1:23,000	Date: 27.06.2024

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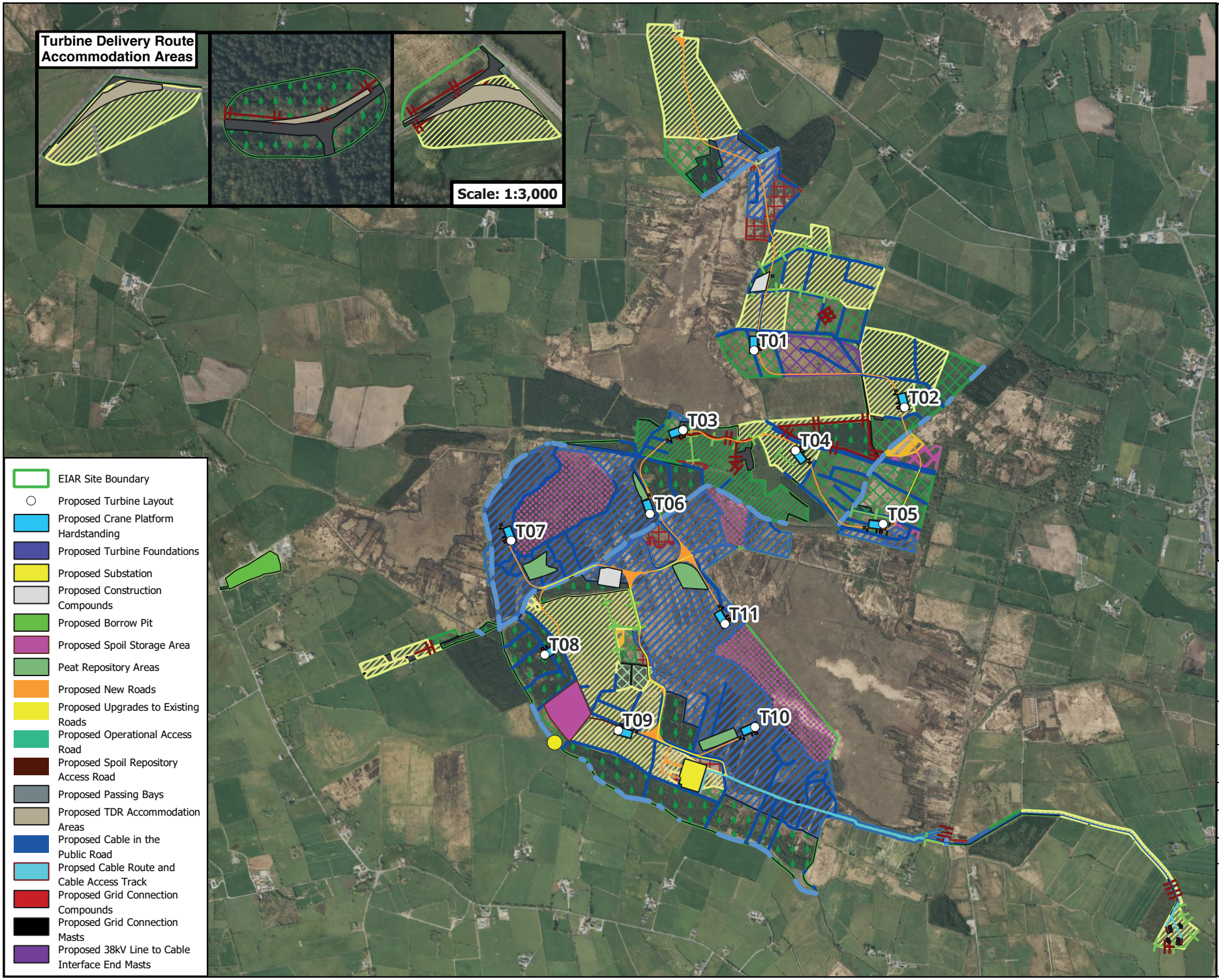

Drawing Title
Habitats within the Site with Proposed Infrastrucutre

Project Title
Proposed Clonberne Wind Farm, Co. Galway

Drawn By	Checked By
KB	KOD
Project No.	Drawing No.
180740	Figure 4-2
Scale	Date
1:23,000	27.06.2024

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4.2.1.1 Proposed Wind Farm Site

The habitats within the Proposed Wind Farm Site boundary are dominated by grassland and peatland habitats. Grassland habitats are predominantly characterised by agricultural land, including improved agricultural grassland and agricultural wet grassland, while peatland habitats are characterised predominantly by cutover raised bog with areas of uncut raised bog also present. The site is accessed via a network of bog roads/tracks and local roads. Other habitats within the Proposed Wind Farm Site boundary include conifer plantation, Molinia meadow and woodland dominated by birch or alder.

4.2.1.1.1 *Cutover Bog (PB4) and associated habitats*

A large proportion of the land within the Proposed Wind Farm Site boundary is classified as cutover raised bog (PB4). Peat extraction was ongoing at various locations during the site visits and cutover bog within these areas was characterised by a high percentage of bare peat cover (80% or more) with sparsely growing vegetation including toadrush (*Juncus bufonius*), low growing, sparse purple moor grass (*Molinia caerulea*), ling heather (*Calluna vulgaris*), bog asphodel (*Narthecium ossifragum*) and common cottongrass (*Eriophorum angustifolium*) (Plate 4-1 and 4-2). Turbines 6, 7, 10 and 11, as well as part of the southern construction compound, are located in areas of cutover bog dominated by bare peat.

In other areas, where peat extraction has ceased for some time, the cutover bog has revegatated with dry heath and scrub type vegetation (Plate 4-3 and 4-4). Vegetation in these areas is typically dominated by purple moor grass, knapweed (*Centurea nigra*), common cottongrass, cocksfoot (*Dactylis glomerata*), sweet vernal grass (*Anthoxanthum odoratum*), soft rush (*Juncus effusus*), hawkbits (*Leontodon* sp.) and occasional devil's bit scabious (*Succisa pratensis*), or heath and scrub species including ling heather (*Calluna vulgaris*), bog myrtle (*Myrica gale*), gorse (*Ulex europaeus*) and willow species (*Salix* sp.) along with purple moor grass. Lesser butterfly orchid (*Platanthera bifolia*) was occasionally recorded in areas of revegetating cutover bog.

Four peat repository areas are proposed to the southwest of Turbine 10, southeast of Turbine 7, northwest of Turbine 11 and north of Turbine 6. All peat repository areas are located within Cutover bog (PB4) of varying degree of revegetation and regeneration. The areas to the southwest of Turbine 10, southeast of Turbine 7 and north of Turbine 6 are dominated by bare peat with little revegetation except for small amounts of rushes (*Juncus* sp.) and cottongrass (*Eriophorum angustifolium*) (Plate 4-5 and 4-6). The proposed peat repository area to the northwest of Turbine 11 is more highly revegetated with species including ling heather (*Calluna vulgaris*), purple moor grass (*Molinia caerulea*) and cottongrass as well as small areas of gorse (*Ulex europaeus*) scrub (Plate 4-7). The southern proposed construction compound is also partially located within an area of cutover bog.

A small section of the Site to the south of Turbine 6 supported an area of cutover bog that was relatively wet underfoot and dominated by common cottongrass (*Eriophorum angustifolium*), Yorkshire fog (*Holcus lanatus*), bottle sedge (*Carex rostrata*), soft rush (*Juncus effusus*) and marsh pennywort (*Hydrocotyle vulgaris*). Other species included purple moor grass, lesser spearwort (*Ranunculus falmmula*), creeping bent (*Agrostis stolonifera*), devil's bit scabious (*Succisa pratensis*), meadowsweet (*Filipendula ulmaria*) and marsh bedstraw (*Galium palustre*). The Levally stream flows adjacent to the northern section of this habitat and wetter areas were characterised by stands of bulrush (*Typha latifolia*). Drier sections were characterised by dominant purple moor grass and areas of willow (Salix sp.) scrub. A small part (approx. 0.09ha) of this habitat lies within the footprint of proposed wind farm road widening works (Figure 4-2) (Plate 4-8).

The revegetating areas of cutover bog were assessed for their potential to conform to the Annex I habitat 'Active Raised Bog [7110]' as per IWM 128 The habitats of cutover raised bog (Smith and Crowley, 2020). Sphagnum cover was less than 40%, the habitat did not contain the sufficient indicator species and contained species not typical of raised bog. Therefore, the habitat did not conform to the Annex I habitat 'Active Raised Bog [7110]'.

Plate 4-1 Cutover bog characterised by bare peat

Plate 4-2 Cutover bog characterised predominantly by bare peat

Plate 4-3 Revegetating cutover bog

Plate 4-4 Revegetating cutover bog with purple moor grass, ling heather and birch scrub

Plate 4-5 The peat repository area to the southeast of T7 is dominated by bare peat with little revegetation

Plate 4-6 The peat repository area to the north of T6 is dominated by bare cutover peat

Plate 4-7 The peat repository area to the northwest of Turbine 11 is more highly revegetated

Plate 4-8 Revegetating cutover bog south of T6 which was relatively wet underfoot

4.2.1.1.2 Bog Woodland (WN7)

Small areas of dry birch-dominated woodland categorised as Bog woodland (WN7) has developed on areas of cutover bog throughout the site. The woodlands are dominated by birch (*Betula pubescens*), with willow (*Salix* sp.) and occasional pine (*Pinus* sp.) in some areas. The wooded areas are predominantly very dry and have not established on *Sphagnum* rich substrates. A small area of bog woodland is located within the construction footprint to the south of T2 along the access track between T2 and T5 (Plate 4-9). None of the areas of woodland within the Site, including the section within the construction footprint, were found to correspond to Annex I habitat Bog Woodland (91D0). They were very dry in nature with no *Sphagnum* species present.

Plate 4-9 Dry birch-dominated Bog woodland along the access track to the south of T2

4.2.1.1.3 Scrub (WS1)

Areas of scrub dominated by willow (*Salix* sp.), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.) are common throughout the development site, mostly associated with colonising areas of former cutover bog or occurring in association with areas of grassland (Plate 4-10 and 4-11). The proposed substation and southern proposed construction compound are partially located within areas of scrub (Plate 4-12).

Plate 4-10 Willow scrub colonising cutover bog within the development site.

Plate 4-11 Willow dominated Scrub along the proposed wind farm access road

Plate 4-12 The southern proposed construction compound in an area of buildings and artificial surfaces, scrub, cutover bog and conifer forestry

4.2.1.1.4 Raised Bog (PB1)

Small areas of fragmented Raised bog (PB1) are present throughout the site boundary. These areas have been entirely avoided by the development infrastructure. The majority of areas of remnant uncut bog are small in size, heavily drained through the insertion of parallel drainage ditches and are subject to ongoing peat extraction at the facebank (Plate 4-13), where they are surrounded by deep drains and extensive areas of bare peat and/or revegetating cutover bog. They are dry in nature and the vegetation is typically dominated by abundant ling heather with little Sphagnum cover.

These areas were assessed for their potential to conform to the Annex I habitat 'Active Raised Bog [7110]' as per IWM 81. Raised Bog Monitoring and Assessment Survey 2013 (Fernandez *et al.*, 2013). Sphagnum cover was low, the habitat did not contain the sufficient indicator species and contained species not typical of raised bog. Therefore, the habitat did not conform to the Annex I habitat 'Active Raised Bog [7110]'.

Plate 4-13 Raised bog (PB1) dominated by ling heather at top of facebank where there is ongoing peat extraction

4.2.1.1.5 Wet Grassland (GS4)

Wet grassland is abundant throughout the Proposed Wind Farm Site boundary. The majority of wet grassland (GS4) throughout the site is agricultural in nature, grazed and dominated by common species including Yorkshire fog (*Holcus lanatus*) or soft rush dominated swards. Other species present include meadow buttercup (*Ranunculus acris*), white clover, common mouse-ear (*Cerastium fontanum*) and marsh thistle (*Cirsium palustre*).T1 and T5 are both located in habitat classified as Wet grassland (GS4). (Plate 4-14). The proposed northern construction compound and proposed spoil storage areas are also located within fields characterised as wet grassland. Wet grassland was also recorded along forestry rides including to the west of T3 and to the east of T9 where it was interspersed with areas of bramble (*Rubus fruticosus* agg.) and gorse scrub with calcareous grassland on areas of higher ground. Species present in these areas included false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), meadowsweet (*Filipendula ulmaria*), horsetails (*Equisetum* sp.), wild angelica (*Angelica sylvestris*), greater tussock sedge (*Carex paniculata*) and silverweed (*Potentilla anserina*), bird's foot trefoil (*Lotus corniculatus*), meadow buttercup (*Ranunculus acris*) and self-heal (*Prunella vulgaris*).

An area of species-rich wet grassland is present to the east of T1 within the same field boundary (Plate 4-14, 4-15, 4-16). This area of grassland was characterised by a different species composition and greater species richness than the location of T1 and is separated from the location of the proposed T1 by a drainage ditch. Species recorded in this habitat included brown sedge (*Carex disticha*), sweet vernal grass (*Anthoxanthum odoratum*), marsh cinquefoil (*Potentilla palustris*) with smaller amounts of purple moor grass (*Molinia caerulea*), creeping bent grass (*Agrostis stolonifera*) jointed rush (*Juncus articulatus*), meadowsweet (*Filipendula ulmaria*) and meadow thistle (*Cirsium dissectum*). Small areas of this wet grassland habitat contained elements of cutover bog habitat and supported species including bog myrtle (*Myrica gale*), *Sphagnum* species, devil's bit scabious (*Succisa pratensis*), star sedge (*Carex echinata*), carnation sedge (*Carex panicea*), black bog rush (*Schoenus nigricans*), purple moor grass and deergrass (*Trichophorum germanicum*). Wetter areas associated with artificial drains throughout the field supported cuckoo flower (*Cardamine pratensis*), lesser spearwort (*Ranunculus flammula*), ragged robin (*Silene flos-cuculi*) and occasional bog pimpernel (*Anagallis tenella*). The proposed access

track between T1 and T2 runs along the very southern boundary of this this habitat, adjacent to the existing field boundary wall (refer to habitat map Figure 4-2).

A detailed botanical assessment was carried out in the species-rich area of grassland. The area of grassland was found to correspond to the Annex I habitat *'Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 6410* (O'Neill *et al.* 2014).

Plate 4-14 Wet grassland in the vicinity of T5

Plate 4-15 Species rich grassland to the east of T1 but outside the T1 construction footprint was found to correspond to the Annex I habitat Molinia meadows

Plate 4-16 Species rich grassland to the east of T1 but outside the T1 construction footprint was found to correspond to the Annex I habitat Molinia meadows

4.2.1.1.6 Improved Agricultural Grassland (GA1)

Improved agricultural grassland (GA1) within the Site Boundary is typically dominated by perennial rye grass (*Lolium perenne*) as well as forbs typical of the habitat including broad-leaved dock (*Rumex obtusifolius*), white clover (*Trifiolium repens*) and creeping buttercup (*Ranunculus repens*) with some soft rush (*Juncus effusus*). T2, T4 and T9 are all located in Improved agricultural grassland, as well as the proposed substation and proposed borrow pit (Plate 4-17).

The proposed borrow pit is located to the west of the main wind farm site. It is accessed via a local road to the west of the field, with an existing track of Buildings and artificial surfaces (BL3) entering the site from this road. The field is an Improved agricultural grassland (GA1) of low botanical diversity (Plate 4-18). The area was dominated by perennial ryegrass (*Lolium perenne*) and Yorkshire fog (*Holcus lanatus*) with some white clover (*Trifolium repens*) and small amounts of dandelion (*Taraxacum officinale*), common daisy (*Bellis perennis*) and broad-leaved dock (*Rumex obtusifolius*).

The proposed substation is located in the south of the Site. The field in which it is located is predominantly Improved agricultural grassland (GA1), transitioning into Wet grassland (GS4) in the south as the terrain gently slopes into wetter areas (Plate 4-19). Small pockets of Scrub (WS1) are also present within this field, to the north and west of the proposed substation location. A wet Drainage ditch (FW4) flows in a southerly direction through the proposed substation to join another deep drain that delineates the southern boundary of the field and the edge of the adjacent Conifer plantation (WD4). Plant species recorded at this location were dominated by perennial ryegrass (*Lolium perenne*) and Yorkshire fog (*Holcus lanatus*). Other species recorded in small numbers included common mouse ear (*Cerastium fontanum*), white clover (*Trifolium repens*), ribwort plantain (*Plantago lanceolata*), gorse saplings (*Ulex europaeus*), common sorrel (*Rumex acetosa*), sheep's sorrel (*Rumex acetosella*), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), meadow thistle (*Cirsium dissectum*), creeping thistle (*Cirsium arvense*), perennial sowthistle (*Sonchus arvensis*) and tufted vetch (*Vicia cracca*).

Plate 4-17 Improved agricultural grassland in the vicinity of T4

Plate 4-18 The proposed borrow pit is within a field of improved agricultural grassland

Plate 4-19 The proposed substation location within improved agricultural grassland, transitioning into wet grassland and scrub

4.2.1.1.7 Conifer Plantation (WD4)

Small areas of conifer plantation (WD4) of various ages are common throughout the site (Plate 4-20). Conifer plantation was dominated by either sitka spruce (*Picea sitchensis*), lodgepole pine (*Pinus contorta*) or both. T3 and T8 are both located within areas of dense immature sitka spruce and lodgepole pine plantation. Willow, birch and alder (*Alnus glutinosa*) are present around the forestry edge at the location of T3. The location of the proposed southern construction compound is also partially located within conifer plantation forestry.

Plate 4-20 Conifer plantation in the vicinity of T3

4.2.1.1.8 Immature Woodlands (WS2)

A small area of young, planted ash (*Fraxinus excelsior*)-dominated woodland is present within the Site (Plate 4-21). The woodland lies to the north of T4, adjacent to agricultural grassland, with conifer plantation to the east. The woodland was recently planted and is dominated by immature ash. A treeline of hazel (*Corylus avellana*), alder (*Alnus glutinosa*), beech (*Fagus sylvatica*), willow (*Salix* sp.), rowan (*Sorbus aucuparia*), hawthorn (*Crataegus monogyna*) and guelder rose (*Viburnum opulus*) is present along the northern and southern boundaries of this area of woodland.

A small area of immature woodland is also located to the west of the proposed wind farm access road, to the north of T1.

