APPENDIX 8

CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN

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1. INTRODUCTION

This Construction and Environmental Management Plan (CEMP) has been prepared by MKO on behalf of the Applicant, SSE Renewables (Ireland) Ltd. who intend to apply to An Coimisiún Pleanála (ACP) for planning permission to remove the existing 23 no. turbines on the Dunneill (13 no. turbines) and Kingsmountain (10 no. turbines) Wind Farm sites, replace them with 17 no. wind turbines across both existing wind farm sites and additional greenfield sites in the townlands of Crowagh or Dunneill Mountain, Tawnadremira, and Ballyglass, Doonbeakin, Dunowla, Kingsmountain and Ballygreighan Barr in Co. Sligo. The proposed renewable energy development will make use of existing cable connections from the Dunneill and Kingsmountain Wind Farms to the existing Cunghill 110kV substation and a new underground cable connection from a proposed new onsite 110kV substation to the existing Srananagh 220kV substation to connect to the National Grid.

As detailed in Section 1.1.1 in Chapter 1, for the purposes of this EIAR, the following references are used: 'Proposed Project', 'Proposed Wind Farm', 'Proposed Turbines', 'Proposed Grid Connection Route', 'Existing Wind Farm', 'Existing Grid Connection', 'the Site' and 'Proposed Wind Farm'. Please see Section 1.1.1 of this EIAR for further details. A detailed description of the Proposed Project is provided in Chapter 4 (Description of the Proposed Project) of this EIAR.

The CEMP has been prepared in conjunction with the EIAR and the Natura Impact Statement (NIS) which accompany the planning application for the Proposed Project to the competent authority. Should the Proposed Project secure planning permission, the CEMP will be updated, in line with all conditions and obligations which apply to any grant of permission. The CEMP should be read in conjunction with the EIAR, NIS and planning drawings. The CEMP will also require updating by the selected contractor in order to identify, assess and satisfy the contract performance criteria as set out by the various stakeholders. The CEMP, due to its structure and nature will also require constant updating and revision throughout the construction period as set out below. Therefore, this is a working document and will be developed further prior to and during the construction phase of the Proposed Project.

Triggers for amendments to the CEMP will include:

- Response to any specific requirements arising from conditions attached to a grant of planning permission.
- When there is a perceived need to improve performance in an area of environmental impact;
- As a result of changes in environmental legislation applicable and relevant to the Proposed Project;
- Where the outcomes from auditing establish a need for change;
- Where Work Method Statements identify changes to a construction methodology to address high environmental risk; and
- As a result of an incident or complaint occurring that necessitates an amendment.

This CEMP identifies the key planning and environmental considerations that must be adhered to and delivered during site construction. The Contractor, which will be appointed by the Project Developer prior to commencement of construction, will be required to implement all of the requirements set out in this CEMP. The CEMP may be updated and revised throughout the construction phase of the Proposed Project, but all future iterations must meet or exceed the standards and requirements set out in this document and the Project Developer must be satisfied that all requirements set out in this document can and will be implemented in full by the appointed contractor.

The CEMP to be prepared by the appointed contractor will be a single, amalgamated document that can be used during the construction phase of the Proposed Project, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, Developer and Contractors alike. The CEMP may evolve over further iterations as the construction works progress, but at all times must meet or exceed the standards and requirements set

out in this document. It will be the contractor's current version of the CEMP, which at any point in time, will guide the construction activities on site and the implementation of which will be audited by an Ecological Clerk of Works (ECoW).

1.1 Statement of Authority

The Construction and Environmental Management Plan was completed by Brandon Taylor, with input by Edel Mulholland and Muireann Van Nieuwenhove, and reviewed by Ellen Costello and Sean Creedon, all of MKO.

Brandon Taylor is an Environmental Scientist with over three years of private consultancy experience. Brandon holds a BSc (Hons) in Geography from McGill University, and a MSc (Hons) in Coastal & Marine Environments from the University of Galway. Brandon's key skills include scientific research and report writing, particularly in the context of local communities and their interactions with environmental stressors, and geospatial analysis and the application of GIS and remote sensing tools across fields of renewable energy development, coastal zone management and education and scientific communication. Since joining MKO, Brandon has been involved in the design and environmental impact assessment of multiple large-scale onshore wind energy developments across Ireland, contributing to and managing the production of EIA reports.

Edel Mulholland is an Environmental Scientist with MKO with over 1 year experience. Edel holds BA (Hons) in Environmental Science from the University of Galway. Prior to taking up her position with MKO in September 2024, Edel worked as an Environmental Chemistry Analyst with Complete Laboratory Solutions, Co. Galway, where she assisted with water quality analysis. Since joining MKO, Edel has assisted in the submission of several renewable energy developments. Edel's key strengths and areas of expertise are in environmental policy, drafting EIAR chapters, field work and QGIS mapping.

Muireann Van Nieuwenhove is a Graduate Environmental Scientist with MKO. Muireann holds a BA (Hons) in Geography and French and an MA (Hons) in Environment, Society and Development from the University of Galway. Muireann has excellent report writing and research skills. She received an award for her Master's thesis and for placing top of her class. She is experienced in qualitative and quantitative data analysis. Muireann's key strengths and areas of expertise include EIAR drafting and GIS mapping. Within MKO Muireann works as part of a large multi-disciplinary team to produce EIA Reports on the Environmental Renewables team. Since joining MKO Muireann has been involved in several large-scale Renewable Energy Developments.

Ellen Costello is a Senior Environmental Scientist with MKO with over 6 years' experience in private consultancy. Ellen holds a BSc (Hons) in Earth Science, and a MSc (Hons) in Climate Change: Integrated Environmental and Social Science Aspects where she focused her studies on renewable energy development in Europe and its implications on environment and society. Ellen's key strengths and expertise are Environmental Protection and Management, Environmental Impact Statements, Project Management, and GIS Mapping and Modelling. Since joining MKO, Ellen has been involved in a range of renewable energy infrastructure projects. In her role as a senior project manager, Ellen works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments.

This report has been reviewed by Sean Creedon (B.Sc., M.Sc.). Sean has 23 years' experience in planning and environmental impact elements within all stages of wind farm project delivery.

1.2 Scope of the Construction and Environmental Management Plan

This CEMP is presented as a guidance document for the construction of the Proposed Project which will comprise the construction of 17 no. new turbines and all associated works. The Proposed Project includes for an onsite 110kV substation and the Proposed Grid Connection Route, connecting the onsite 110kV substation to the existing Srananagh 220kV substation in the townland of Ballysumaghan, Co. Sligo via 110kV underground electrical cabling. In addition, the CEMP includes details on the removal of the existing 23 no. turbines which will occur during the construction phase.

The Proposed Project is located within the EIAR Site Boundary or the 'Site' which measures approximately 1,546 hectares (ha). The Proposed Project layout is illustrated on Figure 2-2 below.

A detailed description of the Proposed Project is provided in Chapter 4 of the EIAR.

This CEMP is divided into ten sections, as outlined below.

Section 1 provides a brief introduction as to the scope of the report.

Section 2 outlines the Site and Proposed Project details, detailing the targets and objectives of this plan along with providing an overview of construction methodologies and management practices that will be adopted throughout the Proposed Project.

Section 3 sets out details of the environmental controls to be implemented on site. Site drainage principles, traffic management, dust control, invasive species management and a waste management plan are also included in this section.

Section 4 sets out a fully detailed implementation plan for the environmental management of the Proposed Project outlining the roles and responsibilities of the project team.

Section 5 outlines the general Health and Safety measures that will be implemented on site during the construction phase of the Proposed Project.

Section 6 outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

Section 7 consists of a summary table of all mitigation proposals to be adhered to during the Proposed Project, categorised into three separate headings, 1) pre-commencement measures; 2) construction-phase measures.

Section 8 consists of a summary table of all monitoring requirements and proposals to be adhered to during the Proposed Project, categorised into three separate headings, 1) pre-commencement measures; 2) construction-phase measures.

Section 9 sets out a programme for the timing of the works.

Section 10 outlines the proposals for reviewing compliance with the provisions of this report.

1.3 Targets and Objectives

The following key targets and objectives will inform the final detailed design should the Proposed Project secure planning permission and proceed to the construction phase. This includes consideration of the buildability of the designs that emerge:

- Ensure construction works and activities are completed in accordance with mitigation and best practice approach presented in the EIAR, NIS and associated planning documentation;
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community;
- Ensure construction works and activities have minimal impact on the natural environment;
- Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible; and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows:

- Using recycled materials, if possible, e.g. excavated stone and overburden;
- Ensure sustainable sources for materials supply where possible;
- Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and having emergency measures in place;
- Avoidance of vandalism;
- Keeping all watercourses free from obstruction and debris;
- Correct implementation of the sustainable drainage system (SuDS) drainage design principles;
- Keep impact of construction to a minimum on the local environment, watercourses, and wildlife;
- Correct fuel storage and refuelling procedures to be followed;
- Good waste management and house-keeping to be implemented;
- Air and noise pollution prevention to be implemented;
- Monitoring of the works and any adverse effects that it may have on the environment. Construction Methods and designs will be altered where it is found there is an adverse effect on the environment;
- Comply with all relevant water quality legislation listed throughout this document; and,
- Ensure a properly designed, constructed and maintained drainage system appropriate to the requirements of the Site is kept in place at all times.

2. SITE AND PROPOSED PROJECT DETAILS

2.1 Site Location

The Proposed Wind Farm is located on the northwest slopes of the Ox Mountains, located approx. 4.5km south of the village of Dromore West, and approx. 3km southwest of the village of Templeboy in Co. Sligo, at their nearest points. The Proposed Wind Farm is accessed via the L6309 and L2702 Local Roads off the N59 National Road, travelling in an east-west direction north of the Site and the N17 National Road, which runs in a north-south direction to the southeast of the Site. The current entrance to the Existing Wind Farm is proposed as the main site entrance, utilising the existing access roads and infrastructure. Upgrades to additional existing site entrances along the L6309 and L2702 Local Roads and the provision of a new site entrance on the L2702 are proposed to access the adjoining lands.

The Existing Wind Farm is shown in Figure 2-1. The EIAR Site Location Context is shown in Figure 2-2. For clarity, the planning application boundary, i.e., the area in which the Applicant is applying for planning permission, is shown on Figure 2-3.

The export capacity of the Proposed Project will be split across the Existing Grid Connection to Cunghill 110kV substation and the Proposed Grid Connection Route to the existing Srananagh 220kV substation. The Proposed Grid Connection Route encompasses underground 110kV electrical cabling from the proposed onsite 110kV substation to the existing Srananagh 220kV substation in the townland of Ballysumaghan, Co. Sligo to facilitate the Proposed Project connection to the national grid. The Proposed Grid Connection Route to the existing Srananagh 220kV substation, measuring approximately 41.6km in length, is primarily located within the public road corridor with approx. 130m located within the Proposed Wind Farm.

The Site measures approximately 1,546ha and primarily comprises peat bog, with coniferous forest to the north-west, east and south of the Site. South of the Proposed Wind Farm comprises largely of transitional wood scrub, while land-cover in the northern end of the Site comprises largely of pastoral agriculture and low-density residential.

In addition to the Existing Wind Farm, current land-use on the Proposed Wind Farm is predominantly comprised of peat/turf cutting, commercial forestry, and pastoral agriculture. Current land-use along the Proposed Grid Connection Route comprise public road corridor, pastures, low density residential, industry, commercial forestry and land principally used for agriculture with significant areas of natural vegetation. Land-use on the wider landscape comprises a mix of pastoral agriculture, peatlands, low-density residential, and small-scale commercial properties.