Plate 4-21 Immature ash woodland bounded by a treeline east of T4

4.2.1.1.9 Wet Willow-Alder-Ash Woodland (WN6)

A small area of alder (*Alnus glutinosa*) dominated woodland classified as wet willow-alder-ash woodland is present within the Proposed Wind Farm site to the north of T9 (Plate 4-22). Other species present included ash, sycamore (*Acer pseudoplatanus*), willow (*Salix* sp.), beech (*Fagus sylvatica*) and hawthorn (*Crataegus monogyna*). Ground flora included soft rush, creeping buttercup, Yorkshire fog (*Holcus lanatus*), willowherb (*Epilobium* sp.), cleavers (*Galium aparine*), meadowsweet (*Filipendula ulmaria*), floating sweet-grass (*Glyceria fluitans*), broad buckler fern (*Dryopteris dilatata*), ivy (*Hedera hibernica*), hawthorn (*Crataegus monogyna*), rough meadow-grass (*Poa trivialis*).

A small section (approx. 0.15ha) of this habitat lies within the footprint of road widening works associated with the proposed wind farm infrastructure. The woodland was classified as wet willow-alder-ash woodland (WN6) growing on cut-over bog, dominated by alder and subject to waterlogged conditions. This area was subjected to a condition assessment to assess the potential for this area to conform to the Annex I habitat 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]'. The results of the condition assessment concluded that, despite the high quality of the wet woodland habitat within the footprint of the works, it did not meet the criteria necessary to be considered an Annex 1 habitat. As a result, it is classified as wet willow-alder-ash woodland (WN6) grown on cut-over bog, dominated by alder and subjected to waterlogged conditions.

A further area of this habitat is also located to the east of the proposed wind farm access track north of T1, along the Sinking River.

Plate 4-22 Woodland classified as wet willow-ash-alder woodland dominated by alder. The woodland also supports non-native species including sycamore and beech

4.2.1.1.10 Depositing/Lowland River (FW2)

A number of small watercourses drain the Proposed Wind Farm Site. The majority of the streams were 1-2m in width (up to 4m at the location of bridges). The main watercourse running through the site is the Levally stream which drains towards the southern end of the site. It is a Depositing/lowland river (FW2). It contains sections with a predominantly silty substrate along its length (Plate 4-23) and varies in in width from 1m to 4m. Flow ranges from stagnant to moderate/fast depending on the area of the site as well as recent rainfall levels. Instream vegetation included watercress (*Rorippa nastutium-aquatica*), fool's water cress (*Apium nodiuflorum*), unbranched bur-reed (*Sparganium emersum*), broad-leaved pondweed (*Potamogeton natans*), water figwort (*Scrophularia umbrosa*), water mint (*Mentha aquatica*), and branched bur-reed (*Sparganium erectum*). Bankside vegetation recorded around the bridge crossing points included meadowsweet (*Filipendula ulmaria*), nettles (*Urtica dioica*), water figwort (*Scrophularia umbrosa*), tufted hair grass (*Deschampsia cespitosa*), great willowherb (*Epilobium hirsutum*), marsh horsetail (*Equisetum palustre*), soft rush (*Juncus effusus*) hard rush (*Juncus inflexus*), false oat grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*), meadow vetchling (*Lathyrus pratensis*), yorkshire fog (*Holcus lanatus*) and alder (*Alnus glutinosa*). Parts of the river have been subjected to alterations, including historical bank re-profiling and concreate culverts.

During the aquatic surveys undertaken by Triturus Environmental Ltd in 2021 the Annex I habitat 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation or aquatic mosses [3260]' was recorded within the Levally Stream at a survey site outside of and approximateley 1.16km downstream of the Site Boundary (refer to Aquatic baseline report in Appendix 1). This was based on the presence of ≥3 indicator species for the habitat (EC, 2013; Weekes et al., 2018), namely broad-leaved pondweed (*Potamogeton natans*; 50% cover), water starwort (Callitriche sp.), fool's watercress (*Apium nodiflorum*) and a high coverage of aquatic bryophytes such as *Leptodictyum riparium* and *Fontinalis antipyretica*.

The watercourses draining the site have been subject to detailed assessment and kick sampling and the results are presented in Section 4.2.2.2 below.

Plate 4-23 The Levally stream which drains the site to the south

4.2.1.1.11 Drainage Ditches (FW4)

The site is extensively drained with channels that run through the site, predominantly within cutover bog and around the edges of remnant areas of uncut raised bog, as well as along road verges and forming the boundaries of agricultural fields. The majority of the drains associated with cutover bog within the site are devoid of vegetation (Plate 4-24). Many of the drainage ditches associated with road verges and agricultural fields were dry and vegetated at the time of the site visit (Plate 4-25). The wetter drainage ditches supported soft rush (*Juncus effusus*) and lesser spearwort (*Ranunculus flammula*) (Plate 4-26).

Plate 4-24 Example of drainage ditch at the intersection between cutover bog and uncut raised bog facebank

Plate 4-25 Example of dry vegetated drainage ditch forming boundary of agricultural field within the site boundary

Plate 4-26 Drainage ditch within the site boundary close to T1

4.2.1.1.12 Buildings and Artificial Surfaces (BL3)

Local paved roads within the development site boundary as well as agricultural buildings such as sheds were classified as Buildings and artificial surfaces (BL3) (Plate 4-27).

Plate 4-27 Bog roads classified as Buildings and artificial surfaces are present throughout the site

4.2.1.1.13 Spoil and Bare Ground (ED2)

Local unpaved bog roads and farm tracks were classified as Spoil and bare ground (ED2), often in association with areas of Buildings and artificial surfaces (BL3) such as in farmyards within the site (Plate 4-28). These areas had low vegetation cover, with more highly vegetated tracks constituting Recolonising bare ground (ED3).

Plate 4-28 Agricultural shed and hardstanding area classified as buildings and artificial surfaces and spoil and bare ground.

4.2.1.1.14 Recolonising Bare Ground (ED3)

Small areas of Recolonising bare ground are present along farm tracks including to the south of T3 (Plate 4-29). Recolonising species included dandelion (*Taraxacum officinale*), silverweed (*Potentilla anserina*), broadleaf plantain (*Plantago major*), meadowsweet (*Filipendula ulmaria*) and grass species including Yorkshire fog (*Holcus lanatus*) and perennial rye grass (*Lolium perenne*).

Plate 4-29 More highly vegetated farm tracks were classified as recolonising bare ground, such as the track to the south of T3

4.2.1.1.15 Tall-herb Swamps (FS2)

An area of Tall-herb swamp was recorded along the western boundary of the site (Plate 4-30). This habitat comprised of in stream species including broad leaved pondweed (*Potamogeton natans*), duckweed (*Lemna minor*), fools water cress (*Apium nodiflorum*), marsh marigold (*Caltha palustris*) and branched bur reed (*Sparganium erectum*). Bankside vegetation present included nettles (*Urtica dioica*), valerian (V*aleriana officinalis*), meadowsweet (*Filipendula ulmaria*), hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), tufted hair grass (*Deschampsia cespitosa*), cocks foot (*Dactylis glomerata*), great willowherb (*Epilobium hirsutum*), wild Angelica (*Angelica sylvestris*), curly dock (*Rumex crispus*), false oat grass (*Arrhenatherum elatius*), bindweed (*Calystegia sepium*), Yorkshire fog (*Holcus lanatus*), cleavers (*Galium aparine)*, silverweed (*Potentilla anserina*), red fescue (*Festuca rubra*), field horsetail (*Equisetum arvense*), rough meadow grass (*Poa trivialis*), common sorrel (*Rumex acetosa*), marsh horsetail (*Equisetum palustre*), soft rush (*Juncus effusus*), floating sweet grass (*Glyceria fluitans*), and water mint (*Mentha aquatica*).

This habitat was subjected to a condition assessment (Devaney *et al.*, 2013[2]) to assess the potential for this area to conform to the Annex I habitat 'Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430)'. The results of the condition assessment concluded that, due to the presence of more than three indicator species, the absence of Common reed (*Phragmites australis*) and less than 30% cover of floating sweet grass, it met the criteria necessary to be considered an Annex 1 habitat.

[2] *Devaney, F. M., Martin, J. R., O'Neill, F. H., & Delaney, A. (2013). Irish semi-natural grasslands survey (No. 4). Annual Report.*

Plate 4-30 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430) recorded along the Levally Stream on the western boundary of the Site

4.2.1.1.16 Hedgerows (WL1)

Hedgerows (WL1) within the site are predominantly associated with agricultural lands, delineating field margins and along access tracks (Plate 4-31). Common hedgerow species include hawthorn (*Crataegus monogyna*), brambles (*Rubus fruticosus*) and gorse (*Ulex europaeus*) in association with herbaceous species such as rosebay willowherb (*Chamaenerion angustifolium*), nettles (*Urtica dioica*) and bracken (*Pteridium aquilinum*).

Plate 4-31 Hedgerows were most commonly associated with agricultural farmlands

4.2.1.1.17 Treelines (WL2)

Several Treelines (WL2) were recorded within the Site. These were mostly found within agricultural areas, delineating field margins and along access tracks, in places in association with Hedgerows (WL1). Species included sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and beech (*Fagus sylvatica*) (Plate 4-32).

Broadleaf treelines were also commonly associated with forestry plantations, including the area of immature ash woodland to the east of T4, as well as along the boundaries of the conifer plantation within which T3 is located. These treelines comprised hazel (*Corylus avellana*), alder (*Alnus glutinosa*), beech (*Fagus sylvatica*), willow (*Salix* sp.), rowan (*Sorbus aucuparia*), hawthorn (*Crataegus monogyna*) and guelder rose (*Viburnum opulus*).

Plate 4-32 Treelines of sycamore, ash and beech along agricultural access tracks

4.2.1.1.18 Watercourse Crossings

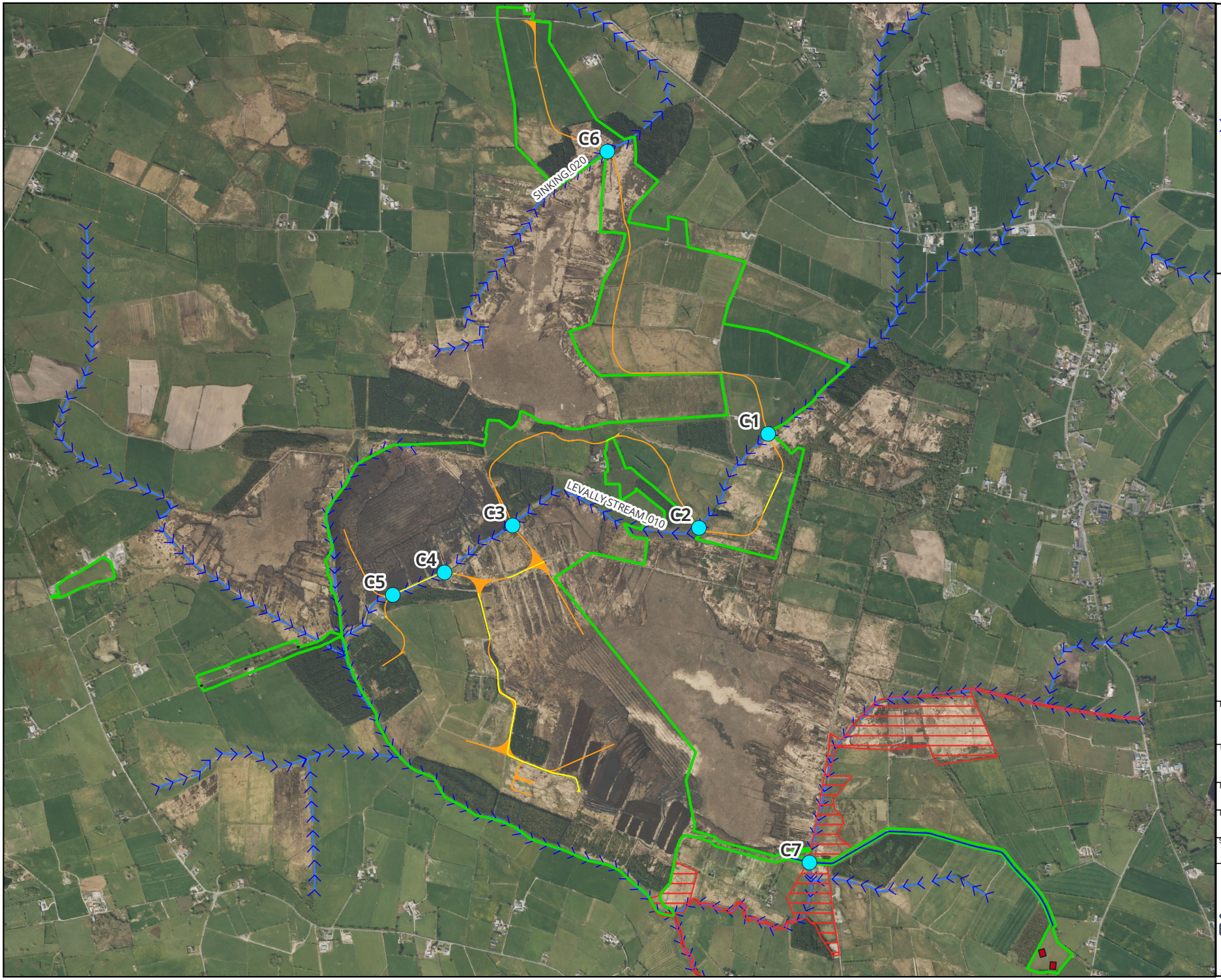
The Proposed Wind Farm infrastructure within the Wind Farm site will involve 5 no. watercourse crossings to facilitate the site access roads, 4 no. of which are proposed new crossings involving a clear span bridge and one which is an upgrade to an existing watercourse crossing. All crossings are of the Levally stream.

No instream works will be required at any of the proposed watercourse crossings in the Proposed Wind Farm Site. The watercourse crossing locations within the Proposed Wind Farm Site are shown in Figure 4-3 below and listed in the Table 4-4 below.

Table 4-4 Watercourse Crossings within the Wind Farm Site

Crossing ID (refer to Figure 4-3)	Works Proposed	Photo of crossing location
C1	Clear span bridge (no instream works).	
C2	Clear span bridge (no instream works).	
C3	Clear span bridge (no instream works).	

Crossing ID (refer to Figure 4-3)	Works Proposed	Photo of crossing location
C4	Upgrade to existing watercourse crossing (no instream works).	
C5	Clear span bridge (no instream works).	



Map Legend

- EIAR Site Boundary
- Watercourse Crossings
- WFD River Waterbodies
- Special Area of Conservation (SAC)
- Existing Roads to be Upgraded
- Proposed New Roads
- Cable in the Public Road

N

Drawing Title

Watercourse Crossings

Project Title: Proposed Clonberne Wind Farm, Co. Galway	
Drawn By: KB	Checked By: KOD
Project No.: 180740	Drawing No.: Figure 4-3
Scale: 1:22,000	Date: 27.06.2024

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4.2.1.2 Habitats along the Proposed Access Route

The proposed wind farm access road is located in the north of the Site. It approaches Turbine 1 from the R328 Regional Road, traversing fields classified as Improved agricultural grassland (GA1), rush dominated Wet grassland (GS4) (Plate 4-33) with meadowsweet (*Filipendula ulmaria*), wild angelica (*Angelica sylvestris*) and Yorkshire fog (*Holcus lanatus*), pockets of dry birch-dominated Scrub (WS1) with gorse (*Ulex europeas*), immature sitka spruce (*Picea sitchensis*) dominated Conifer plantation (WD4) and Cutover bog (PB4). The cutover bog was dominated by purple moor grass (*Molinia caerulea*) and common cottongrass (*Eriophorum angustifolium*) with bog myrtle (*Myrica gale*), ling heather (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*) also present (Plate 4-34). It was predominantly dry in nature but wetter pockets supported bog asphodel (*Narthecium ossifragum*) and round-leaved sundew (*Drosera rotundifolia*). Some areas of *Sphagnum capillifolium* are present.

The road cuts through Scrub (WS1) (Plate 4-35) as it continues south consisting of willow (*Salix* sp.), reed canary grass (*Phalaris arundinaceae)* and purple loosestrife (*Lythrum salicaria*).

None of the habitats that the proposed access route traverses correspond to Annex I habitats.

Plate 4-33 Improved agricultural grassland (background) and wet grassland along the proposed wind farm access road

Plate 4-34 Purple moor grass dominated cutover bog along the proposed wind farm access road

Plate 4-35 Willow scrub (WS1)

4.2.1.2.1 Watercourse Crossings

There is one proposed water crossing along the proposed access route. The proposed access route will cross the Sinking Stream, classified as Depositing/lowland River (FW2) (Plate 4-36). This crossing will be via a new clear span bridge and no instream works are proposed. The location of this water crossing is shown in Figure 4-3. This watercourse has been subject to historical re-profiling and culverting. The water crossing is located north of the proposed T1, located in the north of the site. At the water crossing location, the river is 1.5m at its widest point and 40cm deep with a slow flow. There is no pre-existing water crossing and the crossing point is located in an area of thick willow scrub within an area of peatland. The stream is narrow with peaty sediment and slow flow. No vegetation was present within the water. Bankside vegetation consisted of meadowsweet (*Filipendula ulmaria*), bindweed (*Calystegia sepium*), angelica (*Angelica sylvestris*), watercress (*Nasturtium officinale*), *Agrostis* sp., nettles (*Urtica dioica*), water figwort (*Scrophularia umbrosa*), tufted hair grass (*Deschampsia cespitosa*), cleavers (*Galium aparine*), overhanging willows (*Salix* sp.), lady fern (*Athyrium filix-femina*), *Dryopteris* sp., hawthorn saplings (*Crataegus monogyna*) and herb robert (*Geranium robertianum*).

Plate 4-36 Proposed access route crossing location on the Sinking Stream

4.2.1.3 Habitats along the Proposed Turbine Delivery Route

There are 3 no. land take areas located along the proposed turbine delivery route on the L6466 Local Road between the N83 and R328, approximately 2km south of Dunmore, Co. Galway. The easternmost land take area at the junction of the L6466 with the R328 is located within a field classified as Improved agricultural grassland (GA1) to the south of the existing road. This field is not highly improved, with areas of nettles (*Urtica dioica*) and common ragwort (*Jacobaea vulgaris*) dominant towards the field boundaries, and wetter, rush dominant areas towards the southern field boundary (Plate 4-37). The field to the north of the road is classified as Wet grassland (GS4). A mature Treeline (WL2) is present in the verge to the south of the road comprising several ash (*Fraxinus excelsior*) trees

which will lie within the footprint of the proposed land take (Plate 4-38). A less mature, sparser treeline is also present along the verge to the north of the road.

The central land take area along the L6466 is located at a junction with a forestry road to the south. Conifer plantation (WD4) is located on all sides of the junction. A Treeline (WL2) of willow (*Salix* sp.) and alder (*Alnus glutinosa*) is present along the road verge to the north of the road, which lie within the footprint of the proposed land take (Plate 4-39). The invasive alien plant species Rhododendron (*Rhododendron ponticum*) was recorded growing extensively in all road verges in this area. This species is listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (S.I. 477 of 2011). An Invasive Species Management Plan has been prepared along with this planning application and can be found in Appendix 4. The highly invasive plant species cherry laurel (*Prunus laurocerasus*) was also found growing in large stands along with the Rhododendron (Plate 4-40).

The western land take area is located at the junction of the L6466 and the N83. Fields classified as Improved agricultural grassland (GA1) are located on all sides of this junction and are characterized by low plant species diversity (Plate 4-41). A Stone wall (BL1) is located along the southern boundary of the L6466 with further walls within the adjacent field. These lie within the footprint of the proposed land take.

Plate 4-37 Improved agricultural grassland (GA1) with areas of nettles and rushes at the eastern land take area

Plate 4-38 Mature treeline of ash at the eastern land take area

Plate 4-39 A broadleaf treeline of willow and alder is growing along the northern road boundary in front of the conifer forestry at the central land take area

Plate 4-40 The highly invasive alien plant species Rhododendron and cherry laurel were found growing extensively along all roadsides at the central land take area

Plate 4-41 The western land take area is surrounded by improved agricultural grassland with a stone wall along the southern road boundary

4.2.1.4 Habitats along the Proposed Grid Connection Route

The proposed Grid Connection comprises of an 220kV underground cable route of approximately 2.8km in length. The proposed Grid Connection will originate at a proposed new substation within the south-eastern extent of the Proposed Wind Farm Site in the townland of Cloonarkan. The proposed substation is located within a field classified as Improved agricultural grassland (GA1) and Wet grassland (GS4) with areas of Scrub (WS1). It then travels in an easterly direction for approximately 1.1km towards the eastern boundary and the public road network (L6501 local road). Within the Site the Proposed Grid Connection traverses Cutover bog (PB4) which consists of actively cut bare peat (Plate 4-42). This is in places becoming colonised by grassland species including silverweed (*Potentilla anserina*) and Yorkshire fog (*Holcus lanatus*).

Immediately east of the Proposed Wind Farm the Grid Connection will be laid within the existing road infrastructure for approximately 1.4km. Adjacent habitats include Improved agricultural grassland (GA1), Conifer plantation (WD4), grassland classified as Wet grassland (GS4), areas of Scrub (WS1) and short stretches of Hedgerow (WL1).

The Proposed Grid route terminates at two proposed new grid connection compounds, within a field categorised as Improved agricultural grassland (GA1) (Plate 4-43) in the townland of Laughil. This field is bordered by Hedgerows (WL1) to the north, east and south, with three mature sycamore (*Acer pseudoplatanus*) along the southern boundary. An area of Conifer plantation (WD4) is located to the west of the proposed compounds.

Plate 4-42 Field of improved agricultural grassland in which two grid connection compounds are proposed

Plate 4-43 Actively cut peat along the grid route.

4.2.1.4.1 Watercourse Crossings

There is one water crossing of a mapped EPA watercourse where the proposed grid connection route traverses the Levally Stream classified as Depositing/lowland river (FW2) (Plate 4-44) within the boundary of Lough Corrib SAC. This location of this water crossing is shown on Figure 4-3. It is proposed to horizontally directional drill beneath the Levally stream. The launch pit will be located to the west of the watercourse and the reception pit will be located to the east of the watercourse. The top of the cable ducts will be a minimum of 1.5m below the watercourse bed as advised by Inland Fisheries Ireland. It is proposed to construct a temporary accommodation area around the launch and reception pits to facilitate the horizontal directional drilling process.

This existing watercourse crossing at this location is located within the existing road, consisting of a concrete box culvert (Plate 4-45). This culvert extends into the riverbed for approximately 2m before grading into natural substrate of large and small gravel upstream and cobbles and boulders downstream. A ditch feeds into the stream upstream of the crossing, the left bank in this area slopes downwards around the drain. The stream is slow flowing with some glides upstream and has a moderate flow downstream with riffles.

Upstream of the crossing, the instream submerged vegetation consists of unbranched bur-reed (*Sparganium emersum*). Emerging vegetation includes yellow iris (*Iris pseudacorus*) and floating sweet grass (*Glyceria fluitans)*. Downstream of the crossing, submerged vegetation includes yellow iris (*Iris pseudacorus*) with green filamentous algae. Bankside vegetation up and downstream of the water crossing consists of species including; common duckweed (*Lemna minor*), fool's water cress (*Apium nodiflorum*), branched bur-reed (*Sparganium erectum*), great willowherb (*Epilobium hirsutum*), meadowsweet (*Filipendula ulmaria*), tufted hair grass (*Deschampsia cespitosa*), yorkshire fog (*Holcus lanatus*), marsh horsetail (*Equisetum palustre*), soft rush (*Juncus effusus*) hard rush (*Juncus inflexus*), false oat grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*), meadow vetchling (*Lathyrus pratensis*), cocks-foot (*Dactylis glomerata*), bindweed (*Calystegia sepium*) curly dock (*Rumex crispus*)

and knapweed (*Centaurea nigra*). Additionally, alder (*Alnus glutinosa*), grey willow (*Salix cinerea*) and male fern (*Dryopteris filix mas*) are present on the downstream banks.

The watercourse, while not providing optimal habitat for to Atlantic salmon (*Salmo salar),* white clawed crayfish (*Austropotamobius pallipes*) and lamprey (*Lampetra* sp.), did support some suitable habitat for these species.

Approximately 17 metres to the west of this watercourse crossing is a stand of the invasive alien plant species Rhododendron (*Rhododendron ponticum*), which is listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (S.I. 477 of 2011). An Invasive Species Management Plan has been prepared along with this planning application and can be found in Appendix 4.

The Proposed Grid Connection cabling also crosses a number of artificial bog Drainage ditches (FW4) along its route (Plate 4-46). These vary in width and depth from approximately 1.5m wide and 1m deep to approximately 3m wide and 4-5m deep, with water flow depending on recent rainfall levels.

Plate 4-44 The Levally Stream along the grid connection route.

Plate 4-45 Concrete box culvert over the Levally Stream

Plate 4-46 Typical drainage ditch within the cutover bog crossed by the proposed grid connection route.

4.2.1.5 Protected flora

No botanical species protected under the Flora (Protection) Order (2022) were recorded during the surveys of the site.

4.2.1.6 Invasive Species

One invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (S.I. 477 of 2011) was recorded during the surveys of the site of the Proposed Project. Rhododendron (*Rhododendron ponticum*) was recorded at a number of locations within the site.

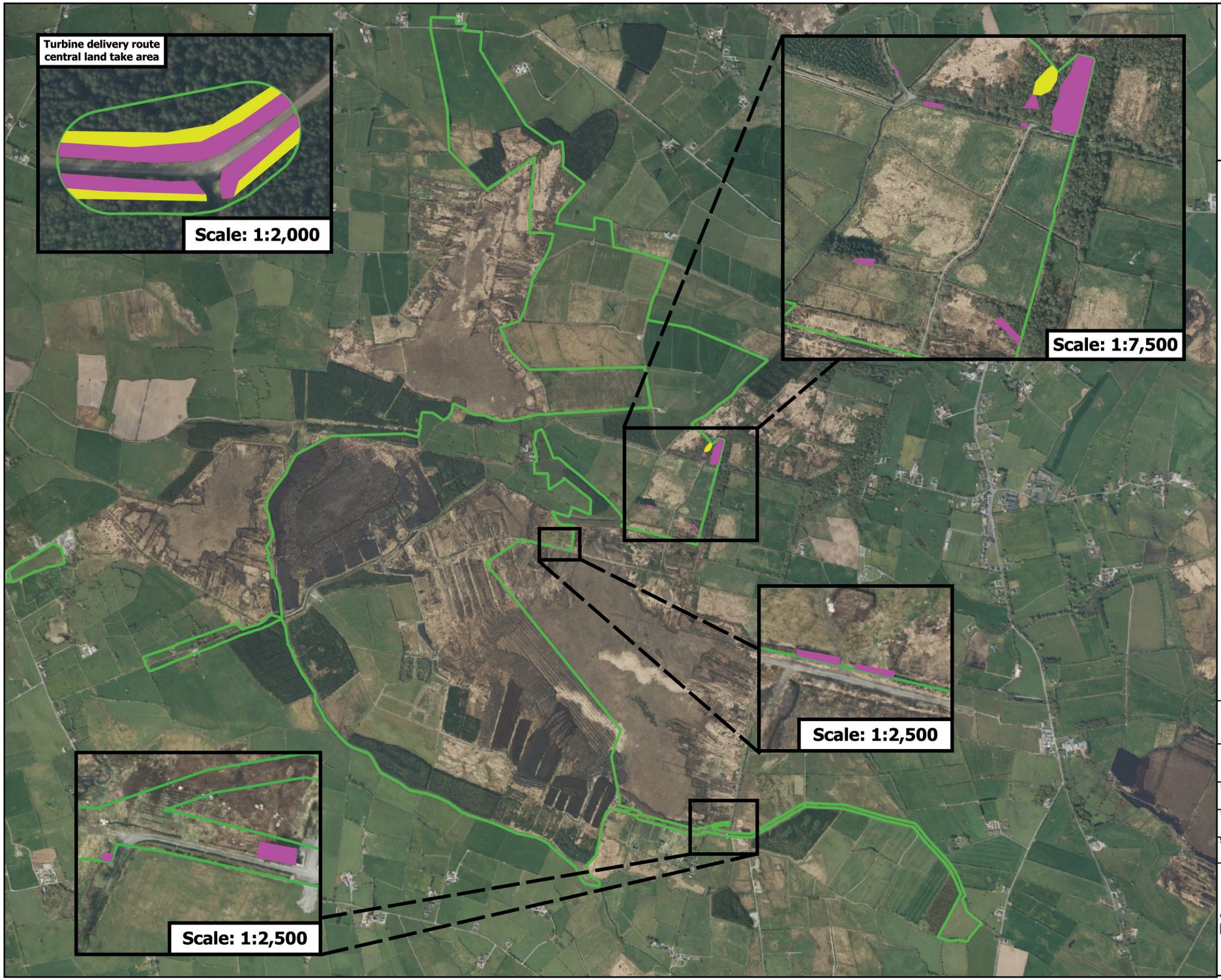
This species was recorded within the construction footprint of the Proposed Project within the Proposed Wind Farm site in an area of birch-dominated dry bog woodland along the proposed access road to the south of T2. It was also recorded along the proposed Grid Connection route, to the west of the Levally Stream at the location of the stream crossing. These locations of recorded Rhododendron are shown in Figure 4-4.

Rhododendron was also identified along the proposed turbine delivery route at the central land take area along the L6466 at the junction with a forestry road to the south (Plate 4-47). Rhododendron was found to be growing extensively along all road verges in this area.

In addition, the invasive species Cherry Laurel (*Prunus laurocerasus*), was also recorded growing in association with the Rhododendron on the site. This species is not listed on the Third Schedule of the Birds and Natural Habitats Regulations but is highly invasive.

The locations of recorded Rhododendron and Laurel are shown in Figure 4-4.

Plate 4-47 Rhododendron ponticum seen growing in the central land take area of the proposed turbine delivery route



Map Legend

- EIAR Site Boundary
- Rhododendron ponticum
- Cherry laurel

Drawing Title:
Invasive Species within the Site

Project Title
Proposed Clonberne Wind Farm, Co. Galway

Drawn By	Checked By
KB	KOD
Project No.	Drawing No.
180740	Figure 4-4
Scale	Date
1:23,000	21.03.2024

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4.2.2 Faunal Surveys

4.2.2.1 Otter (*Lutra lutra*)

No otter resting or breeding sites were recorded within the Proposed Wind Farm site or along the Proposed Grid Connection route during the otter surveys undertaken. The streams within the site, including the Levally stream and its tributaries the Lomaunaghroe and Dunblane streams, provide suitable commuting and foraging habitat for otter, however.

Otter spraints were recorded at the Levally stream approximately 550m downstream of the Windfarm Site boundary during surveys undertaken in August 2021. Furthermore, a regular spraint site was identified by Triturus Environmental Ltd. during fisheries assessments at survey site B1 (refer to Figure 2.1 in the aquatic baseline report in Appendix 1) on the upper reaches of the Levally Stream, as well as fresh otter prints in soft marginal mud at survey site B3 (refer to Figure 2.1 in the aquatic baseline report in Appendix 1) on the Lomaunaghroe Stream within the Wind Farm Site.

Otter signs recorded within the Site Boundary are shown in Figure 4-5 below.

Map Legend

- Site Boundary
- WFD River Waterbodies
- Otter signs

N

Drawing Title	Mammal Signs within the Site
Project Title	Proposed Clonberne Wind Farm, Co. Galway
Drawn By: KB	Checked By: KOD
Project No.: 180740	Drawing No.: Figure 4-5
Scale: 1:25,000	Date: 27.06.2024

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4.2.2.2 Fisheries and Aquatic Fauna

4.2.2.2.1 *Triturus Environmental Ltd. (2021)*

Full details of results of aquatic surveys undertaken by Triturus Environmental Ltd. in August 2021 are provided in the Aquatic Baseline Report (included here in Appendix 1). The sections below summarise the results of the surveys with regard to Atlantic salmon (*Salmo salar),* white clawed crayfish (*Austropotamobius pallipes*) and lamprey (*Lampetra* sp.) which are Qualifying Interest (QI) species for the nearby Lough Corrib SAC. All survey locations (n=20) are shown in Figure 2-1 in the Aquatic Baseline report in Appendix 1 and the following should be read in conjunction with Figure 2.1 of that report.

Fish Species

The below paragraphs should be read in conjunction with Figure 2.1 (survey locations) in the Aquatic Baseline Report (Appendix 1):

- **Salmonids:** Atlantic salmon were recorded from a total of four survey sites namely site A3 (unnamed Sinking River tributary), downstream of the Proposed Wind Farm site, sites B1 and B4 on the Levally Stream within the Proposed Wind Farm Site Boundary & site B5 on the Levally Stream, downstream of the Proposed Wind Farm site. Salmonids were absent from sites A1 and A2 on the unnamed Sinking River tributary and B3 on the Lomaunaghroe Stream, which was considered a result of low flows and considerable siltation pressures (i.e. poor quality salmonid habitat).
- **Lamprey:** *Lampetra* sp. ammocoetes were recorded from two sites on the Levally Stream (B4 within the Proposed Wind Farm Site Boundary and B5 downstream of the Wind Farm Site boundary) as well as site A3 (downstream of the Wind Farm Site Boundary on the unnamed Sinking River tributary. The highest density recorded were present at site B5 (outside the Site Boundary), where an average density of 9.3 ammocoetes per m^2 of targeted larval habitat was recorded.

White-clawed crayfish & crayfish plague

White-clawed crayfish were recorded via hand-searching and sweep netting at sites A2 and A3 (both outside of and downstream of the Wind Farm Site Boundary) on an unnamed Sinking River tributary. Both sites supported very low densities of crayfish (2 per 30 refugia searched at each site).

Despite good suitability throughout the Levally Stream (particularly at site B5 outside the Wind Farm Site Boundary), white-clawed crayfish were only recorded from site B1 (within the Wind Farm Site Boundary) during the August 2021 survey period (via hand searching/sweep netting). However, crayfish eDNA was detected at site B5.

eDNA analysis

White-clawed crayfish was detected from eDNA in a water sample collected from the Levally Stream at Mahanagh Bridge, site B5. This result was considered as evidence of the species' presence at and or upstream of this site.

The water sample from site B5 returned a negative result for both crayfish plague and freshwater pearl mussel. These results were considered as evidence of the species' absence at and or upstream of site B5.

Kick-sampling and Q-Value

The following summarises the results of kick-sampling and Q-Value evaluation carried out:

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples taken from *n*=8 sites.

Good status (Q4) water quality was only recorded from site A2 on an unnamed Sinking River tributary. Primarily due to peat harvesting pressures and historical modifications, all remaining survey sites achieved Q3-4 (moderate status) or Q3 (poor status) water quality and, thus, failed to meet the good status (≥Q4) requirements of the European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 and the Water Framework Directive (2000/60/EC).

While many of the watercourses in the vicinity of the Site had aquatic ecological features that can be considered of high conservation value, historical drainage pressures and ongoing peat escapement (siltation) had reduced the ecological quality of aquatic habitats. These included survey sites on the Levally Stream and Lomaunaghroe Stream (draining southwards) and, to a lesser extent, the unnamed Sinking River tributary (draining northwards). However, larger watercourses with higher flow rates, including the Levally Stream, were better able to buffer against such impacts. This watercourse supported the best quality aquatic habitat within vicinity of the proposed wind farm, despite evident pressures.

4.2.2.2.2 *Aquatic and River Habitat Surveys (MKO 2024)*

The following outlines the results of macroinvertebrate kick sampling surveys undertaken in watercourses within and downstream of the site by MKO in 2024. The results provide a baseline against which water quality in the watercourses downstream of the site can be monitored throughout construction and operation of the Proposed Project. River habitat characteristics were also recorded and are presented below. The survey locations are shown on Figure 3-3 below.

Site 1

Site 1 was at ITM X 555557, Y 757089 on the Levally stream in the Corrib catchment. The sampling point was upstream of a bridge on the local road between Turbines 1 & 2 and Turbine 4.

The properties of the stream at the sample point are shown in Table 4-5 below:

Table 4-5 Properties of the stream at sampling Site 1

Property	Recorded Value
Bank width	Approx. 2.5m
Wet width	Approx 2.5m
Left bank height	1.5m
Right bank height	1m
Average depth	40-70cm
Velocity at sampling	Slow
Colour	Highly coloured
Clarity	Slightly turbid
Sampled in	Glides
Dominant substrates	10% cobble, 30% gravel, 40% fine gravel, 20% sand and silt layer covering gravel

Property	Recorded Value
Main land use upstream	Pasture
Modifications	Watercourse culverted downstream, banks historically artificially raised

There was no sign of filamentous algae, gelatinous complexes, or sewage fungus. The watercourse was moderately vegetated With submerged vegetation including water mint (*Mentha aquatica*) and unbranched bur-reed (*Sparganium emersum*). Emergent vegetation also included branched bur-reed (*Sparganium erectum*) and fool's water cress (*Apium nodiflorum*).