A full and detailed description of the Proposed Project (i.e. the Proposed Wind Farm and the Proposed Grid Connection Route) for the purposes of the planning application and the additional elements that form part of the overall project, assessed in the EIAR, is contained in Chapter 4 of the EIAR. The townlands in which the Proposed Project is located are listed in Table 1-1 in Chapter 1: Introduction of the EIAR.

544000
546000
548000
830000
828000
826000
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0
1
2 km
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Microsoft, Vantor

Map Legend

- EIAR Site Boundary
- Existing Kingsmountain Footprint
- Existing Dunneil Footprint

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

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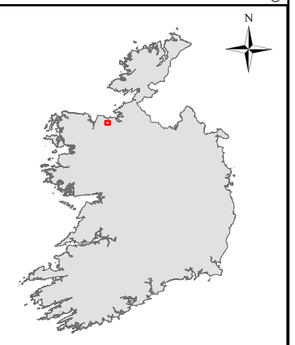

SITE LOCATION - NOT TO SCALE

Drawing Title
Existing Wind Farm Layout

Project Title
Crumhach Wind Farm,
Co. Sligo

Project No.	Drawing No.	Scale
230841	2-1	1:20,000
Drawn By	Checked By	Date
MVN	BT	30/06/2026

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

544000
552000
560000
568000
840000
832000
824000
N
Sligo
Dromore West
Ardboline
Horse Island
Raghly
Drumcliff Bay
Drumcliff
Glencar Lo
Black Rock
Rosses Point
Sligo Bay
Strandhill
Culleenamore
Hazelwood
Ballysadare Bay
Slishwo
Dromore West
County Sligo
Ballysadare
Ballygawley
Collooney
Coolaney
Arrow River
Ballynacarrow
Riverstown
Easky Lough
WAW
N59
N15
N16
N4
N17
0
5
10 km
Map Legend
EIAR Site Boundary
Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator
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SITE LOCATION - NOT TO SCALE
Drawing Title
EIAR Site Location Context
Project Title
Crumhach Wind Farm, Co. Sligo
Project No. 230841
Drawing No. 2-2
Scale 1:100,000
Drawn By MVN
Checked By BT
Date 04/08/2026
Email: info@mkoireland.ie/ Website: www.mkoireland.ie

545000 550000 555000 560000 565000

840000 835000 830000 825000 820000

N

RAGHLY

DRUMCLIFF SOUTH

ROSSES POINT

BALLYWEELIN

BALLINCAR

Coney Island

CARTRON (CARBURY BY)

KNAPPAGH MORE

BALLYDOOGAN

SLIGO

CALTRAGH (CARBURY BY)

TON

TULLYNAGE NORT

AU

st

R297

DROMORE

N59

R292

BREEOGUE

KILMACOWEN

KNOCKMULDONEY

R284

KILBOGLASHY

BA

COLLOONEY

COOLANEY

SHANCOUGH (LEYNY BY)

N4

Toberscanavan Loughs

Easky Lough

BALLYNABOLL

BALLINACARROW

CARRICKBANAGHER

0 4 8 km

Map Legend

Red Line Boundary

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

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N

SITE LOCATION - NOT TO SCALE

Drawing Title
Planning Application Boundary

Project Title
Crumhach Wind Farm, Co. Sligo

Project No.	Drawing No.	Scale
230841	2-3	1:85,000
Drawn By	Checked By	Date
MVN	BT	30/07/2026

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

2.2 Description of the Proposed Project

The Proposed Wind Farm will comprise the removal of the existing 23 no. turbines and the construction of 17 no. turbines with a maximum blade tip of 180m, and all associated works. A detailed description of the Proposed Project is provided in Chapter 4 (Description of the Proposed Project) of this EIAR.

Figure 2-4 illustrates the overall layout of the Proposed Project (i.e. the Proposed Wind Farm and Proposed Grid Connection Route together). The Proposed Wind Farm layout is shown in Figure 2-5.

Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to Chapter 4 of the EIAR.

544000
552000
560000
568000
840000
832000
824000

N

Dromore
R297
DROMORE
RAGHLY
CARNEY
DRUMCLIFF SOUTH
Coney Island
LAR
Cluain Carn
N59
R2
KILMACOWEN
KILMULDONEY
KILBOGLASH
BALLYGAWLEY
R284
N4
Castle Dargan
Toberscanavan Loughs
BANAGHER
RIVERSTOWN
Lough Gill
Easky Lough

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17

0 5 10 km

Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Turbine Hardstands
- Proposed Blade Storage Set Down Area
- Proposed Decommissioned Turbine Laydown Area
- Proposed New Roads
- Proposed Upgrades to Existing Roads
- Proposed Upgrades to Public Road
- Proposed Permanent LiDAR Locations
- Proposed Peat and Spoil Management Areas
- Proposed Borrow Pits
- Proposed Onsite 110kV Substation
- Proposed Temporary Construction Compound
- Proposed Temporary Turbine Delivery Overrun Areas
- Proposed Grid Connection Route Access Track
- Proposed Enhancement Area
- Proposed Grid Connection Route

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SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Project Layout

Project Title

Crumhach Wind Farm, Co. Sligo

Project No.	Drawing No.	Scale
230841	2-4	1:100,000
Drawn By	Checked By	Date
MVN	BT	30/06/2026

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

544000
546000
548000
830000
828000
826000
N
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15
T16
T17
0
1
2 km
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Microsoft, Vantor

Map Legend

- EIAR Site Boundary
- Proposed Turbines
- Proposed Turbine Foundations
- Proposed Turbine Hardstands
- Proposed Blade Storage Set Down Area
- Proposed Decommissioned Turbine Laydown Area
- Proposed New Roads
- Proposed Upgrades to Existing Roads
- Proposed Upgrades to Public Road
- Proposed Permanent LiDAR Locations
- Proposed Peat and Spoil Management Areas
- Proposed Borrow Pits
- Proposed Temporary Construction Compound
- Proposed Onsite 110kV Substation
- Proposed Temporary Turbine Delivery Overrun Areas
- Proposed Grid Connection Route Access Track
- Proposed Enhancement Area
- Proposed Grid Connection Route

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N

SITE LOCATION - NOT TO SCALE

Drawing Title
Proposed Wind Farm

Project Title
Crumhach Wind Farm, Co. Sligo

Project No.	Drawing No.	Scale
230841	2-5	1:20,000
Drawn By	Checked By	Date
MVN	BT	30/06/2026

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

2.3 Construction Management Practices Overview

2.3.1 Introduction

An experienced principal contractor will be appointed for the civil works for the construction phase of the Proposed Project. The appointed contractor for the works will be required to comply with this CEMP and any revisions made to this document in the preparation of method statements for the various elements of the construction phase of the Proposed Project. An overview of the proposed Construction Management Practices is provided below.

2.3.2 Overview of Proposed Construction Management Practices

The EIAR includes construction methodologies and management practices for various elements of work to be undertaken as part of the Proposed Project. Detailed construction methodologies are reproduced in the relevant sub-sections but will be superseded by an appointed contractor's construction method statements, which will form part of the CEMP. The following sections also outline the construction and environmental management practices to be deployed during the construction phase. The contractor's construction method statements will be prepared to take account of the detailed engineering, geotechnical and detailed drainage design which will be prepared prior to commencement of construction and all requirements of this CEMP.

Existing Wind Farm

- Removal of the Existing Turbines and Met Mast
- Removal of Existing 20kV Electrical Cabling

Proposed Wind Farm

- Enabling Works
- Keyhole Forestry Felling
- Turbine Foundations
- Turbine Hardstanding Areas;
- Site Access Tracks and Hardstand Areas;
    - Upgrading of Existing Access Track (Type A and B)
    - Construction of New Excavated Roads through Peat (Type C)
    - Construction of New Floated Track over Peat (Type D)
- Clear-Span Watercourse Crossing;
- Culvert Crossing;
- Onsite Electricity Substation and Control Buildings;
- Underground Electrical (20/33kV) and Communication Cabling;
- Temporary Construction Compounds;
- Borrow Pits;
- Peat and Spoil Management Areas

Proposed Grid Connection Route

- Underground Electrical (110kV) and Communication Cabling;
- Watercourse/ Built Service Crossings;
- Joint Bays

2.3.3 Existing Wind Farm

2.3.3.1 Removal of Existing Turbines and Met Mast

The existing 23 no. turbines onsite and existing met mast will be removed from the Site in advance of the Proposed Turbines being transported to site. The turbines will be disassembled in reverse order to how they were initially constructed i.e. blades will be removed from the nacelle, the nacelle will then be removed from the top of the tower, and the tower sections will then be removed. A crane will be used to remove the blades from the hub. The blades will then be decommissioned following the methodology set out below:

Removal of the Existing Turbines:

- Cranes will be used to remove the blades from the hub;
- Blades will be dismantled and removed from site;
- Technicians will remove root rings and any other associated metal for recycling;
- The construction crew will ensure that there are no contaminants present (e.g. oils, brake dust, grease rubber hoses);

Prior to decommissioning, all available options for blade management will be assessed in terms of circularity. Assessed options will include blade reuse, blade repurposing, blade recycling and energy from waste (EfW).

Removal of the Existing Met Mast

- Establish safe working area around mast.
- Climb mast and remove instruments and logger box.
- On one side of the mast, transfer guy ropes from ground anchors to excavator.
- Cut guy rope attached to excavator to allow mast to fall.
- Excavate mast anchors and anchor bases making good the ground.
- Dismantle and remove mast components and accessories from site using trailer

2.3.3.2 Removal of Existing Onsite 20kV Electrical Cabling

Removal of the existing 20kV onsite electrical cabling will be dependent on how the cabling was placed during the construction of the Existing Wind Farm. There will be two standard approaches to this based on the two methods of cable laying employed on the Existing Wind Farm:

- Where the cables have been direct buried in peat soils, they will be cut and left in situ;
- Where the cables have been ducted, the cable will be cut at both ends and pulled from the cable duct.

The 2 no. options above have been determined to be the most environmentally prudent methods to deal with the removal of the onsite electrical cabling. It is noted that, where onsite electrical cables facilitating the connection of the Proposed Wind Farm follow the same route as the Existing Wind Farm cables, these existing cables will be removed once safe to do so.

2.3.4 Proposed Wind Farm

Enabling Works:

Enabling works to facilitate the construction of the Proposed Wind Farm include the following:

- The temporary construction compounds will be established;
- Vegetation and scrub clearance along with some levelling works will be carried out at the turbine hardstand areas and access roads as necessary;
- Improvements to existing roads

2.3.4.2 Keyhole Forestry Felling

The proposed methodology for the forestry felling activities is as follows:

Felling works will conform to current best practice Forest Service policies and strategic guidance documents as well as Coillte produced guidance documents, specific guidelines listed below, to ensure that the felling works provides minimal potential impacts to the receiving environment.