The banks were vegetated with willowherbs (*Epilobium* sp.), cock's foot grass (*Dactylis glomerata*), wild angelica (*Angelica sylvestris*), hard rush (*Juncus inflexus*) and other grass species (Plate 4-48).

The results (i.e. identification and numbers of aquatic macroinvertebrates) of two minutes of kick sampling are shown in Table 4-6.

An individual three-spined stickleback (*Gasterosteus glomeratus*) was also caught and released during this kick sample.

Table 4-6 Results of kick sampling at Site 1

Taxa	Species/Group	Abundance Category (%)	Sensitivity Group
Ephemeroptera	*Ecdyonurus*	Small numbers (<5)	A
Trichoptera	*Sericostoma*	Fair numbers (5-10)	B
	Anabolia	Scarce/few (<1)	B
Coleoptera	*Limnius* larvae	Small numbers (<5)	C
	Coleoptera	Small numbers (<5)	C
Crustacea	*Gammarus*	Common (10-20)	C
Diptera	Chironomidae	Small numbers (<5)	C
	Simuliidae	Scarce/few (<1)	C
Ephemeroptera	*Baetis rhodani*	Common (10-20)	C
	Caenis	Small numbers (<5)	C
Hydracarina	Hydracarina	Fair numbers (5-10)	C
Trichoptera	*Rhyacophila*	Scarce/few (<1)	C
Crustacea	*Asellus*	Numerous (25-50)	D
Hirudinea	*Glossiphonia*	Scarce/few (<1)	D
Megaloptera	*Sialis*	Small numbers (<5)	D

Taking into account the biological data, the stream has been assigned a Q-value of Q3-4.

Plate 4-48 Kick sampling Site 1 showing culversion of the watercourse downstream of the sampling location

Site 2

Site 2 was at ITM X 553916, Y 756438 on the Levally stream, at the bridge just upstream of its confluence with the Levally stream. The sampling point was at a bridge on the local bog road to south of T7 and north of T8.

This sample was taken just downstream of the bridge. The properties of the stream at the sample point are shown in Table 4-7 below:

Table 4-7 Properties of the stream at sampling Site 2

Property	Recorded Value
Bank width	3m
Wet width	3m
Left bank height	2m
Right bank height	3m
Average depth	20cm
Velocity at sampling	Moderate-fast
Colour	Slightly coloured

Property	Recorded Value
Clarity	Clear
Sampled in	Riffles
Dominant substrates	10% boulders, 30% cobbles, 35% gravel, 20% fine gravel, 5% sand and silt
Main land use upstream	Bog, pasture
Modifications	Channelised, culvert upstream of sampling point

There was no sign of filamentous algae, gelatinous complexes, or sewage fungus. The watercourse was lowly vegetated with submerged vegetation comprising fool's water cress (*Helosciadium nodiflorum*). Emergent vegetation also included common reed (*Phragmites australis*) downstream, however this was outside the sampling area.

The banks were vegetated with willowherbs (*Epilobium* sp.), cock's foot grass (*Dactylis glomerata*), wild angelica (*Angelica sylvestris*), hard rush (*Juncus inflexus*), hart's tongue fern (*Asplenium scolopendrium*), fescues (*Festuca* sp.) and other grass species (Plate 4-49).

The results (i.e. identification and numbers of aquatic macroinvertebrates) of two minutes of kick sampling are shown in Table 4-8.

Evidence of cattle access to the stream was observed upstream of the sampling point and culvert (Plate 4-50).

Table 4-8 Results of kick sampling at at Site 2

Taxa	Species/Group	Abundance Category (%)	Sensitivity Group
Ephemeroptera	*Rhithrogena*	Small numbers (<5)	A
Trichoptera	*Sericostoma*	Common (10-20)	B
Coleoptera	*Limnius* larvae	Scarce/few (<1)	C
Crustacea	*Gammarus*	Numerous (25-50)	C
Diptera	Chironomidae	Fair numbers (5-10)	C
	Simuliidae	Small numbers (<5)	C
Ephemeroptera	*Baetis rhodani*	Numerous (25-50)	C
	Hydropsyche	Common (10-20)	C
Hydracarina	Hydracarina	Small numbers (<5)	C
Crustacea	*Asellus*	Scarce/few (<1)	D

Taking into account the biological data, the stream has been assigned a Q-value of Q3-4.

Plate 4-49 Kick sampling Site 2 downstream of the bridge culvert

Plate 4-50 Evidence of cattle access to the watercourse upstream of Site 2

Site 3

Site 3 was at ITM X 555572, Y 754662 on the Levally stream, approximately 550m downstream of the site. The sampling point was at a bridge on a track to a dwelling off the local road to the south.

This sample was taken just downstream of the bridge. The properties of the stream at the sample point are shown in Table 4-9 below:

Table 4-9 Properties of the stream at sampling Site 3

Property	Recorded Value
Bank width	3.5m
Wet width	3.5m
Left bank height	2m
Right bank height	2m
Average depth	80cm
Velocity at sampling	Moderate-fast
Colour	Slightly coloured
Clarity	Slightly turbid
Sampled in	Glides
Dominant substrates	10% boulders, 20% cobbles, 50% gravel, 10% fine gravel, 10% sand and silt
Main land use upstream	Pasture
Modifications	Crossing upstream, bridge downstream, banks historically artificially raised

There was no sign of filamentous algae, gelatinous complexes, or sewage fungus. The watercourse was lowly vegetated with no submerged vegetation and emergent vegetation comprising brooklime (*Veronica beccabunga*) and fool's water cress (*Helosciadium nodiflorum*).

The banks were vegetated with brambles (*Rubus fruticosus*), ivy (*Hedera helix*), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), dock (*Rumex* sp.)fescues (*Festuca* sp.) and other grasses (Plate 4-51).

The results (i.e. identification and numbers of aquatic macroinvertebrates) of two minutes of kick sampling are shown in Table 4-10.

Table 4-10 Results of kick sampling at at Site 3

Taxa	Species/Group	Abundance Category (%)	Sensitivity Group
Ephemeroptera	*Rhithrogena*	Small numbers (<5)	A
	Ecdyonurus	Common (10-20)	A

Taxa	Species/Group	Abundance Category (%)	Sensitivity Group
	Ephemera danica	Scarce/few (<1)	A
Plecoptera	*Protonemura*	Small numbers (<5)	A
Plecoptera	*Leuctra*	Scarce/few (<1)	B
Trichoptera	*Sericostoma*	Fair numbers (5-10)	B
	Limnephelidae	Small numbers (<5)	B
Coleoptera	Coleoptera	Fair numbers (5-10)	C
Crustacea	*Gammarus*	Common (10-20)	C
Diptera	Chironomidae	Small numbers (<5)	C
	Simuliidae	Scarce/few (<1)	C
	Dicranota	Scarce/few (<1)	C
Ephemeroptera	*Baetis rhodani*	Common (10-20)	C
	Hydropsyche	Common (10-20)	C
Hydracarina	Hydracarina	Small numbers (<5)	C
Crustacea	*Asellus*	Small numbers (<5)	D
Hirudinea	*Glossiphonia*	Scarce/few (<1)	D
	Erpobdella	Scarce/few (<1)	D
Oligochaeta	Tubificidae	Scarce/few (<1)	E

Taking into account the biological data, the stream has been assigned a Q-value of Q4-5. This is due to the relative proportion and diversity of Group A species, and the lack of dominance of any one group or species within the sample.

Plate 4-51 Kick sampling Site 3

Site 4

Site 4 was at ITM X 555008, Y 758501 on the Sinking River. The sampling point was alongside an area of sitka spruce conifer (*Picea sitchensis*) forestry, downstream of a proposed new access road.

The properties of the stream at the sample point are shown in Table 4-11 below:

Table 4-11 Properties of the stream at sampling Site 4

Property	Recorded Value
Bank width	1.5m
Wet width	1.5m
Left bank height	1m
Right bank height	1m
Average depth	30cm
Velocity at sampling	Slow
Colour	Slightly coloured
Clarity	Slightly turbid
Sampled in	Glides
Dominant substrates	100% peat and silty layer on top

Property	Recorded Value
Main land use upstream	Bog, forestry
Modifications	Modified banks built up, straightened

There was no sign of filamentous algae, gelatinous complexes, or sewage fungus. The watercourse was immediately adjacent to conifer forestry on the left bank and therefore had overhanging sitka spruce (*Picea sitchensis*) branches at the location of the sample. An area of wet-willow-alder-ash woodland (WN6) is also located adjacent to the sample on the right bank, with overhanging grey willows (*Salix cinerea*).

The banks were alo vegetated with brambles (*Rubus fruticosus*), bracken (*Pteridium aquilinum*), ivy (*Hedera helix*), cleavers (*Galium aparine*), hart's tongue fern (*Asplenium scolopendrium*) and common tamarisk moss (*Thuidium tamariscinum*) (Plate 4-52).

The watercourse had no submerged or emergent vegetation.

The results (i.e. identification and numbers of aquatic macroinvertebrates) of two minutes of kick sampling are shown in Table 4-12.

Table 4-12 Results of kick sampling at at site 4

Taxa	Species/Group	Abundance Category (%)	Sensitivity Group
Crustacea	*Gammarus*	Dominant (50-75)	C
Crustacea	*Asellus*	Numerous (25-50)	D

Taking into account the biological data, the stream has been assigned a Q-value of Q3.

Plate 4-52 Kick sampling Site 4

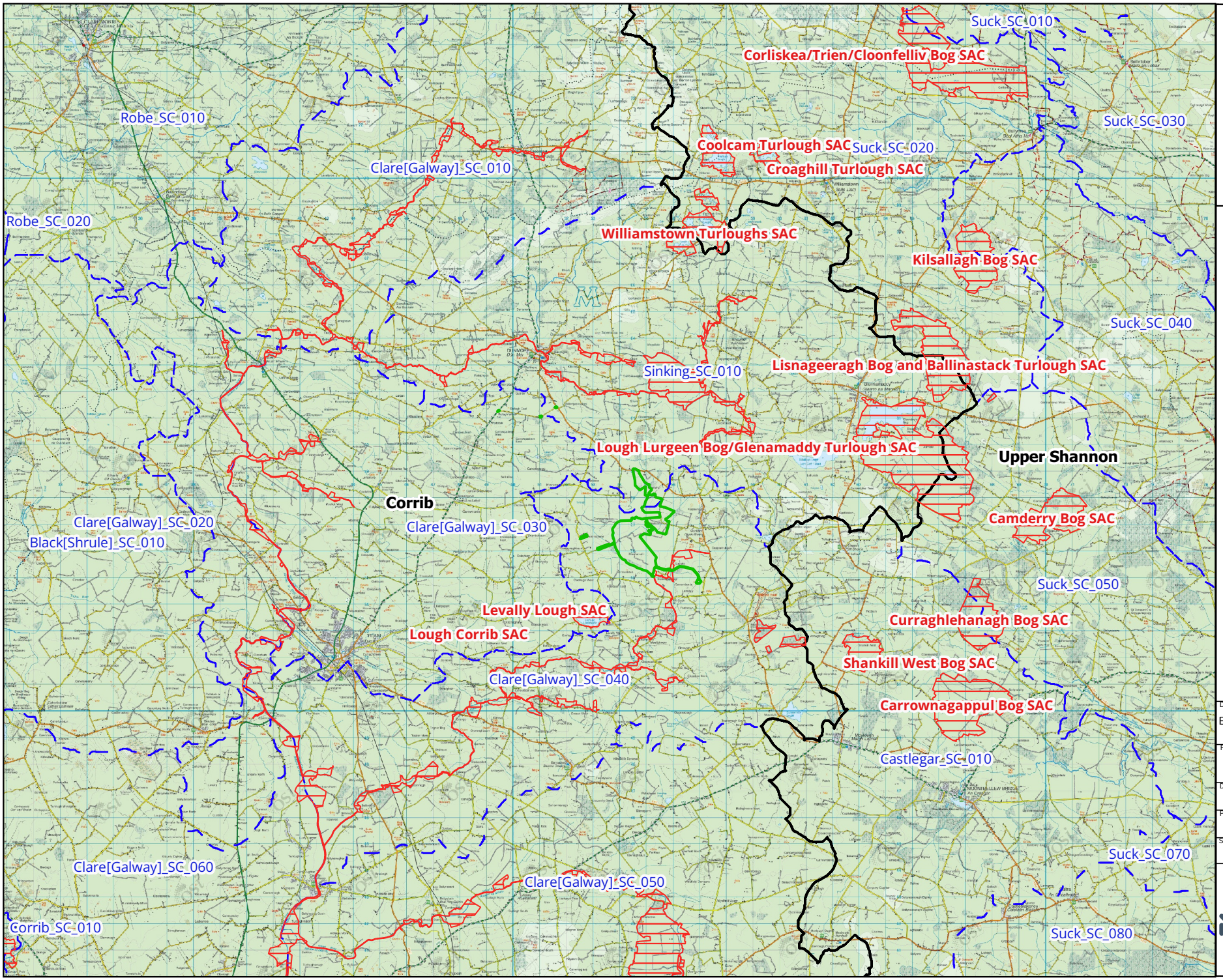
5. STAGE 1 – APPROPRIATE ASSESSMENT SCREENING

5.1 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) on the 22/06/2024.
- 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 development site are shown on Figure 5-1. Information on these sites according to the site-specific conservation objectives is provided in Table 5-1. Sites that were further away from the Proposed Project were also considered and in this case connectivity with sites that were further downstream in the catchment was identified. These included Lough Corrib SPA [004042] located approximately 26.2km at the closest point and 53.3km hydrological distance, Galway Bay Complex SAC [000268] located approximately 33.2km at the closest point and 67.3km hydrological distance and Inner Galway Bay SPA [004031] located approximately 34.6km at the closest point and 68km hydrological distance. However, given the nature, scale and location of the Proposed Project and the attenuating properties of the of the intervening waterbodies, no potential pathway for significant effects was identified.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the Proposed Project and any European Sites. The hydrological catchments are also shown in Figure 5-1.
- 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 Proposed 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 5-1 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 impacts 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 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 sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report 22/06/2024.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Impact 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 5-1. Plans and projects considered include those that are listed in Appendix 5.



Map Legend

- Site Location
- Special Area of Conservation (SAC)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

Drawing Title	European Designated Sites within the Likely Zone of Influence
Project Title	Proposed Clonberne Wind Farm, Co. Galway
Drawn By: KB	Checked By: KOD
Project No.: 180740	Drawing No.: Figure 5-1
Scale: 1:185,000	Date: 21.03.2024

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Table 5-1 Identification of European Sites within the Likely Zone of Impact

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Special Areas of Conservation (SAC)			
Lough Corrib SAC [000297] **Distance:** A small section of the Proposed Wind Farm Site boundary is located within the SAC. The Proposed Grid Connection traverses the SAC at one location	› [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* › [3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › [6410] Molinia meadows on calcareous, peaty, or clayey-silt-laden soils (*Molinion caeruleae*) › [7110] Active raised bogs	Detailed conservation objectives for this site, (Version 1, April 2017), were reviewed as part of the assessment and are available at www.npws.ie	A very small section of the southern end of the Proposed Wind Farm site boundary lies within the boundaries of this European Site, however, no infrastructure is proposed in this area of the site. A short section of the Proposed Grid Connection route traverses the SAC to the south-east of the Wind Farm Site, where it crosses a tributary of the Levally stream. Therefore, taking a precautionary approach, a potential pathway for direct effects on the SAC due to habitat loss, deterioration of water quality and disturbance/displacement of QI species was identified. There is also hydrological connectivity between the Proposed Project and this SAC via drains and small watercourses within the Wind Farm Site boundary. These discharge to the Levally Stream (EPA Code: 30L07) to the south, and the Sinking River (EPA Code: 30S01) to the north, both of which are designated as part of the SAC downstream of the site. The Proposed Project and the SAC are also underlain by the same groundwater catchment, i.e. the Clare-Corrib. Given the above, a potential pathway for indirect effects on this SAC due to deterioration of water quality arising from construction, operational and decommissioning activities associated with the Proposed Project, including but not limited to construction of turbine hardstands and other associated infrastructure, and the laying of the Proposed Grid Connection cabling, was identified.

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
	› [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the Rhynchosporion › [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* › [7220] Petrifying springs with tufa formation (*Cratoneurion*) › [7230] Alkaline fens › [8240] Limestone pavements › [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › [91D0] Bog woodland › [1096] Brook Lamprey (*Lampetra planeri*) › [1092] White-clawed Crayfish (*Austropotamobius pallipes*) › [1095] Sea Lamprey (*Petromyzon marinus*) › [1393] Slender Green Feather-moss (*Drepanocladus vernicosus*) › [1106] Salmon (*Salmo salar*) › [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*) › [1355] Otter (*Lutra lutra*)		**A complete source pathway receptor chain was identified and therefore in the absence of mitigation, there is potential for the Proposed Project to result in Likely Significant Effects on this European Site. The European Site is located within the Likely Zone of Impact and is considered further in this assessment.**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
	› [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) › [1833] Slender Naiad (*Najas flexilis*)		
Levally Lough SAC [000295] **Distance from proposed wind farm site:** 2.0km **Distance from proposed grid connection:** 2.1km	› [3180] Turloughs	Detailed conservation objectives for this site, (Version 1, December 2020), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside of and approximately 2km from the designated site. There is no surface water connectivity between the Proposed Project and this SAC, therefore there is no potential for indirect effects on the SAC due to deterioration of water quality via surface water pathways. The SAC and the Proposed Project are underlain by the same ground water catchment, i.e. the Clare-Corrib, and the SAC is designated for the groundwater dependent habitat, [3180] Turloughs. Therefore a potential pathway for indirect effects on the SAC due to deterioration of groundwater quality, arising from construction, operational and decommissioning activities associated with the Proposed Project was identified. **A complete source pathway receptor chain for effect was identified and therefore in the absence of mitigation, there is potential for the Proposed Project to result in Likely Significant Effects on this European Site. Therefore, the European Site is located within the Likely Zone of Impact and is considered further in this assessment.**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Derrinlough (Cloonkeenleananode) Bog SAC [002197] **Distance from proposed wind farm site:** 4.2km **Distance from proposed grid connection:** 2.5km	› [7120] Degraded raised bogs still capable of natural regeneration	First Order Site-specific Conservation Objectives for this site, (Version 1.0, March 2022), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside of the designated site. There is no identified hydrological connectivity between the Proposed Project and this SAC. Furthermore the SAC is designated for a terrestrial QI habitat. Given the terrestrial nature of the QI habitat, the absence of connectivity between the Proposed Project Site and the SAC, and the distance between the Proposed Project and the SAC, no potential pathway for indirect effects on this designated site was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Lough Lurgeen Bog/Glenamaddy Turlough SAC [000301] **Distance from proposed wind farm site:** 7.2km	› [3180] Turloughs › [3270] Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation › [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the Rhynchosporion	Detailed conservation objectives for this site, (Version 1, April 2016), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project and this SAC. Furthermore, the SAC is underlain by different groundwater bodies, i.e. the GWDTE-Glenamaddy Turlough (SAC000301) and Suck-South groundwater bodies, than the Proposed Project. Given the absence of hydrological connectivity and the

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Distance from proposed grid connection: 7.5km			distance between the Proposed Project and the SAC, no pathway for indirect effects on this European Site was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Shankill West Bog SAC [000326] **Distance from proposed wind farm site:** 7.5km **Distance from proposed grid connection:** 5.8km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project site and this SAC as this designated site is located within a separate catchment, i.e. the Upper Shannon, to the Proposed Project. The SAC is also all underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. Taking the above into account, as well as the terrestrial nature of the habitats for which the SAC is designated, no potential pathway for indirect effects on this SAC as a result of the Proposed Project were identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Williamstown Turloughs SAC [002296] **Distance from proposed wind farm site:** 8.2km **Distance from proposed grid connection:** 11.6km	› [3180] Turloughs	Detailed conservation objectives for this site, (Version 1, January 2018), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. This SAC is located in a separate hydrological sub-catchment to the Proposed Project. Therefore there is no surface water connectivity between the Proposed Project and this SAC and no potential for indirect effects due to deterioration of surface water quality. This SAC is designated for a groundwater dependent QI habitat, i.e. Turloughs. The SAC and the Proposed Project are partially underlain by the same groundwater body, the Clare-Corrib. Therefore taking a precautionary approach, a potential pathway for indirect effects on the SAC due to deterioration of groundwater quality, arising from construction, operational and decommissioning activities associated with the Proposed Project, was identified. **A complete source pathway receptor chain for effect was identified and therefore in the absence of mitigation, there is potential for the Proposed Project to result in Likely Significant Effects on this European Site. Therefore, the European Site is located within the Likely Zone of Impact and is considered further in this assessment.**
Lisnageeragh Bog and Ballinastack Turlough SAC [000296]	› [3180] Turloughs › [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration	Detailed conservation objectives for this site, (Version 1, March 2016), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside of and >10km from the designated site.