- '*Standards for Felling and Reforestation'* (Department of Agriculture, Food and the Marine, 2019)
- '*Forest Operations & Water Protection Guidelines'* (Coillte, 2009)
- '*Methodology for Clear Felling Harvesting Operations'* (Coillte, 2009)
- '*Forestry and Water Quality Guidelines'* (Forest Service, 2000)
- '*Forestry Biodiversity Guidelines'* (Forest Service, 2000)
- '*Forestry Protection Guidelines'* (Forest Service, 2002)
- '*Forestry Harvesting and Environmental Guidelines'* (Forest Service, 2000)

The proposed methodology for the forestry felling activities is as follows:

- The extent of all necessary forestry felling areas will be identified and demarcated with markings on the ground in advance of any felling commencing.
- All roads and culverts will be inspected by the ECoW and contractor prior to any machinery being brought on site to commence the felling operation.
- Existing drains that drain an area to be felled towards surface watercourses will be blocked, and temporary silt/sediment traps (i.e. check dam / silt fence) will be constructed to ensure collection of all silt within felling areas. These temporary silt traps will be cleaned out and backfilled once felling works are complete. This ensures there is no residual collected silt remaining in blocked drains after felling works are completed.
- New collector drains and sediment traps will be installed during ground preparation to intercept water upgradient of felling areas and divert it away. Collector drains will be excavated at an acute angle to the contour (0.3%-3% gradient), to minimise flow velocities.
- 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 removed from traps will be carefully disposed of in the peat repository areas.
- Machine combinations (i.e. hand-held or mechanical) will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance; however, the general proposed machine combination will comprise a harvester and a low-ground pressure harvester with a 14-tonne bunk capacity.
- Trees will be cut manually inside the 50m construction watercourse buffer and using machinery to extract whole trees only;
- Brash mats will be put in place 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.
- No tracking of vehicles through watercourses will occur. Vehicles will only use existing road infrastructure and established watercourse crossings.

- Brash which has not been pushed into the soil may be moved to facilitate the creation of mats elsewhere within the site.
- Extraction routes, and hence brash mats, will be aligned parallel to the ground contours where possible.
- Harvested timber will be stacked in dry areas, and outside any 50-metre watercourse buffer zone prior to removal off site to authorised sawmills.

2.3.4.3 Turbine Foundations

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground level. The size of the foundation will be dictated by the turbine manufacturer, and the final turbine selection will be the subject of a competitive tender process. Different turbine manufacturers use different shaped turbines foundations, ranging from circular to hexagonal and square, depending on the requirements of the final turbine supplier. The turbine foundation transmits any load on the wind turbine into the ground. The maximum horizontal and vertical extent of the turbine foundation will be 25m and 4m respectively, which has been assessed in the EIAR.

After the foundation level of each turbine has been formed using piling methods or on competent strata (i.e. bedrock or subsoil of sufficient load bearing capacity), the "Anchor Cage" is levelled, and reinforcing steel is then built up around and through the anchor cage. The outside of the foundation is shuttered with demountable formwork to allow the pouring of concrete and is backfilled accordingly with appropriate granular fill to finished surface level following completion of the foundation.

It is anticipated that the formation level of the turbine foundations will be on the lower mineral subsoil or bedrock. They will be formed at a suitable level directed by the Geotechnical Engineer/Designer. The foundations will be constructed as follows:

1. *The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter;*
2. *Where practical, the soil will be stripped over the area of the excavation and stored locally for reuse, the subsoil will be excavated and stored to one side for reuse during the landscaping around the finished turbine;*
3. *No material will be removed from the Proposed Wind Farm with excavated peat and spoil being transported to the identified peat and spoil management areas within the Site.*
4. *All groundwater and surface water arising from turbine base excavation will be pumped to the dirty water system prior to discharge from the works area;*
5. *Soil excavation shall be observed by a qualified archaeologist in accordance with a scheme of archaeological monitoring to identify any significant remains as they come to light;*
6. *The foundations excavation will be raised to formation level by compacted layers of well graded granular material will be spread and compacted to provide a hard area for the turbine foundation.*

Standard excavated reinforced concrete bases will be completed as follows:

1. *A layer of lean-mix blinding will be laid approximately 75mm thick directly on top of the newly exposed formation, tamped and finished with a screed board to leave a flat level surface. The concrete should be protected from rainfall during curing and all surface water runoff from the curing concrete should be prevented from entering surface water drainage directly;*
2. *High tensile steel reinforcement will be fixed around the anchor cage in accordance with the designer's drawings & schedules. The foundation anchorage system will be installed, levelled and secured to the blinding using steel box section stools;*
3. *Ductwork will be installed as required, and formwork erected around the steel cage and propped from the backside as required;*

4. *The foundation anchorage system will be checked both for level and line prior to the concrete being installed in the base. These checks will be passed to turbine manufacturer for their approval;*
5. *Concrete will be placed using a concrete pump and compacted when in the forms using vibrating pokers to the levels and profile indicated on the drawings. Upon completion of the concreting works the foundation base will be covered and allowed to cure;*
6. *Steel shutters will be used to pour the circular chimney section;*
7. *Earth wires and drainage pipes will be placed around the base;*
8. *The foundation will be backfilled with a cohesive material, where possible using the material arising during the excavation or imported material and landscaped using the soil set aside during the excavation; and.*
9. *No excavated material will be removed from the Proposed Wind Farm with excavated peat and spoil being transported to the identified peat and spoil management areas within the Site.*

Reinforced concrete piled foundations will be completed as follows:

1. *The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter;*
2. *No excavated material will be removed from the Proposed Wind Farm with excavated peat and spoil being transported to the identified peat and spoil management areas within the Site.*
3. *A piling platform for the piling rig will be constructed by excavating to a suitable intermediate mineral subsoil and backfilling to formation level by compacted layers of well graded granular material spread and compacted to provide a hard area for the piling rig;*
4. *The piling rig, fitted with an auger, will then bore through the soft material with a sleeve fitted around the auger to prevent the sidewalls of the soil and overburden from collapsing. The borehole is then extended to a suitable depth into the subsoil/bedrock.*
5. *When the auger and the sleeve are removed high tensile steel cages will be lowered into the boreholes. These steel cages will extrude above the level of the top of the concrete pile.*
6. *As the auger is removed concrete is pumped into the borehole.*
7. *Reinforcing steel on the top of the pile will tie to the foundation base steel.*
8. *The procedure for standard excavated reinforced concrete bases as outlined above can be applied form here.*

2.3.4.4 Turbine Hardstanding Areas

Hard standing areas consisting of levelled and compacted hardcore are required around each turbine base to facilitate access, turbine assembly and turbine erection. The hard-standing areas are used to accommodate cranes used in the assembly and erection of the turbine, offloading and storage of turbine components, and provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations once the turbine foundation is in place. All crane hardstand areas will be designed taking account of the loadings provided by the turbine manufacturer and will consist of a compacted stone structure. The main body of the crane hardstands (i.e not including the blade fingers and turbine foundation) will be constructed in a similar manner to the excavated site roads. The main body of the crane hardstand area will measure approximately 35m x 55m.

The precise sizes, arrangement and positioning of hard standing areas are dictated by turbine suppliers. The proposed hard standing areas are illustrated in the detailed drawings included in Appendix 4-1 of the EIAR. The extent of the required areas at each turbine location may be optimised on-site depending on topography, position of the site access road, the proposed turbine position and the turbine supplier's exact requirements.

2.3.4.5 Site Access Tracks

To facilitate travel within the Site and to connect the various project components together, existing onsite tracks will need to be upgraded. The Proposed Project makes use of the existing track network insofar as possible.

Upgrade of Existing Access Tracks - Type A and B

Existing access tracks will require upgrading which will comprise widening of the roadway to a total running width of approximately five metres, with wider sections at corners and the laying of a new surface dressing on the existing section of roadway where necessary.

The general construction methodology for upgrading of existing sections of access tracks is summarised below.

1. *Access track construction will be to the line and level requirements as per design and the turbine suppliers requirements*
2. *For upgrading of existing excavated access tracks (Type A) the following guidelines will be implemented in full :*
    a. *Excavation of the widened section of access track will take place to a competent stratum beneath the peat (as agreed with the designer) and backfilled with suitable granular fill.*
    b. *Benching of the excavation may be required between the existing section of access track and the widened section of access track where the depth of excavation required exceeds 500mm.*
    c. *The surface of the existing access track will be overlaid with up to 150mm of selected granular fill.*
    d. *Access tracks will be finished with a layer of capping across the full width of the track.*
    e. *A layer of geogrid/geotextile may be required at the surface of the existing access track and at the base of the widened section of access road (to be confirmed by the designer).*
    f. *For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability.*
    g. *A section of upgraded road runs adjacent to Borrow Pit 1. At this location a 1m high safety berm will be constructed between the road and the borrow pit excavation.*

3. *For upgrading of existing access tracks constructed using a floated construction technique (Type B) the following will apply:*
    a. *Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than 2m.*
    b. *Construction of road will be in accordance with appropriate design from the designer.*
    c. *The surface of the existing access track should be graded/tidied up prior to the placement any geogrid/geotextile, where necessary (to prevent damaging the geogrid/geotextile).*
    d. *Where granular fill has been used in the existing access track make-up, a layer of geogrid should be placed on top of the existing access track, extending to the full width of the proposed road.*
    e. *The geogrid will be overlaid with an average of 800mm of selected granular fill on the widened sections of the floating access road.*

f. *Additional geogrid and granular fill may be required in certain sections of the works, such as where excessive rutting is noted in the existing track (to be confirmed by the designer).*
g. *Stone delivered to the floating road construction will be end-tipped onto the constructed floating road. Direct tipping of stone onto the peat will not be carried out.*
h. *To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road will be tipped over at least a 10m length of constructed floating road.*
i. *Following the detailed design of the floated access roads it may be deemed necessary to include pressure berms either side of the access road in some of the deeper peat areas. The inclusion of a 2 to 5m wide pressure berm (typically 0.5m in height) either side of the access road will reduce the likelihood of potential bearing failures beneath the access road.*
j. *Following end-tipping suitable machinery will be employed to spread and place the tipped stone over the base geogrid along the line of the road.*

4. *The finished access trackwidth will have a running width of 5m, with wider sections on bends and corners.*
5. *On side long sloping ground any access track widening works required will be done on the upslope side of the existing access track, where possible.*
6. *A final surface layer shall be placed over the existing access track, as per design requirements, to provide a road profile and graded to accommodate wind turbine construction and delivery traffic.*
7. *At transitions between new floating and existing excavated roads a length of about 10 to 20m will have all peat excavated and replaced with suitable fill. The surface of this fill will be graded to accommodate wind turbine construction and delivery traffic.*
8. *The construction of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site Manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.*

Construction of New Excavated Roads through Peat – Type C

The construction methodology for new excavated roads through peat is outlined as follows:

1. *Prior to commencing the construction of the excavated access tracks movement monitoring posts will be installed in areas where the peat depth is greater than 2.0m. and in areas identified within the peat stability risk assessment (see Appendix 8-1 Geotechnical & Peat Stability Assessment) as requiring monitoring.*
2. *Interceptor drains will be installed upslope of the access track alignment to divert any surface water away from the construction area.*
3. *Excavation of access tracks shall be to the line and level given in the design requirements. Excavation will take place to a competent stratum beneath the peat.*
4. *Access track construction will be carried out in sections of 20m lengths i.e., no more than 20m of access track will be excavated without replacement with stone fill. This length will be reduced to 5m in areas identified within the peat stability risk assessments.*
5. *Excavation of materials with respect to control of peat stability:*
    a. *Where Acrotelm (to about 0.3 to 0.4m of peat) is required for landscaping, it will be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping will be undertaken prior to main excavations.*
    b. *Where possible, the acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation.*

c. *All catotelm peat (peat below about 0.3 to 0.4m depth) will be transported immediately on excavation, where possible, to the designated placement areas.*

6. *Once excavated, non-catotelm peat will be temporarily stored in localised areas adjacent to excavations for roads and hardstands before being placed into the permanent peat storage areas within the borrow pits, in the designated peat and spoil management areas, or reused for landscaping purposes. All peat and spoil management areas will be inspected by the Project Geotechnical Engineer before material is stored in the area. No material is to be sidecast or stored on the in-situ peat on the downslope side of the access roads.*
7. *Excavation side slopes in peat will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction. Where areas of weaker peat are encountered then slacker slopes will be required. Battering of the side slopes of the excavations will be carried out as the excavation progresses*
8. *End-tipping of stone onto the road during the construction/upgrading of the access road will be carefully monitored to ensure that excessive impact loading, which may adversely affect the adjacent peat, is limited.*
9. *The new excavated access road will be constructed with an average of 500mm of selected granular fill. Granular fill will be placed and compacted in layers in accordance with the TII Specification for Road Works.*
10. *Access roads will be finished with a layer of capping across the full width of the road.*
11. *A layer of geogrid/geotextile may be required at the surface of the competent stratum where cohesive material is present to prevent mixing of the underlying material with the granular fill.*
12. *At transitions between floating and excavated roads a length of road of about 10m will have all peat excavated and replaced with suitable fill. The surface of this fill will be graded so that the road surface transitions smoothly from floating to excavated road.*
13. *Where slopes of greater than 5 degrees are encountered along with relatively deep peat (i.e., greater than 2m) and where it is proposed to construct the access road perpendicular to the slope contours it is best practice to start construction at the bottom of the slope and work towards the top, where possible. This method avoids any unnecessary loading to the adjacent peat and greatly reduces any risk of peat instability.*
14. *Where the above is not possible, a specific Risk Assessment Method Statement (RAMS) from the contractor will be produced, detailing how the downslope works will be undertaken, including that all plant would operate from the already constructed section of track, with no loading of the peat on the downslope slope and limiting the length of ground to be stripped/excavated at any one time. Movement monitoring posts (as described in the Peat & Spoil Management Plan, Section 8.1) will also be installed downslope of the works area to allow for ongoing monitoring during the construction works.*
15. *A final surface layer will be placed over the excavated road and graded to accommodate wind turbine construction and delivery traffic.*
16. *The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following trafficking by heavy vehicular loads.*

Construction of New Floated Track over Peat – Type D

The construction methodology for the proposed new floating access tracks is outlined as follows:

1. *Prior to commencing floating access track construction movement monitoring posts will be installed in areas where the peat depth is greater than 2m and will be placed at 10m intervals along these sections.*
2. *Base geogrid will be laid directly onto the existing peat surface along the line of the access track in accordance with geogrid provider's requirements.*

3. *Construction of access track will be in accordance with appropriate design from the designer.*
4. *The make-up of the new floated access track is up to 1,000mm of selected granular fill with 2 no. layers of geogrid with possibly the inclusion of a geotextile separator*
5. *Granular fill will be placed and compacted in layers in accordance with the TII Specification for Road Works.*
6. *Following the detailed design of the floated access tracks it may be deemed necessary to include pressure berms either side of the access track in some of the deeper peat areas. The inclusion of a 2 to 5m wide pressure berm (typically 0.5m in height) either side of the access track will reduce the likelihood of potential bearing failures beneath the access track*
7. *The finished access track running width will be 5m, with wider sections on bends and corners.*
8. *Stone delivered to the floating access track construction will be end-tipped onto the constructed floating access track. Direct tipping of stone onto the peat will be avoided.*
9. *To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating access track will be tipped over at least a 10m length of constructed floating access track.*
10. *Where it is not possible to end-tip over a 10m length of constructed floating access track then dumpers delivering stone to the floating access track will carry a reduced stone load (not greater than half full) until such time as end-tipping can be carried out over a 10m length of constructed floating access track.*
17. *Following end-tipping a suitable bulldozer will be employed to spread and place the tipped stone over the base geogrid along the line of the access track.*
11. *A final surface layer will be placed over the full width of the floating access track, as per design requirements, to provide a access track profile and graded to accommodate wind turbine construction and delivery traffic*

2.3.4.6 Site Drainage System

The early establishment of the drainage system will manage the risk of impacts on watercourses on and adjacent to the Site during construction. In addition, construction operations will adopt best working practices, and the development of the Site will be phased accordingly.

The EIAR (and appended drawings) includes a drainage design required for the purposes of assessing the potential effects of the Proposed Project. The drainage design will be developed further with a level of construction detail necessary to implement the measures onsite. The detailed (construction phase) drainage design will form part of the updated Main Contractor's CEMP, and the effective implementation of the detailed drainage design will be audited by the ECoW. Surface water management and drainage design principles are outlined in Section 3.2.2 below and Section 4.6.3 of the EIAR.

Clear-Span Watercourse Crossing

It is proposed to upgrade 1 no. existing mapped watercourse crossing and construct 1 no. new watercourse crossing via a clear-span bridge crossing within the Proposed Wind Farm. The location of these crossings are shown on the layout drawings included in Appendix 4-1. The clear-span watercourse crossing methodology presented below will ensure that no instream works are necessary. The standard construction methodology for the installation of a clear-span watercourse crossing is as follows:

- The access track on the approach either side of the watercourse will be completed to a formation level which is suitable for the passing of plant and equipment required for the installation of each watercourse crossing.
- All drainage measures along the proposed road will be installed in advance of the works.

- A foundation base will be excavated to rock or competent ground with a mechanical excavator with the foundation formed in-situ using a semi-dry concrete lean mix. The base will be excavated along a 1m setback from the stream bank with no instream works required.
- Access to the opposite side of the watercourse for excavation and foundation installation will require the installation of a temporary pre-cast concrete or metal bridge across the watercourse to provide temporary access for the excavator. Plant and equipment will not be permitted to track across the watercourse.
- Once the foundation base has been completed, the pre-cast concrete box culvert will be installed using a crane which will be set up on the bank of the watercourse and will be lifted into place from the bank with no contact with the watercourse.
- Where the bottomless box culvert is installed in sections, the joints will be sealed to prevent granular material entering the watercourse,
- Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.
- Underground cabling ducting will be contained within the road make-up of the proposed crossing.

The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines '*Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945*', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material.

Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.

Culvert Crossing

All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Wind Farm will be suitably sized for the expected peak flows in the watercourse. Only 1 no. new culvert will be installed to manage drainage waters from works areas of the Proposed Wind Farm, where the waters have to be taken from one side of an existing access trackway to the other for discharge. The size of culverts will be influenced by the depth of the track or access track sub-base but will have a minimum 900m diameter.

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

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance. Please see Figure 4-35 of the EIAR for details.

2.3.4.7 Site Entrance Management

Construction and Operational Site Entrance

During the construction and operation phase, the Proposed Wind Farm will be accessed via the existing site entrance from the L6309 Local Road, previously used for the Existing Wind Farm. This entrance will be widened to facilitate the delivery of the construction materials and turbine components. This entrance will be used during both the construction and operational phase of the Proposed Project.

Appropriate sightlines will be established to the north and south of the proposed Site entrance for the safe egress of traffic during the construction phase. The proposed works will result in a permanent upgrade of this existing site access from the L6309 local road, which will also form the main site entrance to the Proposed Wind Farm during the operational phase. Temporary overrun areas will be constructed to facilitate delivery of oversized loads during the construction phase.

Access and Egress Points

The Proposed Wind Farm site is currently served by a number of existing tracks and public roads. As part of the Proposed Wind Farm, it is proposed to utilise 1 no. existing access/egress locations along the L2702, construct 2 no. new access/egress locations along the L2702 and 1 no. new access/egress location along the L6309. All proposed site entrances were subject to a swept path analysis assessment to identify the turning areas required. Temporary overrun areas will also be constructed to facilitate delivery of oversized loads during the construction phase at these 4-no. additional site access locations. Appropriate sightlines will be established at each of these site entrances for the safe egress of traffic during the construction phase.

2.3.4.8 Onsite 110kV Electricity Substation and Control Buildings

A detailed drawing of the proposed onsite 110kV substation is shown in Chapter 4 of the EIAR. The proposed onsite 110kV substation will be constructed by the following methodology:

- The area of the on-site substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and temporarily stockpiled for later use in landscaping. Any excess material will be sent to one of the designated peat and spoil management areas.
- 2 no. control buildings will be built within the onsite substation compound;
- A stoned-out hardstand area will then be established using locally sourced materials.
- The dimensions of the onsite substation area have been designed to meet the requirements of the ESBN and the necessary equipment to safely and efficiently operate the Proposed Wind Farm;
- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it. An anti-bleeding admixture will be included in the concrete mix.
- The block work walls will be built up from the footings to DPC level and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors.
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the building for this operation.
- The roof slabs will be lifted into position using an adequately sized mobile crane.
- The timber roof trusses will then be lifted into position using a telescopic load all or mobile crane depending on-site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- The transformer, electrical equipment, and storage container plinths will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it. An anti-bleeding admixture will be included in the concrete mix.
- Lightning poles will be erected at appropriate locations adjacent to the substation. All lightning poles will be appropriately earthed.
- The electrical equipment will be installed and commissioned.
- Perimeter fencing will be erected.
- The construction and components of the substation will be built to EirGrid specifications.

2.3.4.9 Underground Electrical and Communication Cabling

The transformer in each turbine and the met mast will be connected to the on-site substation through a network of underground electrical and communication cabling. The ground is trenched using a mechanical excavator. The top layer of soil (or access track surface) is removed and saved so that it is replaced on completion. The cable ducting will be bedded with suitable material. The cabling will be laid at a depth of approximately 1.2m below ground level; a suitable marker tape is installed between the cabling and the surface (see Plate 2-1 below illustrating an example of a single 33kV cable trench and Plate 2-2 below illustrates an example of a trefoil 33kV cable trench). On completion, the ground will be reinstated. The route of the underground electrical and communication cabling will follow the access tracks as illustrated on the Proposed Wind Farm layout drawings included as Appendix 4-1 of the EIAR. The cabling may be placed on either side of the road footprint, on both sides of the road and/or within the road. The exact configuration of the underground cabling will be set by the requirements of the electrical designers at detailed design stage.

All underground cabling watercourse crossings along the public road corridor (L2702 and L6309 local roads) will be completed via horizontal directional drilling methodology.

Plate 2-1 Typical Single Cable Trench View

Plate 2-2 Typical Trefoil Cable Trench View

2.3.4.10 Temporary Construction Compounds

There are 4 no. temporary construction compounds proposed as part of the Proposed Wind Farm. The primary construction compound will be located adjacent to the proposed onsite 110kV substation and measures approximately 30m x 60m. The compounds will be constructed in the same manner, as follows:

- The compound area will be marked out at the corners using ranging rods or timber posts. Drains and associated settlement ponds will be installed around the perimeter (refer to Section 3.2.4 below);
- The compound will be established using a construction of the substation platform as discussed above in Section 2.3.4.8;
- Where required, a layer of geogrid will be installed, and compacted layers of well graded granular material will be spread and lightly compacted to provide a hard area for site offices and storage containers;
- Areas within the compound will be constructed as site roads and used as vehicle hard standings during deliveries and for parking;
- A bunded containment area will be provided within the compound for the storage of lubricants, oils and site generators etc.;
- A waste storage area will be provided within the compound;
- If necessary the compound will be fenced and secured with locked gates, although fencing would only be utilised where significant risk of danger to third parties or vandalism is envisaged;
- During the construction phase, a temporary toilet block unit will located within the temporary construction compounds for use during the construction phase. Elsewhere on site, self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. Wastewater from staff toilets will be directed to sealed storage tanks, with all wastewater being tankered off site by an appropriately consented waste collector to wastewater treatment plants, and;
- The water supply to the Site will be from temporary water storage tanks which will be filled using mobile water tanks which will source water locally as required

Give the proximity of temporary construction compound 1 from the nearest proposed turbine (175m to T05), during the erection of Turbine 5, an increased temporary exclusion zone will be implemented

around the turbine base. This exclusion zone will also encompass the temporary construction compound, where access will be restricted to essential personnel and vehicles directly involved in the lift.