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Distance from proposed wind farm site: 10.5km **Distance from proposed grid connection:** 11.0km	› [7150] Depressions on peat substrates of the *Rhynchosporion*		No surface water connectivity was identified between the Proposed Project and this SAC. Furthermore, this site is underlain by different groundwater bodies, i.e. the GWDTE-Glenamaddy Turlough (SAC000301) and Suck-South groundwater bodies, than the Proposed Project. Therefore no potential pathway for indirect effects on the SAC due to deterioration of water quality was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Carrownagappul Bog SAC [001242] **Distance from proposed wind farm site:** 11.3km **Distance from proposed grid connection:** 9.6km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside of the designated site. There is no surface water connectivity between the Proposed Project and this SAC, which is located within a separate catchment, i.e. the Upper Shannon, to the Proposed Project. Furthermore, this site is also underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. Given the above, and the terrestrial nature of the habitats for which the SAC is designated, no potential pathway for indirect effects on the SAC was identified. **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. The site is**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
			not within the Likely Zone of Impact and is not considered further in this assessment.
Curraghlehanagh Bog SAC [002350] **Distance from proposed wind farm site:** 11.3km **Distance from proposed grid connection:** 9.7km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the Rhynchosporion	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project and this SAC, which is located within a separate catchment, i.e. the Upper Shannon, to the Proposed Project. Furthermore, this site is also underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. Given the above, and the terrestrial nature of the habitats for which the SAC is designated, no potential pathway for indirect effects on the SAC was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Coolcam Turlough SAC [000218] **Distance from proposed wind farm site:** 11.5km	› [3180] Turloughs ›	Detailed conservation objectives for this site, (Version 1, November 2017), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project and this SAC, which is located within a separate catchment, i.e. the Upper Shannon, to the Proposed Project. Furthermore, this site is also underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. No potential pathway for indirect effects on the SAC was identified.

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Distance from proposed grid connection: 14.8km			**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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Croaghill Turlough SAC [000255] **Distance from proposed wind farm site:** 12.4km **Distance from proposed grid connection:** >15km	› [3180] Turloughs ›	Detailed conservation objectives for this site, (Version 1, November 2017), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project and this SAC, which is located within a separate catchment, i.e. the Upper Shannon, to the Proposed Project. Furthermore, this site is also underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. No potential pathway for indirect effects on the SAC was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Camderry Bog SAC [002347]	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project and this SAC, which is located within a separate catchment, i.e. the

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Distance from proposed wind farm site: 12.7km **Distance from proposed grid connection:** 11.8km			Upper Shannon, to the Proposed Project. Furthermore, this site is also underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. Given the above, and the terrestrial nature of the habitats for which the SAC is designated, no potential pathway for indirect effects on the SAC was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**
Kilsallagh Bog SAC [000285] **Distance from proposed wind farm site:** 13.7km **Distance from proposed grid connection:** 14.7km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the *Rhynchosporion*	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. There is no surface water connectivity between the Proposed Project and this SAC, which is located within a separate catchment, i.e. the Upper Shannon, to the Proposed Project. Furthermore, this site is also underlain by a different groundwater body, i.e. the Suck South groundwater body, than the Proposed Project. Given the above, and the terrestrial nature of the habitats for which the SAC is designated, no potential pathway for indirect effects on the SAC was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Galway Bay Complex SAC [000268] **Distance from proposed wind farm site:** 33.2km **Hydrological Distance downstream:** 67.3km **Distance from proposed grid connection:** 33.6km **Hydrological Distance downstream of the grid connection route:** 68.2km	› [1140] Mudflats and sandflats not covered by seawater at low tide › [1150] Coastal lagoons › [1160] Large shallow inlets and bays › [1170] Reefs › [1220] Perennial vegetation of stony banks › [1310] Salicornia and other annuals colonising mud and sand › [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) › [1410] Mediterranean salt meadows (*Juncetalia maritimi*) › [3180] Turloughs › [5130] *Juniperus communis* formations on heaths or calcareous grasslands › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* › [7230] Alkaline fens	Detailed conservation objectives for this site, (Version 1, April 2013), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SAC as the Proposed Project is located entirely outside the designated site. The Proposed Project has hydrological connectivity >67 km downstream with this SAC via the Levally stream which flows through the Wind Farm Site. The potential for indirect effects on this SAC due to deterioration of water quality was therefore considered. Given the nature and scale of the works, the hydrological distance between the Proposed Project and the SAC and the assimilative capacity of the intervening watercourses, no potential for significant indirect effects on this European Site was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
	› [8240] Limestone pavements › [1365] Harbour Seal (*Phoca vitulina*) › [1355] Otter (*Lutra lutra*)		
Special Protection Area (SPA)			
There are no SPAs within 20km of the Proposed Project. There is no potential for Likely Significant Effects on any SPA due to disturbance/displacement of SCI species or due to collision risk for those species. There is hydrological connectivity between the Proposed Project and the below listed SPAs, >50km downstream of the Proposed Project. Taking a very precautionary approach, potential for Likely Significant Effects on these SPAs is considered below.			
Lough Corrib SPA (004042) **Distance from proposed wind farm site:** 26.2km **Hydrological Distance downstream:** 54.3km **Distance from proposed grid connection:** 28.0km	› [A051] Gadwall (*Anas strepera*) › [A056] Shoveler (*Anas clypeata*) › [A059] Pochard (*Aythya ferina*) › [A061] Tufted Duck (*Aythya fuligula*) › [A065] Common Scoter (*Melanitta nigra*) › [A082] Hen Harrier (*Circus cyaneus*) › [A125] Coot (*Fulica atra*) › [A140] Golden Plover (*Pluvialis apricaria*) › [A179] Black-headed Gull (*Chroicocephalus ridibundus*)	Detailed conservation objectives for this site, (Version 1, January 2023), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SPA as the Proposed Project is located entirely outside the designated site. The Proposed Project has hydrological connectivity >54 km downstream with this SPA via the Levally stream which flows through the Site. The potential for indirect effects on this SPA due to deterioration of water quality was therefore considered. Given the nature and scale of the works, the hydrological distance between the Proposed Project and the SPA and the assimilative capacity of the intervening watercourses, no potential for significant indirect effects on this European Site due to deterioration of water quality was identified. **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. The site is**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
Hydrological Distance downstream of the grid connection route: 54.3km	› [A182] Common Gull (*Larus canus*) › [A193] Common Tern (*Sterna hirundo*) › [A194] Arctic Tern (*Sterna paradisaea*) › [A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*) › [A999] Wetland and Waterbirds		**not within the Likely Zone of Impact and is not considered further in this assessment.**
Inner Galway Bay SPA {004031] **Distance from proposed wind farm site:** 34.6km **Hydrological Distance downstream:** 68.9km **Distance from proposed grid connection:** 35.0km **Hydrological Distance downstream of the grid connection route:** 68.9km	› [A003] Great Northern Diver (*Gavia immer*) › [A017] Cormorant (*Phalacrocorax carbo*) › [A028] Grey Heron (*Ardea cinerea*) › [A046] Light-bellied Brent Goose (*Branta bernicla hrota*) › [A050] Wigeon (*Anas penelope*) › [A052] Teal (*Anas crecca*) › [A056] Shoveler (*Anas clypeata*) › [A069] Red-breasted Merganser (*Mergus serrator*) › [A137] Ringed Plover (*Charadrius hiaticula*) › [A140] Golden Plover (*Pluvialis apricaria*)	Detailed conservation objectives for this site, (Version 1, May 2013), were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effects on this SPA as the Proposed Project is located entirely outside the designated site. The Proposed Project has hydrological connectivity > 68km downstream with this SPA via the Levally stream which flows through the Site. The potential for indirect effects on this SPA due to deterioration of water quality was therefore considered. Given the nature and scale of the works, the hydrological distance between the development and the SPA and the assimilative capacity of the intervening watercourses, no potential for significant indirect effects on this European Site was identified. **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. The site is not within the Likely Zone of Impact and is not considered further in this assessment.**

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, www.npws.ie on the 22/06/2024	Conservation Objectives	Identification of Source-Pathway-Receptor chain
	› [A142] Lapwing (*Vanellus vanellus*) › [A149] Dunlin (*Calidris alpina*) › [A157] Bar-tailed Godwit (*Limosa lapponica*) › [A160] Curlew (*Numenius arquata*) › [A162] Redshank (*Tringa totanus*) › [A169] Turnstone (*Arenaria interpres*) › [A179] Black-headed Gull (*Chroicocephalus ridibundus*) › [A182] Common Gull (*Larus canus*) › [A191] Sandwich Tern (*Sterna sandvicensis*) › [A193] Common Tern (*Sterna hirundo*) › [A999] Wetland and Waterbirds		

5.2 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 conservation objectives of the relevant European sites, that the Proposed Project, individually or in combination with other plans and projects, would be likely to have a significant effect on Lough Corrib SAC [000297], Williamstown Turlough SAC [002296] and Levally Lough SAC [000295].

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

6. STAGE 2- INFORMATION TO INFORM APPROPRIATE ASSESSMENT

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:

- Lough Corrib SAC [000297]
- Levally Lough SAC [000295]
- Williamstown Turlough SAC [002296]

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.

6.1 Identification of relevant Qualifying Features and Desk Study

6.1.1 Lough Corrib SAC [000297]

The potential for impacts on this SAC were identified in Section 5.1 above. The identified pathways for effect include the following:

- The Proposed Grid Connection route traverses a very small section of this SAC, including a crossing of a small tributary of the Levally stream which is designated as part of Lough Corrib SAC at this location. Potential pathways for direct effects on the SAC, due to habitat loss, deterioration of water quality and/or disturbance/displacement of QI species arising from construction, operational and decommissioning activities associated with the Proposed Project, were identified.
- There is hydrological connectivity between the Proposed Project and this SAC via drains and small watercourses within the Proposed Project site boundary. Additionally the SAC is underlain by the same groundwater catchment as the Proposed Project site, i.e. the Clare-Corrib. Therefore, a potential pathway for indirect effects the SAC due to deterioration of surface and groundwater quality arising from construction, operational and decommissioning activities associated with the Proposed Project was identified.
- A potential pathway for indirect effects on the SAC due to ex-situ disturbance or displacement of QI species was also identified.

Table 6-1 below lists the QIs 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.

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

Table 6-1 Assessment of Qualifying features potentially affected in Lough Corrib SAC

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
[3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)	To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) in Lough Corrib SAC.	These QI habitats were not recorded within or in close proximity to the Proposed Project site. There is no potential for direct effects on these habitats. According to the Site Specific Conservation Objectives (SSCOs) document, the distribution of these habitats within Lough Corrib SAC has not been mapped in its entirety, however, the habitats are known to occur in Lough Corrib, approximately 53km downstream of the Proposed Project via the small watercourses within and adjacent to the site which discharge to the Levally stream to the south and Sinking River to the north, both of which are designated as part of the SAC. These watercourses eventually discharge to the Clare River which in turn discharges to Lough Corrib. Considering the above, there is potential for indirect effects on these aquatic QI habitats due to deterioration of water quality arising from construction, operational and decommissioning activities associated with the Proposed Project. **A complete source-pathway-receptor chain for adverse effects on these habitats was identified and is considered further in the assessment.**	Yes
[3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea* in Lough Corrib SAC.		Yes
[3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.	To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. in Lough Corrib SAC.		Yes
[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in Lough Corrib SAC.	The Proposed Grid Connection cabling crosses a small tributary of the Levally stream to the south-east of the Proposed Wind Farm site and within the boundaries of the SAC. In the absence of mitigation a potential pathway for direct loss of this habitat was identified. This QI habitat was recorded downstream of the site in surveys undertaken by Triturus Environmental Services in 2021 but was not recorded within the Wind Farm site itself. It was recorded in the Levally Stream at sampling site B5 (refer to Figure 2.1 in the Aquatic report in	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
		Appendix 1) which is located within Lough Corrib SAC. There is hydrological connectivity between the Proposed Project and the SAC via drains and small watercourses within the Proposed Project site boundary which discharge to the Levally Stream to the south, and the Sinking River to the north, both of which are designated as part of the SAC. While little is known about the distribution of the habitat and its sub-types, according to the SSCO document for Lough Corrib SAC, given its recorded location downstream of the site during surveys undertaken for the Proposed Project, a potential pathway for indirect effects on this QI habitat due to deterioration of water quality arising from construction, operational and decommissioning activities associated with the Proposed Project was identified. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and is considered further in the assessment.**	
[6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	To maintain the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) in Lough Corrib SAC.	This QI habitat was not recorded within the Proposed Project Site boundary during the surveys undertaken. Therefore there is no potential for direct loss of this habitats. Given the terrestrial nature of the habitat, no potential for indirect effects as a result of the Proposed Project were identified. **No potential for adverse effects on this QI habitat was identified and no further assessment is required.**	No
[6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) in Lough Corrib SAC.	While this habitat was recorded within the Proposed Wind Farm site boundary, it is located entirely outside of and >1.6km from the SAC. There is no potential for direct loss of areas of this QI habitat associated with the SAC. Given the terrestrial nature of the habitat, no potential for indirect effects as a result of the Proposed Project were identified. **No potential for adverse effects on this QI habitat was identified and no further assessment is required.**	No

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
[7110] Active raised bogs*	To restore the favourable conservation condition of Active raised bogs* in Lough Corrib SAC.	According to the SSCOs document for Lough Corrib SAC, the areas of active raised bog for which the SAC is designated are located at Aldergoole Bog and Lough Tee Bog which are located to the south and southwest of and over 19km from the Proposed Project site. The Site Synopsis document for the SAC document also describes the areas of the QI habitats 'depressions on peat substrates of the Rhynchosporion' and 'degraded raised bogs still capable of natural regeneration' as being associated with these areas of active raised bog. There is no potential for direct effects on these QI habitats given their distance from the Proposed Project. Given the terrestrial nature of these habitats, and the distance between the Proposed Project and the mapped areas of these peatland QI habitats (as per Map 5 of the SSCO document), no potential pathway for indirect effects on these QI habitats was identified. **No potential for adverse effects on these QI habitats was identified 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 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 Lough Corrib SAC.		No
[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 Lough Corrib SAC.		No
[7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*	To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* in Lough Corrib SAC.	According to the SSCOs document for the SAC, the extent of these habitats within Lough Corrib SAC has not been mapped and the total area within the SAC is unknown. These habitats were not recorded within or adjacent to the Proposed Project during the site surveys undertaken and there is no potential for direct effects on these QI habitats. There is surface water connectivity between the Proposed Project and this SAC via drains and small watercourses within the site boundary. These discharge to the Levally Stream to the south, and the Sinking River to the north, both of which are designated as part of the SAC. In addition, the proposed grid connection route crosses a small stream within the SAC boundary.	Yes
[[7220] Petrifying Springs	To maintain the favourable conservation condition of Petrifying springs with tufa formation		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
	(*Cratoneurion*)* in Lough Corrib SAC.	The SAC is also underlain by the same groundwater body as the Proposed Project. Therefore taking a precautionary approach, a potential pathway for indirect effects on these QI habitats due to deterioration of surface and groundwater quality arising from construction, operational and decommissioning activities associated with the Proposed Project was identified. **A complete source-pathway-receptor chain for adverse effects on these habitats was identified and is considered further in the assessment.**	
[7230] Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC.		Yes
[8240] Limestone pavements*	To maintain the favourable conservation condition of Limestone pavements* in Lough Corrib SAC.	According to the SSCO document for the SAC, while it is known that the habitat occurs along the southern and eastern margins of Lough Corrib, the full extent of this habitat within the SAC is unknown. The habitat was not recorded within or adjacent to the Proposed Project during the site surveys undertaken and there is no potential for direct effects on the habitat. Given the terrestrial nature of the habitat, no potential for adverse effects as a result of the Proposed Project was identified. **No potential for adverse effects on this QI habitat was identified and no further assessment is required.**	No
[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 Lough Corrib SAC.	According to the SSCO document, the total extent of this habitat within the SAC is unknown, however, it is noted that most of the woodland within the SAC occurs on the shores of Lough Corrib. This habitat was not recorded during the site surveys undertaken. There is no potential for direct effects on the habitat. Given the terrestrial nature of the habitat, there is no potential for indirect effects as a result of the Proposed Project. **No potential for adverse effects on this QI habitat was identified and no further assessment is required.**	No