2.3.4.11 Borrow Pits

The estimated volume to be extracted from the 3 no. borrow pits for the construction of the Proposed Wind Farm is 9,000m^3 of peat and 41,000m^3 of spoil. This figure presented is the anticipated maximum volumes; however, the actual volumes to be removed from the borrow pit will be confirmed at the time of construction and following detailed pre-construction site investigation works.

The construction of the proposed borrow pits will follow a standard sequence as follows:

1. *Peat and overburden will be removed and temporarily stored in localised areas adjacent to the borrow pit locations before being placed into the permanent peat/spoil storage area within the borrow pit, or within the peat/spoil storage area at T12.*
2. *The rock within the proposed borrow pit footprints will be removed by either breaking or blasting depending on its excavatability, which will be determined from a confirmatory ground investigation carried out at the proposed borrow pits. The ground investigation will comprise rotary core drilling with associated engineering logging including rock quality designation and strength and durability testing. From site observations of rock exposures and the results of the intrusive ground investigation breaking is most likely to be suitable to remove the rock, however at depth some blasting may also be required in Borrow Pit 1.*
3. *It is proposed to construct the borrow pits so that the base of the borrow pits are below the level of the adjacent section of access road. As excavation progresses into the back edge of the borrow pit, localised deepening of the borrow pit floors may be required depending on extraction operations*
4. *A temporary ramp will be formed to provide access and egress for construction vehicles at Borrow Pit 1. The proposed locations of the ramps are shown on drawing P23-240-0600-0015 of the PSMP (Appendix 4-2). These ramps will be backfilled with spoil back to the current ground level once the Borrow Pit is completed.*
5. *Slopes within the excavated rock formed around the perimeter of the borrow pits will be formed at stable inclinations to suit local in-situ rock conditions (45 degrees, 1(v):1(h)). Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance. Slopes within the overburden will be formed at 1(v):2(h).*
6. *The stability of the rock faces within the borrow pits will be inspected by the Project Geotechnical Engineer upon excavation to ensure stability during construction works and in the long term. This inspection will allow unfavourable rock conditions to be identified and suitable mitigation measures to be applied such as removal of loose rock, in line with best practice guidelines.*
7. *It will be necessary to construct rock buttresses founded on in-situ rock within Borrow Pit 1 to create individual cells (up to 3 no.). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of coarse crushed rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for each rock buttress will be inspected and approved by the Project Geotechnical Engineer.*
8. *The rock buttress will be constructed in stages to allow infilling of peat and spoil within cells. The buttress will be constructed of coarse crushed rock fill and placed and compacted in suitable layers to form a buttress of sufficient stability to retain the placed peat and spoil.*
9. *The rock buttress will be wide enough (up to 4m) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The permanent side slopes of the rock buttresses will be constructed at between 40 to 60 degrees.*

10. *The internal rock buttress will be founded on bedrock i.e., competent strata. The founding stratum for the rock buttress will be inspected and approved by the Project Geotechnical Engineer.*
11. *Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress, allowing the borrow pit to be developed and infilled in cells. The contractor excavating the rock will be required to develop the borrow pits in a way which will allow the excavated peat and spoil to be reinstated safely.*
12. *In order to prevent water retention occurring behind the buttress, the buttress will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of about 100mm up to typically 500mm in size. In addition, drains will be placed through the buttress to allow surface water to drain from the surface of the placed peat/spoil. These drains will be 150mm diameter flexible plastic drainage pipe or equivalent.*
13. *The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required.*
14. *The surface of the placed peat and spoil will be shaped following backfill using excavators to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit. The surface of the placed spoil will have a maximum grade of 10 degrees.*
15. *An interceptor drain will also be installed around the perimeter of the borrow pit. This drain will divert any surface water away from the borrow pit and hence prevent water from ponding and lodging during construction and also when reinstated.*
16. *Temporary control of groundwater within the borrow pit will be required and measures will be determined as part of the ground investigation programme. A temporary pump and suitable outfall location will be required during construction.*
17. *A settlement pond will be constructed at the lower side/outfall location of the borrow pit and is shown on the drainage drawings.*
18. *The acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil within the borrow pit.*
19. *Supervision by the Project Geotechnical Engineer is required for the development of the borrow pit.*
20. *All the above-mentioned requirements will be implemented by the Contractor during construction*

Two extraction methods have been assessed for breaking out the useful rock below: rock breaking and blasting.

2.3.4.11.1 Rock Breaking

Weathered or brittle rock can be extracted by means of a hydraulic excavator and a ripper attachment. This is a common extraction methodology where fragmented rock is encountered as it can be carefully excavated in layers. In areas where stronger rock is encountered and cannot be removed by means of excavating then a rock breaking methodology may be used. Rock breaking equipment comprises a large hydraulic 360-degree excavator with a rock breaker attachment. Given the power required to break out tight and compact stone at depth, the machines are generally large and in the 40-60 tonne size range. Even where rock might appear weathered or brittle at the surface, the extent of weathering can quickly diminish with depth resulting in strong rock requiring significant force to extract it at depths of only a few metres.

A large rock breaking excavator progressively breaks out the solid rock from the ground in the borrow pit area. A smaller rock breaker then breaks the rocks down to a size that can then be fed into a crusher.

The extracted, broken rock is loaded into a mobile crusher using a wheeled loading shovel and crushed down to the necessary size of graded stone required for the on-site civil works. The same wheeled loader takes the stone from the crusher conveyor stockpile and stockpiles it elsewhere within the borrow pit, away from the immediate area of the crusher, until it is required elsewhere within the Site.

2.3.4.11.2 *Rock Blasting*

Where blasting is used as an extraction method, a mobile drilling rig is used to drill vertical boreholes into the area of rock that is to be blasted. A drilling rig will drill the necessary number of boreholes required for a single blast in approximately 3 to 4 days. The locations, depth and number of boreholes are determined by the blast engineer. This is a specialist role fulfilled by the blasting contractor.

The blast engineer will arrange for the necessary quantity of explosive to be brought to site to undertake a single blast. The management of explosives on-site and the actual blasting operation will be agreed in advance with and supervised by An Gardaí Siochána. The blast engineer sets the explosives in place in the boreholes, sets the charges, and fires the blast.

A properly designed blast should generate rock of a size that can be loaded directly into a mobile crusher, using the same wheeled loader outlined above. The same method is used for processing the rock generated from a blast, as would be used to process rock generated by rock breaking. Generally, the drilling rig will recommence drilling blast holes for the next blast as soon as one blast is finished. The potential impacts and control measures associated with noise and vibration from this extraction method are assessed in Chapter 12: Noise and Vibration. Any blasting will be carried out in accordance with the *Guidance on the Safe Use of Explosives in Quarries* (Safety and Health Commission for the Mining and Other Extractive Industries, 2002)[1] and the British Standard BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise*[2].

2.3.4.12 Peat and Spoil Management Areas

It is proposed to manage any excess overburden generated through construction activities locally within the Proposed Wind Farm in peat and spoil management areas. The peat and spoil management areas are proposed within permanent clearfell areas around 6 no. Proposed Turbines, to the south of the substation, and at 4 no. locations in the open peatlands in the western part of the Proposed Wind Farm.

Peat and spoil will be managed locally within the Proposed Wind Farm, in dedicated peat and spoil management areas as shown on Figure 2-5. The placement of peat and spoil within the peat and spoil management areas will be undertaken as follows:

1. *The peat placed within the areas will be restricted to a maximum height of 1.25m. Weak/liquified peat will be placed within the proposed borrow pits and not stored within these areas. Spoil can be placed to a maximum depth of 1.5m in the storage area at T12.*
2. *Excavated peat will be placed/spread across the designated areas.*
3. *The placement of excavated peat will be avoided without first establishing the adequacy of the ground to support the load. The placement of peat and spoil within the placement areas will require the use of long reach excavators, low ground pressure machinery and possibly bog mats in particular for drainage works.*

[1] https://www.hsa.ie/eng/Publications_and_Forms/Publications/Mines_and_Quarries/Guidance%20on%20the%20Safe%20Use%20of%20Explosives%20in%20Quarries.pdf
[2] https://www.thenbs.com/PublicationIndex/documents/details?Pub=BSI&DocID=305965

4. *Where there is any doubt as to the stability of the peat surface then no material will be placed on to the peat surface. The risk of peat instability is reduced by not placing any loading onto the peat surface.*
5. *It will be ensured that the surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat.*
6. *Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate.*
7. *The acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the placement areas.*
8. *Movement monitoring instrumentation will be placed around the areas where peat has been placed. The locations where monitoring is required will be identified by the Project Geotechnical Engineer on site.*
9. *Supervision by the Project Geotechnical Engineer will be carried out for the works*
10. *An interceptor drain will be installed upslope of the designated peat placement areas to divert any surface water away from these areas. This will help ensure stability of the placed peat and reduce the likelihood of debris run-off.*
11. *All the above-mentioned general guidelines and requirements will be undertaken by the Contractor during construction.*

The total volume of peat requiring management onsite is estimated at 125,900m3 and the total volume of spoil requiring management onsite is estimated at 197,600m3. This material will be excavated and deposited in the peat and spoil management areas, with a total capacity volume of 171,250 m3, around turbine foundations and hardstands within clear felled areas, landscaping along access tracks, and landscaping. As such, there is enough capacity in the peat and spoil management areas within the Proposed Wind Farm, for the total volumes of peat and spoil requiring management for the Proposed Wind Farm as well as for associated drainage.

All the recommendations/best practice guidelines for the placement of spoil in identified spoil management areas and alongside access roads will be confirmed by the Geotechnical Engineer prior to construction.

2.3.5 Proposed Grid Connection Route

2.3.5.1 Underground Electrical (110kV) and Communication Cabling

The methodology for the construction of the Proposed Grid Connection Route has been prepared by TLI Group. The underground cabling works will consist of the installation of ducts in an excavated trench to accommodate electrical and fibre communications cables to facilitate a loop connection between the proposed 110kV onsite substation and the existing 220kV Srananagh substation.

The ducts will be installed and the trench reinstated in accordance with the specifications of the Roads Section within Sligo County Council where installed in public roads and reinstated in accordance with the landowner's requirements where installed in private lands. The installation of the electrical cabling/fibre cable will be pulled through in one section in approximately 620 to 680m section lengths. Construction methodologies to be implemented and materials to be used will ensure that the UGC is installed in accordance with the requirements of the Council and private landowners.

2.3.5.1.1 *Trenching Methodology*

The following section outlines the methodology to be followed during trenching works:

- The Contractor, and their appointed Site Manager, will prepare a targeted Method Statement concisely outlining the construction methodology and incorporating all mitigation and control measures within the EIAR where relevant;
- All existing underground services along the Proposed Grid Connection Route shall be identified on site prior to the commencement of construction works;
- Traffic management measures will be implemented in accordance with those included in Chapter 15 of the EIAR, and a detailed Traffic Management Plan will be prepared and agreed with Sligo County Council;
- The excavated trench will be approximately 825mm in width and approximately 1315mm deep both within the public road network and within private lands; The 160mm diameter HDPE cable ducting will be placed into the prepared trench, inspected and backfilled.
- Excavated material will be temporarily stockpiled onsite for re-use during reinstatement. Stockpiles will be restricted to less than 2m in height. Stockpiles will be located a minimum of 50m from surface water features and all stockpiling locations will be subject to approval by the Site Manager and Project Ecological Clerk of Works (ECoW);
- Excavated material shall be employed to backfill the trench where appropriate and any surplus material will be transported to one of the proposed on-site borrow pits;
- Any earthen (sod) banks to be excavated will be carefully opened with the surface sods being stored separately and maintained for use during reinstatement;
- The excavated trench will be dewatered if required, from a sump installed within the low section of the opened trench. Where dewatering is required, dirty water will be fully and appropriately attenuated, through silt bags, before being appropriately discharged to vegetation or surface water drainage feature. (Please refer to Section 9.0 of Appendix 4-7);
- Where required, grass will be reinstated by either seeding or by replacing with grass turves;
- No more than a 100m section of trench will be opened at any one time. The second 100 metres will only be excavated once the majority of reinstatement has been completed on the first;
- The excavation, installation and reinstatement process will take on average of 1 no. day to complete a 100m section;
- Where the cable is being installed in a roadway, temporary reinstatement may be provided to allow larger sections of road to be permanently reinstated together;
- Works will only be conducted in normal working hours of Monday to Friday 07:00 to 19:00 and Saturday 07:00 to 19:00, with no works on Sundays or Bank Holidays except in exceptional circumstances or in the event of an emergency;
- Following the installation of ducting, pulling the cable will take approximately 1 no. days between each joint bay, with the jointing of cables taking approximately 1 week per joint bay location.

2.3.5.1.2 *Ducting Installation Methodology*

For the trenching and ducting works the following step by step methodology will apply:

- Grade, smooth and trim trench floor when the required 1315mm depth and 825mm width have been obtained.
- Place bedding layer of Cement Bound Granular Mixture B (CBGM B) material in accordance with the specification and compact it so that the compacted thickness is as per the drawings.
- Lay the bottom row of ducts in trefoil formation as detailed on the design drawings. Use spacers as appropriate to establish horizontal duct spacing. Fit a secure cap / bung to the end of each duct run to prevent the ingress of dirt or water.
- Carefully surround and cover ducts with CBGM B in accordance with the design drawings and specifications and thoroughly compact without damaging ducts.

- Place cable protection strips on compacted CBGM B directly over the ducts.
- Lay the top row of ducts onto the freshly compacted CBGM B including the cable protection strips above the bottom row of ducts. Place a secure cap at the end of each duct to prevent the ingress of dirt or water.
- Carefully surround and cover ducts with CBGM B material in accordance with the drawings and thoroughly compact without damaging ducts.
- Place red cable protection strip on top of compacted CBGM B over each set of ducts as shown on the drawings.
- Place and thoroughly compact CBGM B material or Clause 804 backfill, or soil backfill as specified and place warning tape at the depth shown on the drawings.
- For concrete and asphalt/bitmac road sections, carry out immediate permanent reinstatement in accordance with the specification and to the approval of the local authority and/or landowners, unless otherwise agreed with local authority (Figure 3).
- For unsurfaced/grass sections, backfill with suitable excavated material to ground level leaving at least 100 mm topsoil or match existing level at the top to allow for seeding or replace turves as per the specification of the local authority or landowner (Figure 4).
- Clean and test the ducts in accordance with the specification by pulling through a brush and mandrel. Install 12 mm polypropylene draw rope in each duct and seal all ducts using robust duct end seals fitted with rope attachment eyes in preparation for cable installation at a later date. All the works should be witnessed by ESBN Clerk of Works (CoW) as required.

2.3.5.1.3 *Cable Pulling*

Once the ducting is installed the electrical cables (situated on a drum) are pulled through the ducting by a specialised mechanical winch. The winch will also monitor the tension on the cables being pulled so as not to damage the cables. A guide rope is installed with the ducting to assist in the cable pulling process. The guide rope also is used for proving the ducts by attaching a mandrel, a sponge or brush, for cleaning the duct installed. Cable lubricant is applied to the outside of the cables being pulled through the duct. The lubricant assists in the pulling process by removing friction between the cable and the rollers. This not only speeds up the process but also prevents snagging and therefore damage to the cable.

2.3.5.1.4 *Marker Posts*

Surface cable markers will be placed along the route where cable depth is unavoidably shallow, due to constraints such as existing services, to indicate the precise location of the UGC. These markers will be metallic plates in accordance with ESB standards. Marker posts will be used on non-roadway routes where applicable to delineate the duct route and joint bay positions. Corrosion proof aluminium triangular danger signs, with a 700mm base, and with centred lightning symbol, on fluorescent yellow background shall be installed in adequately sized concrete foundations. Marker posts shall also be placed in the event that burial depth is not to standard. The precise siting of marker posts will be dictated by ESBN as part of the detailed design process.

2.3.5.2 Watercourse/ Built Service Crossings

There are 34 no. identified watercourse crossings along the Proposed Grid Connection Route, 31 no. of which are referenced on EPA/OSI mapping. The construction methodology for the 34 no. identified watercourse crossings has been designed to eliminate the requirement for in-stream works on these locations requiring a crossing to be constructed to traverse the watercourse with the cabling ducts. There are also 2 no. built service crossings of a 38kV underground cable and a disused historic railway line. Table 4-7 of Chapter 4 outlines the proposed methodology for each watercourse/service crossing along the Proposed Grid Connection Route.

Should an alternative methodology option listed below be required for individual crossings during the construction process this will be agreed with the relevant authorities including Sligo County Council prior to works commencing.

2.3.5.2.1 Standard Formation Crossing over Culvert – Option A

Where adequate cover exists above a culvert or service, the standard aforementioned trench arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert or water course. The cable trench will pass over the culvert in a standard trench as outlined in the Proposed Grid Connection Route construction methodology included in Appendix 4-7 of the EIAR.

Where no crossing currently exists, the cable will pass over the watercourse in a bottomless box culvert or pre-cast concrete slab in a standard trefoil arrangement. Where required existing culvert crossings will be extended using appropriately sized corripipe.

2.3.5.2.2 Standard Formation Crossing under Culvert – Option B

Where the culvert or service crossing consists of a socketed concrete or sealed plastic pipe and sufficient depth is not available over the crossing, a trench will be excavated beneath the culvert and cable ducts will be installed in the standard formation 300mm below the existing pipe as outlined in the Proposed Grid Connection Route construction methodology included in Appendix 4-7 of the EIAR.

2.3.5.2.3 Horizontal Directional Drilling – Option C

In the event that none of the above methods are appropriate, horizontal directional drilling (HDD) will be utilised. The Proposed Grid Connection Route will involve 15 No. bridge crossings including 15 No. HDD crossings. Drawings of all 15 no. bridge crossings are included in Appendix 4-8 of this EIAR. A standard HDD crossing is also outlined in Figure 4-36 of Chapter 4.

HDD is a method of drilling under obstacles such as bridges, culverts, railways, water courses, etc. in order to install cable ducts under the obstacle. This method is employed where installing the ducts using standard installation methods is not possible.

The HDD method of duct installation will be carried out using Vermeer D36 x 50 Directional Drill (approx. 22 tonnes), or similar plant, for the directional drilling at watercourse/culvert crossings listed in Table 4-5 below. The launch and reception pits will be approx. 0.55m wide, 2.5m long and 1.5m deep. The pits will be excavated with a suitably sized excavator. The drilling rig will be securely anchored to the ground by means of anchor pins which will be attached to the front of the machine. The drill head will then be secured to the first drill rod and the operator shall commence to drill into the launch pit to a suitable angle which will enable him to obtain the depths and pitch required to the line and level of the required profile. Drilling of the pilot bore shall continue with the addition of 3.0m long drill rods, mechanically loaded and connected into position as outlined in Figure 4-36.

During the drilling process, a mixture of a natural, inert and fully biodegradable drilling fluid such as Clear Bore™ and water is pumped through the centre of the drill rods to the reamer head and is forced in to void and enables the annulus which has been created to support the surrounding subsoil and thus prevent collapse of the reamed length. Depending on the prevalent ground conditions, it may be necessary to repeat the drilling process by incrementally increasing the size of the reamers. When the reamer enters the launch pit, it is removed from the drill rods which are then passed back up the bore to the reception pit and the next size reamer is attached to the drill rods and the process is repeated until the required bore with the allowable tolerance is achieved.

The use of a natural, inert and biodegradable drilling fluid such as Clear Bore™ is intended to negate any adverse impacts arising from the use of other, traditional polymer-based drilling fluids and will be used sparingly as part of the drilling operations. It will be appropriately stored prior to use and

deployed in the required amounts to avoid surplus. Should any excess drilling fluid accumulate in the reception or drilling pits, it will be contained and removed from the Site in the same manner as other subsoil materials associated with the drilling process to a licensed recovery facility.

Backfilling of launch and reception pits will be conducted in accordance with the normal specification for backfilling excavated trenches. Sufficient controls and monitoring will be put in place during drilling to prevent frack-out, such as the installation of casing at entry points where reduced cover and bearing pressure exits.

2.3.5.3 Existing Underground Services

Any underground services encountered along the Proposed Grid Connection Route will be surveyed for level and the ducting will pass over the service provided adequate cover is available. A minimum clearance of 300 mm will be required between the bottom of the ducts and the service in question. If the clearance cannot be achieved the ducting will pass under the service and again 300 mm clearance between the top of the Proposed Grid Connection Route ducting and bottom of the service will be achieved. In deeper excavations an additional layer of marker tape will be installed between the ducting and top-level yellow marker tape. If the required separation distances cannot be achieved then a number of alternative options are available such as using steel plates laid across the width of the trench and using 35N concrete surrounding the proposed ducting, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle where appropriate.

Where the Proposed Grid Connection Route interacts with existing underground services, e.g. the GNI network, the service crossings will be constructed in accordance with best practice information from the relevant entities supplemented by detailed engineering design. The Applicant will hold consultation with the relevant entities prior to the commencement of works along the Proposed Grid Connection Route.

2.3.5.4 Joint Bays

Joints Bays are to be provided approximately every 620m to 680m along the Proposed Grid Connection Route to facilitate the jointing of 2 no. lengths of underground electrical cabling.110kV Joint Bays are typically 2.5m x 6m x 2.05m pre-cast concrete structures installed below finished ground level. Joint Bays will be located in the non-wheel bearing strip of roadways where possible.

In association with Joint Bays, Communication Chambers are required at every joint bay location to facilitate communication links between Wind Farm and the existing Substation. Earth sheath links are used for earthing and bonding cable sheaths of underground power cables, installed in a trefoil formation so that the circulating currents and induced voltages are eliminated or reduced. Earth sheath link chambers and communication chambers are located close to joint bays. Earth sheath link chambers and communication chambers will typically be pre-cast concrete structures with an access cover at the finished surface level.

The precise siting of all joint bays, earth sheath link chambers, and communication chambers is subject to approval by ESBN and EirGrid. Marker posts will be used on non-roadway routes to delineate the duct route and joint bay positions. The marker posts will consist of a corrosion-proof aluminium triangular danger sign, with a 750mm base, and with a centred lightning symbol, on engineering grade fluorescent yellow background. They will be installed inadequately sized concrete foundations and will also be placed where the cable has not been buried to the standard depth, due to existing road conditions. Drawings of the joint bays and communication chambers are included within this planning package. The precise siting of all Joint Bays, Earth Sheath Link Chambers and Communication Chambers, within the curtilage of the public road, is subject to approval by ESBN and EirGrid. Joint bay details are shown within the Proposed Grid Connection Route construction methodology included in Appendix 4-7 of the EIAR. The proposed location of joint bays within the Proposed Grid Connection Route are shown in Appendix 4-8 of the EIAR.

3. ENVIRONMENTAL MANAGEMENT

3.1 Introduction

This CEMP includes all best practice measures required to construct the Proposed Project. The drainage proposals will be developed further prior to the commencement of construction however, any such improvements will be in line with the principles set out here and will also be in full compliance with the planning consent and mitigation measures as presented in the EIAR, Natura Impact Statement (NIS) and all other relevant planning documents. The following sections give an overview of the drainage design principles, dust and noise control measures and a waste management plan for the Site.