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
[91D0] Bog woodland	To maintain the favourable conservation condition of Bog woodland* in Lough Corrib SAC.	According to the SSCO document, bog woodland occurs at one known location in this SAC, i.e. Addergoole Bog, which is located approximately 30km from the Proposed Project. There is no potential for direct effects on this QI habitat. Given the terrestrial nature of the QI habitat and the distance from the Proposed Project, there is no potential for indirect effects on this QI habitat. **No potential for adverse effects on this QI habitat was identified and no further assessment is required.**	No
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)	To restore the favourable conservation condition of Freshwater Pearl Musse in Lough Corrib SAC	This SAC is designated for the freshwater pearl mussel population in the Owenriff River, to the west of Lough Corrib. The Owenriff is in a separate hydrological sub-catchment to the Proposed Project. There is no hydrological connectivity between the Proposed Project and this known population of freshwater pearl mussel. There is no potential pathway for adverse effects on this QI species as a result of the Proposed Project. **No further assessment is required.**	No
[1092] White-clawed Crayfish (*Austropotamobius pallipes*)	To maintain the favourable conservation condition of White-clawed Crayfish in Lough Corrib SAC.	The Proposed Grid Connection cabling crosses a small tributary of the Levally stream to the south-east of the Proposed Wind Farm site and within the boundaries of the SAC. A potential pathway for direct effects on this species as a result of habitat loss and disturbance/displacement was therefore identified. According to Map 10 of the Site-Specific Conservation Objectives for the SAC, White-clawed Crayfish occurs in Lough Corrib and a number of its tributaries, including all main tributaries of the River Clare, including the Grange and Sinking Rivers, which are located downstream of the Proposed Project. The species was recorded in low numbers in watercourses both within	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
		and downstream of the Proposed Wind Farm site during surveys undertaken by Triturus Environmental Services in 2021 (refer to Aquatic report in Appendix 1). While the records from within the Proposed Wind Farm site lie entirely outside of the SAC, there is potential for indirect effects on this aquatic QI species where it occurs downstream of the Proposed Project due to deterioration of water quality arising from construction, operational and decommissioning activities associated with the Proposed Project **A complete source-pathway-receptor chain for adverse effects on this species was identified and is assessed further in this NIS.**	
[1095] Sea Lamprey (*Petromyzon marinus*)	To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC.	The Proposed Grid Connection cabling crosses a small tributary of the Levally stream to the south-east of the Proposed Wind Farm site and within the boundaries of the SAC. A potential pathway for direct effects on brook lamprey and Atlantic salmon as a result of habitat loss and disturbance/displacement was therefore identified. Sea lamprey traditionally congregate and build spawning nests in the River Corrib in Galway city, both up- and downstream of the Salmon Weir Bridge. Their further upstream passage is impeded by the regulating weir immediately upstream. There is no potential for adverse effects on this species due to habitat loss or disturbance/displacement. Atlantic salmon was recorded from the Levally stream both within and downstream of the Proposed Wind Farm site boundary and from a tributary of the Sinking River outside the site boundary during surveys undertaken by Triturus Environmental Services in 2021. The recorded location of the species within the Proposed Wind Farm site lies entirely outside of the SAC. Lamprey ammocoetes were also recorded from the Levally Stream and a tributary of the Sinking River, downstream of the Proposed Wind Farm site boundary during the same surveys. While the record for Atlantic salmon from within the Proposed Wind Farm site lies entirely outside of the SAC, there is potential for indirect effects on these aquatic QI species where they occurs downstream of the Proposed Project due to deterioration of water quality arising from construction, operational and decommissioning activities associated with the Proposed Project.	Yes
[1096] Brook Lamprey (*Lampetra planeri*)	To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC.		Yes
[1106] Salmon (*Salmo salar*)	To maintain the favourable conservation condition of Atlantic Salmon in Lough Corrib SAC.		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
		A complete source-pathway-receptor chain for adverse effects on these species was identified and are assessed further in this NIS.	
[1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	To restore the favourable conservation condition of Lesser Horseshoe Bat in Lough Corrib SAC.	The Lesser Horseshoe Bat roost for which the SAC is designated is located approximately 43km west of the Proposed Project as mapped in Map 11 of the Site-Specific Conservation Objectives. Therefore, the Proposed Project site is outside of the 2.5km core foraging range for populations of this species associated with the SPA. There is no potential for adverse effects on this species due to disturbance of the designated roost or the mapped foraging grounds for Lesser horseshoe bat as a result of the Proposed Project. **No source-pathway-receptor chain for adverse effects on this QI was identified and no further assessment is required.**	No
[1355] Otter (*Lutra lutra*)	To maintain the favourable conservation condition of Otter in Lough Corrib SAC.	The Proposed Grid Connection cabling crosses a small tributary of the Levally stream to the south-east of the Proposed Wind Farm site. The stream is within the boundaries of the SAC at this location. A potential pathway for direct effects on otter as a result of habitat loss and disturbance/displacement was therefore identified. No otter resting or breeding sites were recorded within the Site Boundary (including the Wind Farm Site or along the Proposed Grid Connection Route) during the site surveys (including aquatic surveys undertaken by Triturus Environmental Services) undertaken. However, evidence of otter (spraints and tracks) was recorded within the Proposed Wind Farm site and the small watercourses within the Wind Farm site provide suitable commuting and foraging habitat for this QI species. Taking a precautionary approach potential for ex-situ disturbance of the species where it occurs outside of the SAC was also identified. There is potential for this to occur during construction works in proximity to watercourses and during the crossing of watercourses. As there is hydrological connectivity between the Proposed Project and the SAC there is also potential for indirect effects on this aquatic QI species due to deterioration water quality during	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, April 2017),	Rationale	Potential for Adverse Effects Y/N
		the construction, operational and decommissioning phase of the development. This has potential to impact on prey availability for otter. **A complete source-pathway-receptor chain for adverse effects on this species was identified and is assessed further in this NIS.**	
[1393] Slender Green Feather-moss (*Drepanocladus vernicosus*)	To maintain the favourable conservation condition of Slender Green Feather-moss (Shining Sickle-moss) in Lough Corrib SAC.	According to Map 10 of the SSCOs document for the SAC, Slender Green Feather-Moss occurs to the west of Lough Corrib. There is no potential for direct effects on this species. Given the terrestrial nature of this species, and the distance of its known location from the Proposed Project, no potential for indirect effects was identified. **No source-pathway-receptor chain for adverse effects on this QI was identified as a result of the development. No further assessment is required.**	No
[1833] Slender Naiad (*Najas flexilis*)	To restore the favourable conservation condition of Slender Naiad in Lough Corrib SAC.	According to Map 13 of the SSCOs document for the SAC, known and potential habitat for Slender Naiad is located within the lake waters of Lough Corrib. There is hydrological connectivity between the Proposed Project and Lough Corrib via the small watercourses within and adjacent to the site which discharge to the Levally stream to the south and Sinking River to the north, both of which are designated as part of the SAC. These watercourses eventually discharge to the Clare River which in turn discharges to Lough Corrib approximately 53km downstream of the Proposed Project. Therefore, there is potential for indirect effects on this aquatic QI species due to deterioration of water quality during the construction, operational and decommissioning phase of the development. Taking a precautionary approach, **a complete source-pathway-receptor chain for adverse effects on this species was identified and is assessed further in this NIS.**	Yes

6.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form[3], 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 6-2.

Table 6-2 Site-specific threats, pressures and activities for Lough Corrib SAC

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	A02.01	Agricultural intensification	Both
High	C01.03.02	Mechanical removal of peat	Inside
High	G05	Other human intrusions and disturbances	Inside
High	H01.08	Diffuse pollution to surface waters due to household sewage and waste	Outside
High	I01	Invasive non-native species	Inside
Medium	A04.03	Abandonment of pastoral systems, lack of grazing	Inside
Medium	A08	Fertilisation	Both
Medium	A10.01	Removal of hedges and copses or scrub	Inside
Medium	B01	Forest planting on open ground	Both
Medium	D01	Roads, paths and railroads	Inside
Medium	D03.01.02	Piers/ tourist harbours or recreational piers	Inside
Medium	E01.01	Continuous urbanisation	Outside
Medium	E01.03	Dispersed habitation	Inside
Medium	J02.01.03	Infilling of ditches, dykes, ponds, pools, marshes or pits	Inside
Medium	J02.15	Other human induced changes in hydraulic conditions	Both
Low	C01.01	Sand and gravel extraction	Outside
Low	E03.01	Disposal of household/ recreational facility waste	Inside

[3] https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0000297 *(Accessed 17/06/2024)*

6.1.1.3 QI Specific Information

6.1.1.3.1 Otter (*Lutra lutra*)

As per the SSCOs for Lough Corrib SAC, the conservation objective for this QI is:

'*To maintain the favourable conservation condition of Otter in Lough Corrib SAC'.*

The attributes and targets (as per the SSCO document) for this species are provided in Table 6-3 below.

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for Otter in Lough Corrib SAC

Attribute	Target
Distribution	No significant decline
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 1,054ha along riverbanks/ lake shoreline/around ponds
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 314.2km
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 4,178ha
Couching sites and holts	No significant decline
Fish biomass available	No significant decline
Barriers to connectivity	No significant increase.

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

As per the SSCOs for Lough Corrib SAC , the conservation objective for this QI is:

'To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC.'

The attributes and targets (as per the SSCO document) for this species are provided in Table 6-4 below.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for Brook Lamprey in Lough Corrib SAC

Attribute	Target
Distribution	Percentage of river accessible
Population structure of juveniles	At least three age/size groups present
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 5/m²

Attribute	Target
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	More than 50% of sample sites positive

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

The conservation objective for this QI is:

> '*To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC*'.

The attributes and targets (as per the SSCO document) for this species are provided in Table 6-5 below.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for Sea Lamprey in Lough Corrib SAC

Attribute	Target
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary.
Population structure of juveniles	At least three age/size groups present
Juvenile density in fine sediment	Juvenile density at least 1/m²
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart.

6.1.1.3.4 Atlantic Salmon (*Salmo salar*) [1106]

The conservation objective for this QI is:

> '*To maintain the favourable conservation condition of Atlantic Salmon in Lough Corrib SAC*'.

The attributes and targets (as per the SSCO document) for this species are provided in Table 6-6 below.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for Atlantic Salmon in Lough Corrib SAC

Attribute	Target
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling
Out-migrating smolt abundance	No significant decline.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes.
Water quality	At least Q4 at all sites sampled by EPA

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

The conservation objective for this QI is:

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

The attributes and targets for this species (as per the SSCO document) are provided in Table 6-7 below.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for White-clawed Crayfish in Lough Corrib SAC

Attribute	Target
Distribution: rivers	No reduction from baseline.
Distribution: Lough Corrib	No reduction from baseline.
Population structure: recruitment	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib
Negative indicator species	No alien crayfish species
Disease	No instances of disease

Attribute	Target
Water quality	At least Q3-4 at all sites sampled by EPA
Habitat quality: heterogeneity	No decline in habitat heterogeneity or habitat quality

6.1.1.3.6 Slender Naiad (*Najas flexilis*) [1833]

The conservation objective for this QI is:

'To restore the favourable conservation condition of Slender Naiad in Lough Corrib SAC'.

The attributes and targets for this species (as per the SSCO document) are provided in Table 6-8 below.

Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for Slender Naiad in Lough Corrib SAC

Attribute	Target
Population extent	Restore the spatial extent of *Najas flexilis* within the lake, subject to natural processes
Population depth	Restore the depth range of *Najas flexilis* within the lake, subject to natural processes
Population viability	Restore plant fitness, subject to natural processes
Population abundance	Restore the cover abundance of *Najas flexilis*, subject to natural processes
Species distribution	Restore to at least the north-western bay, subject to natural processes
Habitat extent	Restore, subject to natural processes
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat for the species
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the population of the species
Water quality	Restore appropriate water quality to support the population of the species
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the population of *Najas flexilis*, subject to natural processes
Water colour	Restore/maintain appropriate water colour to support the population of *Najas flexilis*
Associated species	Restore appropriate associated species and vegetation communities to support the population of *Najas flexilis*
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the population of *Najas flexilis*

6.1.1.3.7 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]

The conservation objective for this QI is:

> *'To maintain the favourable conservation condition of Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation in Lough Corrib SAC'.*

The attributes and targets for this habitat (as per the SSCO document for the SAC) are provided in Table 6-9 below.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes
Hydrological regime: river flow	Maintain appropriate hydrological regimes
Hydrological regime: groundwater discharge	Maintain appropriate hydrological regimes
Substratum composition: particle size range	Maintain appropriate substratum particle size range, quantity and quality, subject to natural process
Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition
Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained
Riparian habitat: area	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types

6.1.1.3.8 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea* [3130]

The conservation objective for this QI is:

> *'To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea in Lough Corrib SAC'.*

The attributes and targets for this habitat (as per the SSCO document for the SAC) are provided in Table 6-10 below.

Table 6-10 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status
Water quality: macrophyte status	Maintain high macrophyte status
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes
Water colour	Restore/maintain appropriate water colour to support the habitat
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat
Turbidity	Restore/maintain appropriate turbidity to support the habitat
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130

6.1.1.3.9 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]

The conservation objective for this QI is:

> *'To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) in Lough Corrib SAC'.*

The attributes and targets for this habitat (as per the SSCO document for the SAC) are provided in Table 6-11 below.

Table 6-11 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status
Water quality: macrophyte status	Maintain high macrophyte status
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes

Attribute	Target
Water colour	Restore/maintain appropriate water colour to support the habitat
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat
Turbidity	Restore/maintain appropriate turbidity to support the habitat
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110

6.1.1.3.10 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140]

The conservation objective for this QI is:

> *'To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. in Lough Corrib SAC'.*

The attributes and targets for this habitat (as per the SSCO document) are provided in Table 6-12 below.

Table 6-12 Targets and attributes associated with nominated site-specific conservation objectives for Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species

Attribute	Target
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status
Water quality: macrophyte status	Maintain high macrophyte status
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes
Water colour	Restore/maintain appropriate water colour to support the habitat
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat
Turbidity	Restore/maintain appropriate turbidity to support the habitat
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110

6.1.1.3.11 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]

The conservation objective for this QI is:

> *'To maintain the favourable conservation condition of Calcareous fens with Cladium mariscus and species of the Caricion davallianae in Lough Corrib SAC.'*

The attributes and targets for this habitat (as per the SSCO document for the SAC) are provided in Table 6-13 below.

Table 6-13 Targets and attributes associated with nominated site-specific conservation objectives for Clacareous fens with Cladium mariscus and species of the Caricion davianae in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes.
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat
Ecosystem function: peat formation	Maintain active peat formation, where appropriate
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat

Attribute	Target
Vegetation structure: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants
Vegetation composition: non-native species	Cover of non-native species less than 1%
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat

6.1.1.3.12 Petrifying springs with tufa formation (*Cratoneurion*) [7220]

The conservation objective for this QI is:

> *'To maintain the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion) in Lough Corrib SAC.'*

The attributes and targets for this habitat (as per the SSCO document for the SAC) are provided in Table 6-14 below.

Table 6-14 Targets and attributes associated with nominated site-specific conservation objectives for Petrifying springs with tufa formation (Cratoneurion) in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes.
Hydrological regime: height of water table; water flow	Maintain appropriate hydrological regimes
Water quality - nitrate level	No increase from baseline nitrate level and less than 10mg/l
Water quality - phosphate level	No increase from baseline phosphate level and less than 15µg/l
Vegetation composition: positive indicator species	At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number
Vegetation composition: negative indicator species	Potentially negative indicator species should not be Dominant or Abundant; invasive species should be absent

Attribute	Target
Vegetation structure: sward height	Field layer height between 10cm and 50cm (except for bryophyte-dominated ground
Physical structure: trampling/dung	Cover should not be Dominant or Abundant

6.1.1.3.13 Alkaline fens [7230]

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC.'

The attributes and targets for this habitat (as per the SSCO document for the SAC) are provided in Table 6-15 below.

Table 6-15 Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens in Lough Corrib SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes.
Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range
Ecosystem function: peat formation	Maintain active peat formation, where appropriate
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat
Community diversity	Maintain variety of vegetation communities, subject to natural processes
Vegetation composition: number of positive indicator species (brown mosses)	Number of brown moss species present at each monitoring stop is at least one
Vegetation composition: number of positive indicator species (vascular plants)	Number of positive vascular plant indicator species present at each monitoring stop is at least two for small-sedge flushes and at least three for black bog-rush (*Schoenus nigricans*) flush and bottle sedge (*Carex rostrata*) fen
Vegetation composition: cover of positive indicator species	Total cover of brown moss species and positive vascular plant indicator species at least 20% for small-sedge flushes and at least 75% cover for black bog-rush (*Schoenus nigricans*) flush and bottle sedge (*Carex rostrata*) fen
Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%

Attribute	Target
Vegetation composition: nonnative species	Cover of non-native species less than 1%
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%
Vegetation composition: soft rush and common reed cover	Total cover of soft rush (*Juncus effusus*) and common reed (*Phragmites australis*) less than 10%
Vegetation structure: height	Proportion of live leaves and/or flowering shoots of vascular plants that are more than 5cm above the ground surface should be at least 50%
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%
Physical structure: drainage	Area showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat

6.1.2 Levally Lough SAC [000295]

The potential for impacts on this SAC was identified in Section 5.1 above. The identified pathways for effect include the following:

- This European Site is located 2.0km so the southwest of the Proposed Project and is underlain by the same groundwater body, i.e. the Clare-Corrib, as the Proposed Project site. Therefore a potential pathway for indirect effects on the SAC due to deterioration of groundwater quality was identified.

Table 6-16 below lists the QIs 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.

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

Table 6-16 Assessment of Qualifying features potentially affected in Levally Lough SAC

Qualifying feature	Conservation Objective (NPWS, Version 1, December 2020)	Rationale	Potential for Adverse Effects Y/N
[3180] Turloughs	To maintain the favourable conservation condition of Turloughs in Levally Lough SAC.	Turloughs are a groundwater dependent habitat. This SAC is located 2km to the southwest of and downgradient of the Proposed Project site boundary, and is underlain by the same groundwater body, i.e. the Clare-Corrib. According to Chapter 9 (Hydrology and Hydrogeology) of the Environmental Impact Assessment Report (EIAR) prepared for the Proposed Project, groundwater flow direction in the area of the site is to the south/south west. Therefore Levally Lough is located potentially downgradient of the Proposed Project and a potential pathway for indirect effects on the SAC due to deterioration of groundwater quality arising from construction, operational and decommissioning activities associated with the Proposed Project was identified. **A source-pathway-receptor chain for adverse effects on this habitat was identified and is assessed further in this NIS.**	Yes

6.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form[4] the site-specific threats, pressures, and activities with potential to impact on the European Site were reviewed and considered. These are provided in Table 6-17.