3.2 Protecting Water Quality

3.2.1 Good Environmental Management During Construction

Timing of works can strongly influence the potential for damaging the freshwater environment. Construction works during wetter periods of the year pose a significantly greater risk of causing erosion and siltation, which can be particularly severe following major rainfall or snowmelt events. Traditionally, wind farm construction undertaken during the drier summer months would result in significantly less erosion and siltation. Construction activities in the hydrological buffer zones shall be avoided during or after prolonged rainfall or an intense rainfall event and work will cease entirely near watercourses when it is evident that water quality is being impacted.

3.2.2 Site Drainage Principles

The Site drainage features have been outlined in Chapter 4, Section 4.6 of the EIAR in addition to the drainage design and management for the Proposed Project. The protection of the watercourses within and surrounding the Site, and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals for the Site. No routes of any natural drainage features will be altered as part of the Proposed Project. The Proposed Project has where possible, been kept a minimum of 50 metres from natural watercourses. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from watercourses.

Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place.

Existing artificial drains in the vicinity of existing Proposed Wind Farm roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas post treatment, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.

A detailed drainage design for the Proposed Project will be prepared prior to the commencement of construction to by the Project Hydrologist to incorporate these site drainage principles and carry forward into the construction phase of the Proposed Project.

3.2.3 Best Practice Guidance

The drainage design presented in the EIAR and planning application documents has been prepared based on experience of the project team of other renewable energy sites in similar environments, and the number of best practice guidance documents.

There is no one guidance document that deals with drainage management and water quality controls for wind farm and other renewable energy developments. However, a selection of good practice approaches have been adopted in preparation of this CEMP, and these are taken from the various best practice guidance documents listed below. These relate to infrastructure and operational works on sites, road design, water quality controls for linear projects, road drainage and management of geotechnical risks. To achieve best practice in terms of water protection through construction management, the detailed drainage design and all drainage management proposals shall be prepared in accordance with guidance contained in the following:

- Forestry Commission (2011): Forests and Water UK Forestry Standard Guidelines, Fifth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte Forest (2013): Operations and Water Protection Guidelines;
- Forest Services (Draft) Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;
- Forest Service (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- COFORD (2004): Forest Road Manual – Guidelines for the Design, Construction and Management of Forest Roads;
- Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Watercourses;
- Scottish Natural Heritage, 2019 Good Practice During Wind Farm Construction
- UK Guidance Note 2020 GPP1 - General Guide to Prevention of Pollution (UK Guidance Note);
- UK Guidance Note 2018 GPP5 – Works or Maintenance in or Near Watercourses
- Construction Industry Research and Information Association (CIRIA) 2006: Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006); and,
- Construction Industry Research and Information Association (CIRIA) 2006: Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London, 2006.
- Circular Letter PL 1/2017: Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive);
- Environmental Protection Agency (2022): Guidelines on the information to be contained in Environmental Impact Assessment Reports;
- Institute of Geologists Ireland (2013) Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
- DoE/NIEA (2015): Wind farms and groundwater impacts - A guide to EIA and Planning considerations";
- OPW (2009) The Planning System and Flood Risk Management;
- National Roads Authority (2008) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Wind Energy Development Guidelines for Planning Authorities, 2006 (the DoEHLG 2006 Guidelines) and the Draft Revised Wind Energy Development Guidelines (Draft DoHLGH 2019 Guidelines);

- Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Watercourses;
- Good Practice During Wind Farm Construction (Scottish Natural Heritage, 2010);
- PPG1 - General Guide to Prevention of Pollution (UK Guidance Note);
- PPG5 – Works or Maintenance in or Near Water Courses (UK Guidance Note);
- CIRIA (Construction Industry Research and Information Association) Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006);
- Wind Farms and Groundwater Impacts: A guide to EIA and Planning considerations (DoE/NIEA, April 2015);
- Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London, 2001;
- Land Types for Afforestation (Forest Service, 2016b):
- Forest Protection Guidelines (Forest Service, 2002);
- Forest Operations and Water Protection Guidelines (Coillte, 2013);
- Forestry and Water Quality Guidelines (Forest Service, 2000b); and,
- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plant 2018-2021 (DAFM, 2018).

3.2.4 Site Drainage Design and Management

The proposed site drainage features for this Site are outlined in Section 4.6 of the EIAR. As this CEMP is a working document and is presented as an Appendix to the EIAR, the drainage measures are not included in this document. When the final CEMP report is prepared, and presented as a standalone document, all drainage measures will be included in that document. These drainage proposals will be developed further prior to the commencement of construction as part of the detailed drainage design. The following sections give an outline of drainage management arrangements in terms of pre-construction, construction, operational and decommissioning phases of the Proposed Project.

3.2.4.1 Pre-Construction Drainage

Prior to commencement of works in sub-catchments across the Site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously.

Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.

The routes of any natural drainage features will not be altered as part of the Proposed Project. Turbine locations have been selected to avoid natural watercourses. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from watercourses. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings.

Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place.

Existing artificial drains in the vicinity of existing Proposed Wind Farm roads will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas post treatment, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.

3.2.4.2 Construction Phase Drainage

The key principles of drainage design that will be implemented and adhered to as part of the Proposed Project are as follows:

- Keep clean water clean by intercepting it where possible, upgradient of works areas, and divert it around the works areas for discharge as diffuse overland flow or for rewetting of land.
- Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line, treatment and outfall controls prior to controlled diffuse release as overland flow or for rewetting of land.
- No direct hydraulic connectivity from construction areas to watercourses or drains connecting to watercourses.
- Where possible, maintain 50-metre watercourse buffer zones for the wind turbines.
- No alteration of natural watercourses.
- Maintain the existing hydrology of the Site.
- Blocking of existing manmade drainage as appropriate.
- Daily inspection and recording of surface water management system by on-site Ecological Clerk of Works and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the Site.
- Use of siltbuster or equivalent system if required.

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the Site. The first method involves 'keeping clean water clean' by avoiding disturbance to existing drainage features, minimising any works in or around artificial drainage features, and diverting clean surface water flow around excavations, construction areas and temporary storage areas. The second method involves collecting any drainage waters from works areas within the Site that might carry silt or sediment, and nutrients, to route them towards new proposed silt traps and settlement ponds (or stilling ponds) prior to controlled diffuse release into the existing drainage network. There will be no direct discharges to the existing hydrological features (forestry and agricultural drains or natural watercourses).

The Proposed Drainage Design is included as Appendix 4-3 of the EIAR.

The Project Hydrologist will complete a detailed drainage design and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Section 4.6 of the EIAR. The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated, and settlement ponds constructed to eliminate any suspended solids within surface water running off the Site.

Drainage infrastructure within the Proposed Wind Farm will include:

- Source controls:
  - Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems.

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

It should be noted that within the Proposed Wind Farm, an extensive network of forestry, peat and agricultural drains already exist, and these will be integrated and enhanced as required and used within the Proposed Wind Farm drainage system. The integration of the existing forestry drainage network and the Proposed Wind Farm network is relatively simple. The key elements being the upgrading and improvements to existing water treatment elements, such as in line controls and treatment systems, including silt traps, settlement ponds and buffered outfalls.

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

- Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Proposed Wind Farm drainage into the existing site drainage network. This will reduce the potential for any increased risk of downstream flooding or sediment transport/erosion;
- Silt traps will be placed in the existing drains upstream of any streams where construction works / tree felling is taking place, and these will be diverted into proposed interceptor drains, or culverted under/across the works area;
- Runoff from individual turbine hardstanding areas will be not discharged into the existing drain network but discharged locally at each turbine location through settlement ponds and buffered outfalls onto vegetated surfaces;
- Buffered outfalls which will be numerous over the Proposed Wind Farm 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 Proposed Wind Farm; and,
- Drains running parallel to the existing roads requiring widening will be upgraded, widening will be targeted to the opposite side of the road. Velocity and silt control measures such as check dams, sand bags, oyster bags, 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.

The majority of the Proposed Project infrastructure is >50m from any nearby watercourse, sections within 50m of the Proposed Project infrastructure are confined to existing watercourse crossings at bridges and culverts. It is proposed to limit any works in any areas located within 50m of any watercourse/waterbody including the stockpiling of excavated soils and subsoils.

There is a total of 34 no. watercourse crossings (31 no of which are referenced on EPA/OSI mapping) along the Proposed Grid Connection Route. All the crossings are existing bridges and culverts along the public road.

Setbacks from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures to be properly installed and operate effectively. The proposed buffer zone will:

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

All of the Proposed Project works will be supervised by the Ecological Clerk of Works (ECoW) supported by the Project Hydrologist.

Best practice and practical experience on other similar projects suggests that in addition to the drainage plans that are included in the EIAR, there are additional site-based decisions and plans that can only be made in the field through interaction between the Site Construction Manager, the Project Hydrologist and the Project Geotechnical Engineers. Further details on Roles and Responsibilities are outlined within Section 4.1 of this CEMP.

In relation to decisions that are made on site it is important to stress that these will be implemented in line with the associated drainage controls and mitigation measures outlined in Section 7 of this CEMP, and to ensure protection of all watercourses.

The Project Hydrologist/Design Engineer will complete a site drainage and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Chapter 4, Section 4.6 of the EIAR. The drainage system will be excavated and constructed in conjunction with the road and hard standing construction. Drains will be excavated, and stilling ponds constructed to eliminate any suspended solids within surface water running off the Site.

3.2.4.3 Operational Phase Drainage

The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system. This operational phase drainage system will have been installed during the construction phase in conjunction with the road and hardstanding construction work as described in Section 2.3.4.4 and Section 2.3.4.5 above and in Section 4.6 of the EIAR.

The drainage system will be monitored in the operational phase until such a time that all areas that have been reinstated become re-vegetated and the natural drainage regime has been restored.

The drainage system will not be altered upon decommissioning. Measures which will be implemented to ensure no impacts upon the drainage system during decommissioning will be outlined within the Decommissioning Plan (Appendix 4-6 to the EIAR) and fully agreed with the local authority prior to any decommissioning works.

3.2.4.4 Preparative Site Drainage Management

The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing.

An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.

3.2.4.5 Pre-emptive Site Drainage Management

The works programme for the groundworks part of the construction phase of the Proposed Project will also take account of weather forecasts, and predicted rainfall in particular, working under a schedule of works operation system (SOWOR) system as proposed in the planning application. Large excavations, large movements of overburden or large scale overburden or soil 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.

3.2.4.6 Reactive Site Drainage Management

In line with the requirements of the EIAR, the final drainage design prepared for the Proposed Project prior to commencement of construction will provide for reactive management of drainage measures. The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or supervising hydrologist on-site. The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained in so far as is possible. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to situation on the ground as a particular time.

In the event that works are giving rise to siltation of watercourses, the ECoW or supervising hydrologist will stop all works in the immediate area around where the siltation is evident. The source of the siltation will be identified and additional drainage measures such as those outlined above will be installed in advance of works recommencing.

3.2.4.7 Cable Trench Drainage

Cable trenches are typically constructed in short, controlled sections, thereby minimising the amount of ground disturbed at any one time and minimising the potential for drainage runoff to pick up silt or suspended solids. Each short section of trench is excavated, ducting installed and bedded, and backfilled with the appropriate materials, before work on the next section commences.

To efficiently control drainage runoff from cable trench works areas, excavated material is stored on the up-gradient side of the trench and is temporarily sealed/smoothed over, using the back of the excavator bucket. Should any rainfall cause runoff from the excavated material, the material is therefore collected and contained in the downgradient cable trench. Excess subsoil is removed from the cable trench works area immediately upon excavation, and in the case of the Proposed Project, would be transported to one of the on-site designated spoil management areas or used for landscaping and reinstatement of other areas elsewhere on-site. Along sections of the Proposed Grid Connection underground cabling route that are further removed from the Proposed Wind Farm it may be more practical to transport excess excavated material to a nearby licenced facility.