Table 6-17 Site-specific threats, pressures and activities for Levally Lough SAC

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Low	E01.03	Dispersed habitation	Outside
Low	F03.01	Hunting	Both
Medium	A08	Fertilisation	Outside
Medium	A10	Restructuring agricultural land holding	Both
Medium	C01.01.01	Sand and gravel quarries	Outside

6.1.2.3 QI Specific Information

6.1.2.3.1 Turloughs [3180]

The conservation objective for this QI is:

'*To restore the favourable conservation condition of Turloughs in Levally Lough SAC.*'

The attributes and targets for this habitat are provided in Table 6-18 below.

Table 6-18 Targets and attributes associated with nominated site-specific conservation objectives for Turloughs in Levally Lough SAC

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes
Hydrological regime	Maintain appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat
Soil type	Maintain variety, area and extent of soil types necessary to support turlough vegetation and other biota
Soil nutrient status: nitrogen and phosphorus	Maintain nutrient status appropriate to soil types and vegetation communities
Physical structure: bare ground	Maintain sufficient wet bare ground,
Chemical processes: calcium carbonate	Maintain appropriate calcium carbonate deposition rate and concentration in soil

[4] https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0000295 *(Accessed 17/06/2024)*

Attribute	Target
deposition and concentration	
Active peat formation	Maintaining active peat formation
Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat
Vegetation composition: area of vegetation communities	Maintain area of sensitive and high conservation value vegetation communities/units
Vegetation composition: vegetation zonation	Maintain vegetation zonation/mosaic characteristic of the turlough
Vegetation structure: sward height	Maintain sward heights appropriate to the vegetation unit, and a variety of sward heights across the turlough
Typical species	Maintain typical species within the turlough
Fringing habitats: area	Maintain marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations
Vegetation structure: turlough woodland	Maintain appropriate turlough woodland diversity and structure

6.1.3 Williamstown Turloughs SAC [002296]

The potential for impacts on this SAC was identified in Section 5.1 above. The identified pathways for effect include the following:

- This European Site is partially underlain by the same groundwater body, i.e. the Clare-Corrib, as the Proposed Project site. Therefore a potential pathway for indirect effects on the SAC due to deterioration of groundwater quality was identified.

Table 6-19 below lists the QIs 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.

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

Table 6-19 Assessment of Qualifying features potentially affected in Williamstown Turloughs SAC

Qualifying feature	Conservation Objective (NPWS, Version 1, December 2020)	Rationale	Potential for Adverse Effects Y/N
[3180] Turloughs	To maintain the favourable conservation condition of Turloughs in Levally Lough SAC.	Turloughs are a groundwater dependent habitat. This SAC although partially underlain by the same groundwater body, i.e. the Clare-Corrib, as the Proposed Project is located to the north of the Proposed Project. According to Chapter 9 (Hydrology and Hydrogeology) of the Environmental Impact Assessment Report (EIAR) prepared for the Proposed Project, groundwater flow direction in the area of the site is to the south/south west. Therefore Williamstown Turloughs are located upgradient of the Proposed Project. There is no potential for adverse effects on this QI habitat due to deterioration of water quality associated with the Proposed Project. **No complete source-pathway-receptor chain for adverse effects on this habitat associated with Williamstown Turloughs SAC was identified and this SAC is not assessed further in this NIS.**	No

7. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS assesses the potential effects of the Proposed Project on the identified relevant Qualifying Interests/Special Conservation Interests of the relevant European Sites. This assessment is undertaken in the absence of any mitigation and in respect of the conservation objectives of the European Sites. The Conservation Objectives for each of the European Sites assessed were reviewed in June 2024. The Conservation Objectives for the European Sites for which a potential pathway for adverse effects was identified in Section 6 above are available at the following locations:

- Lough Corrib SAC [000297]: https://www.npws.ie/protected-sites/sac/000297
- Levally Lough SAC [000295]: https://www.npws.ie/protected-sites/sac/000295

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the Conservation Objectives of the relevant QIs/SCIs.

7.1 Potential for Effects on the European Sites

7.1.1 Habitat Loss (Lough Corrib SAC)

While a small section of the Proposed Wind Farm site boundary lies within the boundaries of Lough Corrib SAC, there is no infrastructure proposed at this location, with the nearest infrastructure located approximately 550m at its closest point from the SAC. Additionally, all proposed watercourse crossings within the Proposed Wind Farm site are located entirely outside of the SAC.

However, the Proposed Grid Connection cabling to the south-east of the Wind Farm site crosses the Levally Stream within the boundaries of Lough Corrib SAC. Therefore, in the absence of mitigation, potential for adverse effects on the SAC due to direct loss of the following QI habitat and/or supporting habitat for the following QI species during the Grid ConnecitonRoute cable crossing of the stream at construction stage of the Proposed Project was identified in Table 6-1 above.

- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- [1355] Otter (*Lutra lutra*)
- [1106] Salmon (*Salmo salar*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1096] Brook Lamprey (*Lampetra planeri*)

During the site surveys undertaken, the Annex I habitat 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation' was not recorded within this stream in the vicinity of the crossing of the Grid Connection Route cable, nor was any evidence of otter, including otter resting or breeding sites. There is no potential for direct loss of the QI Annex I habitat or of supporting habitat for the QI otter.

During aquatic surveys undertaken for the Proposed Project, white-clawed crayfish, salmon and lamprey were recorded in low numbers at a number of locations within the Levally stream (refer to Aquatic report in Appendix 1). The Levally stream at the proposed Grid Connection Route cable crossing location within the SAC, while not providing optimal habitat, does nevertheless provide some suitable habitat for these species.

However, the stream will be crossed using Horizontal Directional Drilling (HDD) techniques to drill under the stream bed. The launch pit will be located to the west of the watercourse and the reception

pit will be located to the east. The top of the cable ducts will be a minimum of 1.5m below the watercourse bed as advised by Inland Fisheries Ireland. It is proposed to construct a temporary accommodation area around the launch and reception pits to facilitate the horizontal directional drilling process. There will be no instream works undertaken at this location and no disturbance to the river channel. There will be no direct loss of fisheries habitat, including habitat for white-clawed crayfish, salmon or lamprey species.

There are 6 no. watercourse crossings associated with the Proposed Project within the Wind Farm site boundary and salmon, white-clawed crayfish and brook lamprey were recorded in low numbers at a number of locations within the Wind Farm site boundary (refer to Aquatic report prepared by Triturus Environmental Consultants in Appendix 1). While the proposed watercourse crossings lie entirely outside of the SAC, it should be noted that the watercourses will be crossed using a clear span bridge. There will be no instream works required at these crossings and no disturbance to the stream channel. There is no potential for loss of QI habitat or supporting habitat for QI species outside of the SAC.

Given the above, there is no potential for adverse effects on the above listed QIs as a result of direct habitat or supporting habitat loss.

7.1.1.1 Mitigation

The key mitigation measure during the construction phase of the Proposed Project is the avoidance of sensitive aquatic areas, i.e. watercourses, by the application of a 50m buffer zones between Project infrastructure and the main watercourses. All of the main infrastructure associated with the Proposed Project is located significantly away from the 50m delineated buffer zones, with the exception of existing road upgrades, new roads, proposed stream crossings and existing stream crossings requiring upgrading.

While no adverse effects on the SAC as a result of habitat loss (including supporting habitat for QI species) are anticipated given the design of the project, the following best practice will be adhered to in relation to works in proximity to watercourses:

- Prior to any works being carried out, a pre-construction survey for otter will be undertaken (with a focus on the watercourse crossing locations) by a qualified ecologist to ensure that there have been no changes to the baseline environment and that the QI species has not taken up residence within or in close proximity to the crossings.
- All work will be carried out in line with Inland Fisheries Ireland (2016): *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*; and the Scottish Natural Heritage (SNH) *Good Practice During Wind Farm Construction* (SNH, 2019, 4th Edition).
- In relation to all watercourse crossings, including the crossing of the Levally stream tributary by the Proposed Grid Connection cabling (within the SAC boundary), and the 6 no. watercourse crossings within the Proposed Wind Farm site boundary (outside the SAC), Inland Fisheries Ireland (IFI) will be consulted a minimum of four weeks in advance of these works.

7.1.2 Disturbance/Displacement (Lough Corrib SAC)

A potential pathway for adverse effects on the following QI species associated with Lough Corrib SAC due to disturbance/displacement within the SAC was also identified in Table 6-1 above. There is potential for this to occur during construction activities associated with the Proposed Project, specifically, the crossing of the tributary of the Levally Stream by the Proposed Grid Connection Route cabling.

- [1355] Otter (*Lutra lutra*)
- [1106] Salmon (*Salmo salar*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1096] Brook Lamprey (*Lampetra planeri*)

However, as outlined in Section 7.1.1 above, the stream will be crossed by HDD methodologies and there will be no requirement for instream works. There will be no disturbance to the river bed and therefore no disturbance of fisheries habitat. No evidence of otter, including no otter resting or breeding sites, were recorded at this location during the site surveys undertaken.

While the proposed watercourse crossings and all infrastructure within the Proposed Wind Farm site boundary lie entirely outside the SAC, potential for ex-situ disturbance/displacement of the above species where they occur outside of the SAC is also considered here.

As outlined in Section 7.1.1 above, all watercourses crossings within the Proposed Wind Farm site boundary will be crossed using clear span bridges. As with the cable route crossing of the Leavally stream tributary, there will be no instream works and no disturbance of stream beds and therefore no disturbance of fisheries habitat.

While no otter resting or breeding sites were recorded within the Wind Farm site boundary, and the site was not found to support significant habitat for this species, evidence of otter, including a regular sprainting site on the Levally stream, approx. 300m to the west of Turbine 5 was recorded during surveys undertaken. Therefore, given the presence of otter activity in the Proposed Wind Farm site, taking a precautionary approach, a potential pathway for ex-situ disturbance of this species where it occurs outside of the SAC during construction, operational and decommissioning works associated with the Proposed Project was identified.

Otter are predominantly crepuscular in nature (prefer dim light and tend to be active during dawn/dusk) and are unlikely to be adversely impacted by the proposed works. Construction activity will be confined to daytime hours, thus minimizing potential disturbance related impacts to the species. The NPWS Threat Response Plan for Otter acknowledges that "Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure." It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.

Channin P (2003)[5] provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993). (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.

Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, "the lowest percentage occurrence was found at the sites with the lowest recorded disturbance!" Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006).

The Proposed Project will not result in any significant increase in anthropogenic activity within the site during the operational phase, nor will there be any lighting associated with the Proposed Project. No potential for significant disturbance of otter during the operational phase of the Proposed Project was identified. Any potential for effects on this species during the decommissioning phase of the Proposed

[5] *Chanin P (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature,Peterborough*

Project will be similar in nature to those of the construction phase, but to a much-reduced extent, given the reduced nature of construction activity.

Based on the above review of scientific literature, and the absence of significant suitable habitat for otter within the Proposed Project site, the potential for adverse effects on the integrity of the Otter population associated with the Lough Corrib SAC as a result of the construction, operational and decommissioning phases of the Proposed Project can be excluded.

7.1.2.1 Mitigation

The key mitigation measure during the construction phase of the Proposed Project is the avoidance of sensitive aquatic areas, i.e. watercourses, by the application of a 50m buffer zones between Project infrastructure and the main watercourses. All of the main infrastructure associated with the Proposed Project is located significantly away from the 50m delineated buffer zones, with the exception of existing road upgrades, new roads, proposed stream crossings and existing stream crossings requiring upgrading.

While no adverse effects on the SAC as a result of disturbance/displacement of QI species are anticipated given the design of the project, the following best practice will be adhered to in relation to works in proximity to watercourses:

- Prior to any works being carried out, a pre-construction survey for otter will be undertaken (with a focus on the watercourse crossing locations) by a qualified ecologist to ensure that there have been no changes to the baseline environment and that the QI species has not taken up residence within or in close proximity to the crossings.
- During the construction phase, plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001).
- Construction activity will be confined to daytime hours, thus minimizing potential disturbance related impacts to the species.

7.1.3 Deterioration of Water Quality (Lough Corrib SAC and Levally Lough SAC)

Approximately 3m of the Proposed Grid Connection route traverses Lough Corrib SAC to the south-east of the Wind Farm Site, and crosses a small tributary of the Levally Stream at this location.

There is also hydrological connectivity between the Proposed Project and this SAC via drains and small watercourses within the Wind Farm Site boundary. These discharge to the Levally Stream (EPA Code: 30L07) to the south, and the Sinking River (EPA Code: 30S01) to the north, both of which are designated as part of the SAC downstream of the site. The Proposed Project and the SAC are also underlain by the same groundwater catchment, i.e. the Clare-Corrib.

While there is no surface water connectivity between the Proposed Project and Levally Lough SAC, the SAC and the Proposed Project are underlain by the same ground water catchment, i.e. the Clare-Corrib, and the SAC is designated for the groundwater dependent habitat, [3180] Turloughs.

A potential pathway for adverse effects on the below listed QIs of the relevant European Sites due to deterioration of water quality arising from construction, operational and decommissioning activities associated with the Proposed Project was identified:

Lough Corrib SAC [000297]

- [1355] Otter (*Lutra lutra*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1833] Slender Naiad (*Najas flexilis*)
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
- [7230] Alkaline Fens
- [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*
- [3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

Levally Lough SAC

- [3180] Turloughs

7.1.3.1 Construction Phase

The construction phase of the Proposed Project will include the construction of turbine hardstand areas, wind farm access roads and upgrades, substations, construction compounds, borrowpit and the laying of cables associated with the Proposed Grid Connection. It also includes for the provision of spoil storage and peat repository areas. In addition there are 7 no. watercourse crossings associated with the above works, including 6 no. within the Proposed Wind Farm site boundary and 1 no. along the Proposed Grid Connection route within Lough Corrib SAC. These works and off-road works along the proposed haul route will involve excavations and earth moving which create the potential for pollution in various forms, e.g. the generation of suspended solids, release of cement-based products, the potential for spillage of fuels associated with the refuelling of excavation machinery, percolation of pollutants to groundwater. There is also a risk of surface water runoff from bare soil and soil storage areas during construction works.

The sections below outline the potential pathways for deterioration of water quality. In the absence of mitigation, there is potential for the release of pollutants, including suspended solids, cement-based products and/or hydrocarbons, to watercourses and/or groundwater within and in proximity to the Proposed Project which have connectivity downstream/downgradient with Lough Corrib SAC and Levally Lough SAC. Taking a precautionary approach, the release of pollutants has potential to cause deterioration of water quality in these downstream European Sites, potentially affecting their aquatic QI habitats and supporting habitat for QI species.

7.1.3.1.1 *Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Waters*

There will be earthworks required for both the Wind Farm and Grid Connection (Proposed Project) and therefore both are assessed below.

Proposed Project construction phase activities that will require earthworks resulting in removal of vegetation cover and excavation of peat and mineral subsoil (where present) are detailed in Chapter 4 the Description of the Proposed Project. Potential sources of sediment laden water include:

- Drainage and seepage water resulting from infrastructure excavation;
- Stockpiled excavated material providing a point source of exposed sediment;
- Construction of the underground cable trench resulting in entrainment of sediment from the excavations during construction; and,
- Erosion of sediment from emplaced site drainage channels.

These activities can result in the release of suspended solids to surface watercourses and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality in downstream watercourses.

Mitigaiton

Mitigation by Avoidance:

The key mitigation measure during the construction phase of the Proposed Project is the avoidance of sensitive aquatic areas, i.e. watercourses, where possible by the application of a 50m buffer zones between Project infrastructure and the main watercourses. All of the main Proposed Project infrastructure is located significantly away from the 50m delineated buffer zones, with the exception of existing road upgrades, new roads, proposed stream crossings and existing stream crossings requiring upgrading. Additional control measures, which are outlined further below, will be undertaken at these locations.

The large setback distance from watercourses means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operated effectively. The proposed buffer zones will:

- Avoid physical damage to watercourses, and associated release of sediment;
- Avoid excavations within close proximity of surface water courses;
- 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 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 or other similar/equivalent or appropriate measures.
- 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/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems.
- Treatment systems:
  - Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems.

An extensive network of forestry, bog, field and roadside drains already exists within the Proposed Wind Farm, and these will be integrated and enhanced as required and used within the Proposed Project drainage system.

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 Project 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 stilling 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 including 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 road upgrades (or new road/hardstand) the following key temporary drainage measures will be installed:

- All existing dry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using temporary check dams/silt traps;
- Clean water diversion drains will be installed upgradient of the works areas;

- Check dams/silt fence arrangements (silt traps) will be placed in all existing drains that have surface water flows and also along existing roadside drains; and,
- A double silt fence perimeter will be placed down-slope of works areas that are located inside the 50m buffer zones of watercourses such as at watercourse crossings.

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.

Silt Fences:

Silt fences will be emplaced within drains down-gradient of all construction areas. Silt fences are effective at removing heavy settleable solids. This will act to prevent entry to water courses 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 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 drains down-gradient of all construction areas inside the hydrological 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 sedimats 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 footprint has been divided into drainage catchments (based on topography, outfall locations, catchment size) and stormwater runoff rates based on the 50-year return period rainfall event were calculated for various catchment areas in order to size the settlement ponds for the Proposed Project.

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 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.

Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. 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.

Vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not sand 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).

Pre-emptive Site Drainage Management

The works programme for the entire construction stage of the Proposed Project will also take account of weather forecasts, and predicted rainfall in particular. Large excavations and movements of peat/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 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;
- 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.

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:

- Secure all open excavations;
- Provide temporary or emergency drainage to prevent back-up of surface runoff; and,
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

Management of Runoff from Peat and Spoil Repository Areas:

It is proposed that excavated spoil and peat will be used for landscaping where required. The excess material will then be placed in 4 no. dedicated Peat Repository Areas (PRA) and 1 no. Spoil Deposition Area (SDA). All proposed PRAs and the SDA are located outside of 50m watercourse buffers and also outside of OPW mapped fluvial flood zones.

During the initial construction of repository/deposition areas, silt fences, straw bales and biodegradable geogrids will be used to control surface water runoff from works areas.

Where applicable, the vegetative top-soil layer of the peat and spoil management areas will be rolled back to facilitate placement of excavated spoil, following which the vegetative-top soils layer will be reinstated. Where reinstatement is not possible, spoil and peat management areas will be sealed with a digger bucket and seeded as soon possible to reduce sediment entrainment in runoff.

Drainage from peat and spoil storage areas will ultimately be routed to an oversized swale and a number of stilling ponds with appropriate storage and settlement designed for a 1 in 50-year return period before being discharged to the on-site drains.

Peat/subsoil reinstatement areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff. Once re-vegetated and stabilised peat/subsoil reinstatement areas will no longer be a potential source of silt laden runoff.

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.

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 EQSs will be undertaken for each primary watercourse, and specifically following heavy rainfall events (as per the CEMP is included in Appendix 6 of this NIS).

7.1.3.1.2 *Excavation Dewatering and Potential Impacts on Surface Water Quality (Proposed Project)*

During construction activities associated with the Proposed Project, there may be a requirement to pump water from excavations, including turbine base excavations and the borrow pit, and this will create additional volumes of water to be treated by the runoff management system. There is also potential for cable trenching associated with the Proposed Grid Connection to require removal of water prior to backfilling.

Mitigation

Management of excavation inflows 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 siltbag;
- There will be no direct discharge to surface watercourses;
- Daily monitoring of excavations by a suitably qualified person will occur during the construction phase. If high levels of seepage inflow occur, excavation work will immediately be stopped and a geotechnical assessment undertaken;

- At the borrow pit adequately sized settlement ponds will be constructed to treat pumped water prior to discharge into a local manmade drain;
- A mobile 'Siltbuster' or similar equivalent specialist treatment system will be made available at the borrow pit location 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.

7.1.3.1.3 *Potential Release of Hydrocarbons During Construction and Storage (Proposed Project)*

During construction activities associated with the Proposed Project there is potential for accidental spillage of hydrocarbons during refuelling of construction plant with petroleum hydrocarbons and there is potential for these pollutants to enter surface water bodies or percolate to groundwater. In the absence of mitigation, this has potential to impact on water quality in downstream European Sites.

Mitigation

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

- On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site, and will be towed around the site by a 4x4 jeep to where machinery is located. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;
- Onsite refuelling will be carried out by trained personnel only;
- A permit to fuel system will be put in place;
- Fuels stored on site will be minimised. Fuel storage areas, if required, will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor;
- The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,
- An emergency plan for the construction phase to deal with accidental spillages will be included within the CEMP (Included as Appendix 6 of this NIS). Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.

7.1.3.1.4 *Release of Cement-Based Products*

Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. During construction activities associated with the Proposed Project, there is potential for entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses. This could occur during batching of wet concrete on site and washing out of transport and placement machinery.

Mitigation

- No batching of wet-cement 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 cement 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.

7.1.3.2 Water Quality Effects due to Watercourse Crossing Works

There are 6 no. watercourse crossings within the Proposed Wind Farm site. Five of these are new crossings and one is an upgrade to an existing crossing.

Additionally there is 1 no. watercourse crossing associated with the Proposed Grid Connection route. This involves a crossing of a tributary of the Levally stream within the boundaries of Lough Corrib SAC. It is proposed to cross this watercourse using Horizontal Directional Drilling (HDD) methodologies.

Works associated with the watercourse crossings within the Proposed Wind Farm site and along the Proposed Grid Connection route have the potential to result in deterioration of water quality both at the location of and downstream of the proposed crossings. This could occur due sediment laden run-off generated during installation of the clear span bridges and/or during construction of launch and reception pits for HDD crossing methodologies. During the crossing of the tributary of the Levally Stream within Lough Corrib SAC by HDD, there is also the unlikely risk of fracture blow out and contamination of the watercourse with drilling fluid. The above has potential for adverse effects on Lough Corrib SAC (and associated QI species and habitats).

Mitigation

Watercourse crossings within the Proposed Wind Farm Site

- All proposed stream crossings within the Proposed Wind Farm site will be bottomless or clear span culverts and the existing banks will remain undisturbed. There will be no in-stream excavation works and therefore there will be no direct impact on the stream at the proposed crossing location;
- All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland[6] will be incorporated into the design of the proposed crossings;
- As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to according to the IFI (2016) guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", i.e., July to September inclusive. This time period coincides with the period of lowest expected 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 (any deviation from this will be done in discussion with the IFI);
- During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; and,

[6] *Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*

- All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.

Watercourse crossing along the Proposed Grid Connection Route (HDD)

- Although no in-stream works are proposed, the drilling works will only be done over a dry period between July and September (as required by IFI for in-stream works) to avoid the salmon spawning season and to have more favourable (dryer) ground conditions;
- The crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance;
- There will be no storage of material / equipment or overnight parking of machinery inside a 15m buffer zone;
- Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channel along the 15m buffer zone boundary;
- Additional silt fencing or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards the watercourse;
- Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered;
- The area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages;
- Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area;
- Spills of drilling fluid will be clean up immediately and stored in an adequately sized skip before been taken off-site;
- If rainfall events occur during the works, there will be a requirement to collect and treat small volumes of surface water from areas of disturbed ground (i.e. soil and subsoil exposures created during site preparation works);
- This will be completed using a shallow swale and sump down slope of the disturbed ground; and water will be pumped to a proposed percolation area at least 50m from the watercourse;
- The discharge of water onto vegetated ground at the percolation area will be via a silt bag which will filter any remaining sediment from the pumped water. The entire percolation area will be enclosed by a perimeter of double silt fencing;
- Any sediment laden water from the works area will not be discharged directly to a watercourse or drain;
- Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted;
- Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter is discharged to the watercourse;
- If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the issue is resolved and the cause of the elevated source is remedied;
- On completion of the works, the ground surface disturbed during the site preparation works and at the entry and exit pits will be carefully reinstated and re-seeded at the soonest opportunity to prevent soil erosion;
- The silt fencing upslope of the river will be left in place and maintained until the disturbed ground has re-vegetated;
- There will be no batching or storage of cement allowed at the watercourse crossing;
- There will be no refuelling allowed within 100m of the watercourse crossing; and,
- All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing.

Fracture Blow-out (Frac-out) Prevention and Contingency Plan:

- The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used);
- The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage;
- One or more lines of silt fencing will be placed between the works area and the adjacent river;
- Spills of drilling fluid will be cleaned up immediately and transported off-site for disposal at a licensed facility;
- Adequately sized skips will be used where temporary storage of arisings are required;
- The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse;
- This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling will be immediately stopped;
- Any frac-out material will be contained and removed off-site;
- The drilling location will be reviewed, before re-commencing with a higher viscosity drilling fluid mix; and,
- If the risk of further frac-out is high, a new drilling alignment will be sought at the crossing location.

7.1.3.2.2 *Clear Felling of Coniferous Plantation and Potential Surface Water Quality Effects*

To facilitate the Proposed Project, there will be a requirement to fell approx. 10.3ha of forestry (mostly conifer plantation) within the Proposed Wind Farm site. The tree felling activities required as part of the Wind Farm 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 licences for wind farm developments.

During felling, there is potential for deterioration of water quality due to:

- Exposure of soil and subsoils due to vehicle tracking or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff and enter surface 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.

Mitigation

All felling operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and 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, 2023a)
- Environmental Requirements for Afforestation (Forest Service, 2024)
- Land Types for Afforestation (Forest Service, 2023b)
- Forest Protection Guidelines (Forest Service, 2002)
- Forest Operations and Water Protection Guidelines (Coillte, 2013)
- Forestry and Water Quality Guidelines (Forest Service, 2000a)
- Forestry and the Landscape Guidelines (Forest Service, 2000b)
- Forestry and Archaeology Guidelines (Forest Service, 2000c)

- Forest Biodiversity Guidelines (Forest Service, 2000d)
- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (Forestry Service, 2018)
- Coillte Planting Guideline SOP
- A Guide to Forest Tree Species Selection and Silviculture in Ireland (Horgan *et al.,* 2003)
- Management Guidelines for Ireland's Native Woodlands. Jointly published by the National Parks & Wildlife Service and the Forestry Service (Cross and Collins, 2017)
- Native Woodland Conservation Scheme (Forest Service, 2024)
- Code of Best Forest Practice (Forest Service, 2000e)

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 7-1.

Table 7-1 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

During the Wind Farm construction phase a self-imposed buffer zone of 50 metres will be maintained for all streams where possible. No tree felling is required inside a 50m buffer zone.

The large distance between the proposed felling areas and sensitive aquatic zones means that potential poor quality (sediment laden) runoff from felling areas will be adequately managed and attenuated prior to even reaching the aquatic buffer zone and primary drainage routes.

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;
- 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;
- Ditches which drain from the proposed area to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and will avoid being placed at right angles to the contour;
- Sediment traps will be sited in drains downstream of felling areas. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment

will be carefully disposed of in the peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;

- All drainage channels will taper out before entering the 50m buffer zone. This ensures that discharged water gently fans out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone. On erodible soils, silt traps will be installed at the end of the drainage channels, to the outside of the buffer zone;
- 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. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled;
- Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will 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;
- Timber will be stacked in dry areas, and outside a local 50 metre watercourse buffer. Straw bales and check dams to 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 run-off;
- Checking and maintenance of roads and culverts will be on-going through the felling operation;
- Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required;
- A permit to refuel system will be adopted;
- 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;
- Crossing of streams will not be permitted;
- Trees will be cut manually from along streams and using machinery to extract whole tree; and,
- Travel only perpendicular to and away from stream.

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.

Drain Inspection and Maintenance:

The following items shall 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 shall be identified. Ideally the pre-felling inspection shall be carried out during rainfall;
- Following tree felling all main drains shall be inspected to ensure that they are functioning;
- Extraction tracks nears drains need to 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 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).

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;
- Where possible, 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 will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.

7.1.3.2.3 *Groundwater and Surface Water Contamination from Wastewater Disposal (Proposed Project)*

Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. No wastewater will be treated on-site.

7.1.3.3 Operational Phase

7.1.3.3.1 *Removal of Vegetation Cover and Progressive Replacement of Natural Surface with Low Permeability Surfaces (Proposed Project)*

The Proposed Project will include the construction of permanent hard-standing areas to aid the erection of turbines and to provide safe working environments at the bases of the turbines. Hardstand emplacement will be required at both the Proposed Wind Farm site and along the Proposed Grid Connection.

The potential for increased surface water runoff is the primary potential impact during the operational phase of the Proposed Project.

Progressive replacement of the vegetated surface with impermeable surfaces will decrease the permeability of the ground within the Site footprint (i.e., turbine bases, hardstandings, and to a lesser extent the new access roads) and substation. It should be noted that approximately 2km of the

proposed Site roads already exist and are proposed for upgrade. The permeability along the underground Grid Connection cable route will not be significantly altered, as the fill material will not be compacted.

The emplacement of the Proposed Project footprint, as described in Chapter 4 of the EIAR, (assuming emplacement of impermeable materials as a worst-case scenario) could result in an average total site increase in surface water runoff of approximately 1,261m^3/month. This represents a potential increase of approximately 0.3% in the average daily/monthly volume of runoff from the Site in comparison to the baseline pre-development site runoff conditions. This is a very small increase in average runoff and results from a relatively small area of the overall Proposed Project site being developed. Specifically, the Proposed Project footprint is approximately 17.5ha, representing 5% of the total EIAR Study Area of 353ha.

The additional volume is low due to the fact that the runoff potential from the Site is naturally high (94%). Also, this calculation assumes that all hardstanding areas will be impermeable which considered to be a worst-case scenario. The increase in runoff from most of the development catchment will therefore be imperceptible and this is before mitigation measures will be put in place. This water balance assessment demonstrates that even in the absence of mitigation, the potential to alter the water balance of the Site or downstream hydrology/morphology is imperceptible.

Mitigation

Two distinct methods will be employed to manage drainage water within the Proposed Project. The first being 'keeping clean water clean' and the second involving the collection of any drainage waters from works areas and to route them towards stilling ponds prior to controlled diffuse release over vegetated surfaces. The second method relates to proposed design measures that will prevent road surface and other hardstand areas acting as preferential flowpaths. All development site runoff will be collected, attenuated, treated and then released in a diffuse and regular manner that does not significantly change the natural drainage regime/hydrology of the site.

The operational phase drainage system of the Proposed Project will be installed and constructed in conjunction with the road and hardstanding construction work as described below and as shown on the drainage drawings (Appendix 4-5 of the EIAR) submitted with the planning application:

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

These measures will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstands and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, check dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment

7.1.3.3.2 *Runoff Resulting in Contamination of Surface Waters*

During the operational phase of the Proposed Project, 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 and hardstand areas. 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 and fish stocks of downstream water bodies. Potential effects could be significant if not mitigated against.

During such maintenance works there is a small risk associated with 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 Proposed Wind Farm site and no maintenance works will be required along the Proposed Grid Connection Route.

Mitigation

- Mitigation measures for sediment control are the same as those outlined above for the construction phase.
- Mitigation measures for control of hydrocarbons during maintenance works are similar to outlined above for construction phase.

7.1.3.4 Decommissioning Phase

Decommissioning is fully described within the Decommissioning Plan (Appendix 4-6) and Chapter 4 of this EIAR. There will be no additional habitat loss associated with the decommissioning of the Proposed Project and therefore there will be no significant effects in this regard.

The wind turbines proposed as part of the Proposed 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 Project may be decommissioned fully.

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

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

Site roadways could be in use for purposes other than the operation of the development by the time the decommissioning of the Proposed Project is to be considered, and therefore it may be more appropriate to leave the site roads in situ for future use. It is envisaged that the roads will provide a

useful means of extracting the commercial forestry crop which exists on the site. If it were to be confirmed that the roads were not required in the future for any other useful purpose, they could be removed where required.

The electrical cabling connecting the Proposed Project to the national grid in the townland of Laughil will be removed from the underground cable ducting at the end of the useful life of the Proposed Project. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible.

A Decommissioning Plan has been prepared (Appendix 4-6) the detail of which will be agreed with the local authority prior to any decommissioning. The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time.

As noted in the Scottish Natural Heritage report (SNH) *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the 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 same mitigation to prevent significant impacts on water quality and associated aquatic fauna and other terrestrial fauna during construction will be applicable to the decommissioning phase. It can be concluded that following the implementation of preventative mitigation, there is no potential for the decommissioning of the Proposed Project to result in deterioration of water quality or adverse effects on any European Site.

7.1.4 Best Practice to prevent the Spread of Invasive Species

Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*) were recorded at a number of locations within the Site. During construction there is potential for disturbance of and possible spread of these species to nearby/downstream European Sites where it occurs within the construction footprint of the Proposed Project. A site specific Invasive Species Management Plan (ISMP) has been prepared by MKO for the treatment of Rhododendron and Cherry Laurel within the construction footprint of the Proposed Project and can be found in Appendix 4.

A full description of mitigations can be found within the ISMP. A brief summary of mitigations is presented below:

Prior to the commencement of any works, the following site setup procedures will be carried out:

- A pre-commencement survey for Rhododendron and cherry laurel will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within and immediately adjacent to the Proposed Project footprint and to determine whether there have been any changes in the extent of the infestation since the undertaking of the most recent surveys in January 2024.
- The locations and extent of Rhododendron and cherry laurel within the footprint will be clearly marked out before removal.

Prior to the commencement of construction works, all Rhododendron and cherry laurel within the works footprint will be removed following the methodology outlined below for seedlings, medium and large stands. Medium plant stands are those with no flower head present or visible, thin stems, and that cannot be removed by hand, or where the root cannot be fully removed from the ground. Large plants are those with trunk like stems that exceed 5cm in width.

- All seedlings within and adjacent to(within 3 metres) the Proposed Project footprint will be removed by hand or with a hand tool to fully remove the plant root from the ground. This can occur at any time of the year as they will not produce flowers and seeds at this early stage of growth.
- For medium and large stands, the tree/plant will be cut as close to the ground as possible. Cutting of any foliage will not occur within bird nesting season (March 1st to August 31st) in accordance with the Wildlife Act (as amended).
- The cut material will be stacked and stored on site to dry, used as firewood or mulched as this plant material is deemed inert and can be used for landscaping as natural weed barriers or other horticultural purposes. Cut material will be stacked away from the cut stumps or other plants.
- The remaining root/stump will be removed from the ground using hand tool or an excavator.
- The root/stump will be placed on an impermeable surface such as palettes or a radon barrier membrane and left to dry out.

Medium and large stands of Rhododendron and cherry laurel that are located adjacent to (within 3 metres)the Proposed Project footprint but do not require removal before the commencement of construction works will be treated using herbicide methods, as outlined below.

- Medium sized plants (stem diameter of >20mm) will be sliced at the mid-section of the stem at a 45-degree angle and treated with a herbicide immediately after being cut. Given the wet nature of the site, it is recommended that a Glyphosate-based herbicide suitable for use near watercourses be applied as a spot treatment to each individual plant to avoid contamination by spray drift to the surrounding environment and native plant species.
- For large plants (>100mm, it is recommended to treat in-situ by manually removing the upper parts of the plant and apply the Ecoplug method (www.landscapedepot.ie) as to avoid spray drift

and to minimise the potential for spraying of non-target species. The Ecoplug method is outlined below.

- The tree/plant will be cut as close to the ground as possible. Cutting of any foliage will not occur within bird nesting season (March 1st to August 31st) in accordance with the Wildlife Act (as amended).
- The cut material can be stacked and stored on site to dry out, used as firewood or mulched as this plant material is deemed inert and can be used for landscaping as natural weed barriers or other horticultural purposes. The cut material will not be stacked on the cut stems.
- A 30mm deep hole, and 13mm wide will be drilled into the remaining stump and the Ecoplug will be inserted into the hole until it is flush with the top of the stump.

Post implementation of mitigation measures no significant effect on biodiversity is anticipated as a result of the presence of Rhododendron or Cherry Laurel.

8. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

Based on the above, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effect 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 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. A definition of Favourable Conservation Status is provided below:

> *'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.

9. ASSESSMENT OF CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination 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 past and future plans and projects, their activities and their predicted environmental effects. A list of the plans and projects considered is provided in Appendix 5.

Assessment material for this in-combination impact assessment was compiled on the relevant developments within the vicinity of the Proposed Project and was verified on the 14/06/2024. The material 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 were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g. individual EISs/EIARs, layouts, drawings etc.) for all relevant projects where available. The plans and projects considered include those listed in Appendix 5.

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

Following the detailed assessment provided in the preceding sections, it is concluded that, the Proposed Project will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own. There is therefore no potential for the Proposed Project to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

In the review of the projects (included in Appendix 5) that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Project.

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

10. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

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

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

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