On steeper slopes, silt fences, as detailed in Section 4.5.4.12 of the EIAR will be installed temporarily downgradient of the cable trench works area, or on the downhill slope below where excavated material is being temporarily stored to control run-off.

3.2.4.8 Rainfall Forecasting and Monitoring

Accurate forecasting and monitoring of rainfall is critical to the successful pre-emptive and reactive site drainage management as outlined in the subsections above.

Rainfall forecasts will be obtained for the nearest forecast reference point available via the www.yr.no weather forecasting website. The reference location will be that of Crowagh River, Co. Sligo.

https://www.yr.no/en/forecast/daily-table/2-3311070/Ireland/Connacht/County%20Sligo/Crowagh%20River

Construction personnel will be required to check the forecasted rainfall for the days ahead and plan for or suspend planned works accordingly. The forecasted rainfall should be recorded for reference and comparison with the rainfall levels to be recorded on-site.

Actual rainfall will be monitored on site, ideally via an automated rain gauge with regular recording intervals recommended by the Project Hydrologist and a means of alerting the construction personnel of rainfall trigger levels. Any recorded rainfall data should be available on site at all times for review by the ECoW, Project Hydrologist or any regulatory authorities. The appointed contractor will be required to outline their proposed means of recording rainfall on site to the satisfaction of the ECoW and the Project Hydrologist prior to commencement of works.

3.2.5 Refuelling, Fuel and Hazardous Materials Storage

Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site Heavy plant and machinery will be refuelled on-site by a fuel truck that will come to the Site as required on a scheduled and organised basis. Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area in the construction compound when not in use.

All refuelling will be carried out outside designated watercourse buffer zones. 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 used during refuelling operations as required. All plant and machinery will be equipped with fuel absorbent material and pads to deal with any event of accidental spillage.

The following mitigation measures are proposed to avoid release of hydrocarbons at the Site:

- Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles.
- All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site.
- On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site.
- Heavy plant and machinery will be refuelled on-site by a fuel truck, with spill kits kept onboard, that will come to the Site as required on a scheduled and organised basis.
- Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area in the construction compound when not in use
- Only designated trained operatives will be authorised to refuel plant on-site;
- Refuelling or maintenance of machinery will not occur within the delineated hydrological buffer zones;
- Fuels stored on the Proposed Wind Farm will be minimised;
- Any diesel or fuel oils stored at the temporary construction compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; and,
- An emergency plan for the construction phase to deal with accidental spillages will be contained within Section 6.1.4 below. Spill kits will be available to deal with accidental spillages

3.2.6 Cement Based Products Control Measures

Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative impacts on water quality. They generate very fine, highly alkaline silt (pH 11.5) that can physically damage fish by burning their skin and blocking their gills.

The following mitigation measures are proposed to avoid release of cement leachate from the Site:

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

The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area. The residual liquids and solids will be removed off-site by an appropriately authorised waste collector for disposal at an authorised waste facility. Where temporary lined impermeable containment areas are used, such containment areas are typically built using straw bales and lined with an impermeable membrane. Two examples are shown below in Plate 3-1.

Plate 3-1 Typical concrete wash out areas

3.2.7 Tree Felling Drainage Measures

As discussed in Section 2.3.4.2 above, tree felling will be required within and around Proposed Project footprint to allow for the construction of the proposed turbines, access roads, underground cabling, and the other ancillary infrastructure. The felling will not be undertaken simultaneously with construction groundworks. Keyhole felling to facilitate construction works will take place prior to groundworks commencing.

During tree felling there is a potential to generate silts and sediments in surface water runoff due to tracking of machinery and disturbance of the ground surface etc, however mitigation is provided in

Chapter 9 Hydrology and Hydrogeology with regard to surface water quality protection for this activity which is summarised below. Also, prior to the commencement of tree felling for subsequent road construction the following key temporary drainage measures will be installed:

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

Before the commencement of any felling works, an ECoW shall be appointed to oversee the keyhole and extraction works. The ECoW shall be experienced and competent, and shall have the following functions and operate their record using a Schedule of Works Operation Record (SOWOR), as proposed in the planning application:

- Attend the Site for the setup period when drainage protection works are being installed and be present onsite during the remainder of the forestry keyhole felling works.
- Prior to the commencement of works, review and agreement of the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing (see below), water crossings and onsite storage facilities for fuel, oil and chemicals (see further below).
- Be responsible for preparing and delivering the Environmental Tool Box Talk (TBT) to all relevant parties involved in site operations, prior to the commencement of the works.
- Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness in accordance with Section 3.4 (Monitoring and Recording) and Appendix 3 (Site Monitoring Form (Visual Inspections)) of the Forestry & Freshwater Pearl Mussel Requirements.
- Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures.
- Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements:
- Surface water samples shall be collected upstream and downstream of the keyhole felling at suitable sampling locations.
- Sampling shall be taken from the stream / riverbank, with no in-stream access permitted.
- The following minimum analytical suite shall be used: pH, EC, TSS, BOD, Total P, Ortho-P, Total N, and Ammonia.
- Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions.
- Prepare and maintain a contingency plan.
- Suspend work where potential risk to water from siltation and pollution is identified, or where operational methods and mitigation measures are not specified or agreed.
- Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW.

To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities.

- All relevant measures, best practice methods and requirements set out in Chapter 9 of the EIAR will be adhered to including Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines.

- The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing.
- Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance;
- All machinery will be operated by suitably qualified personnel;
- Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works;
- Machines will traverse the Site along specified off-road routes (referred to as racks);
- The location of racks will be chosen to avoid wet and potentially sensitive areas;
- Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall;
- Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected spoil repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;
- In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed onsite during construction;
- Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses;
- Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded;
- Timber will be stacked in dry areas, and outside watercourse buffer zones. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites;
- Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff;
- All refuelling will be completed outside of the designated 50m hydrological buffer zones. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and,
- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.

Table 3-1 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

3.3 Archaeological Management

This section of the CEMP provides an outline of the mitigation measures outlined in Chapter 14 Archaeological, Architectural and Cultural Heritage of the EIAR for the construction phase of the Proposed Project.

There are no UNESCO World Heritage Sites or National Monuments located within the Site.

Two National Monuments (Nat. Mon. No. 523 and 479) are located within 15km of the nearest proposed turbine which comprise a wedge tomb (No. 523) at Cabragh townland which is located c. 7.7km from the nearest proposed turbine T16 and a passage tomb (No. 479) at Carrowreagh which is situated c. 14.4km from the nearest proposed turbine, T5.

Two monuments subject to a Preservation Order (PO) are located within 15km of the nearest proposed turbine which comprise a moated site (PO No. 2/1994) at Ardabrone townland c. 8km from the nearest proposed turbine, T13, and a megalithic tomb (PO No. 196/1954) at Carrowreagh townland c. 14.7km from the nearest proposed turbine, T5.

No recorded monuments are located within the Proposed Wind Farm site. A total of 240 recorded monuments are located within 5km of the nearest Proposed Turbine. 54 recorded monuments are located within 100m of the Proposed Grid Connection Route. The Proposed Grid Connection Route extends through 25 Zones of Notification (ZoN) associated with recorded monuments.

No Protected Structures are located within the Proposed Wind Farm site. A total of 10 Protected Structures are located within 5km of the nearest Proposed Turbines. A total of 22 Protected Structures are located within 100m of the Proposed Grid Connection Route. The majority of the structures comprise roadside buildings which are not located directly on the Proposed Grid Connection Route. The Proposed Grid Connection Route does, however, traverse two bridges, namely Ardkill Bridge (RPS Ref. 22, NIAH Reg. 32401203) and Ballygrania Bridge (RPS Ref. 42). Horizontal Directional Drilling (HDD) will be utilised at both watercourse crossings with no works required to the bridge structures.

No National Inventory of Architectural Heritage (NIAH) structures or historic gardens are located within the Proposed Wind Farm site. Nine NIAH structures are located within 5km of the nearest Proposed Turbine. They are listed in Table 14-10 and shown on Figure 14-13 in Chapter 14 of the EIAR. The nearest of the structures is located c. 3.6km from the nearest Proposed Turbine, T13 and comprises Templeterrace National School, NIAH Reg. 32401204 which is also a Protected Structure (RPS Ref. 291). A total of 25 NIAH structures are located within 100m of the Proposed Grid Connection Route. As with the Protected Structures discussed above, the majority of the NIAH structures are located at the roadside or set back from the roadside, with only one NIAH structure, Ardkill Bridge Reg. 32401203 located on the Proposed Grid Connection Route. Horizontal Directional Drilling (HDD) will be utilised at this watercourse crossings with no works required to the bridge structure.

As the Proposed Grid Connection Route extends through 25 no ZoN, the following mitigation measures are proposed:

- *Archaeological monitoring of the ground works associated with the Proposed Grid Connection Route where it extends across recorded monument SL019-111— Ringfort -rath. The monitoring will be carried out under licence from the National Monuments Service (NMS) by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report*

detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.

- *The location of recorded monument SL019-111— Ringfort should be clearly shown in the Construction and Environmental Management Plan (CEMP).*

Recorded monument SL019-111— Ringfort is shown in Figure 3-1 of the CEMP below.

While no direct effects to previously unrecorded monuments have been identified the following mitigation is proposed on a precautionary basis.

- *A walk-over survey of the forested areas of the Site where proposed infrastructure will be located will be carried out post-clear-felling but prior to any other works.*
- *The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as buffer zones, etc, deemed necessary.*

The potential exists for the Site to contain as yet unrecorded sub-surface archaeology and artefacts. It is possible that such archaeology may be uncovered either within the peat/topsoil and/or at the level of the underlying natural subsoil. The following mitigation measures are therefore proposed:

- *Archaeological monitoring under licence from the NMS of any geotechnical / engineering trial pits or investigations will be carried out by a suitably qualified archaeologist. A report detailing the results of the monitoring will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.*
- *Pre-development testing, under licence from the NMS, will be carried out in areas where peat depths allow a meaningful investigation. Testing will only be undertaken in areas where ground disturbance will take place as part of the Proposed Project. Where peat depths become a limitation to testing, monitoring at the construction stage will be undertaken. The areas to be tested will be chosen by the appointed archaeologist and the number of test trenches agreed between the archaeologist and the NMS through the licensing system. A report on the testing will be compiled on completion of the work. Should archaeological finds, structures or deposits be uncovered as a result of the testing further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented, where relevant, following consultation with the NMS.*
- *Archaeological monitoring of ground works during the construction stage of the Proposed Wind Farm under licence from the NMS will be carried out by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.*
- *Archaeological monitoring of ground works associated with the construction of the Proposed Grid Connection Route through the Zones of Notification for the recorded monuments specified above. The monitoring will be carried out under licence from the NMS by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing*

the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.

Figure 3-1: Recorded monuments and associated ZoN further to east within 100m of the Proposed Grid Connection Route.

3.4 Traffic Management

This section of the CEMP provides an outline of the traffic management proposals for the construction phase of the Proposed Project. In the event planning permission is granted, the final Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned.

3.4.1 Turbine and Materials Transport Route

3.4.1.1 Proposed Wind Farm

Killybegs Port has been selected and assessed to facilitate turbine delivery to the Proposed Wind Farm. It is proposed that large wind turbine components will be delivered to the Proposed Wind Farm, departing from Killybegs Port, and travel east on the N56 towards Donegal, further south along the N15 towards Sligo before continuing south on N4 through Ballysadare, and subsequently merging onto the N59 heading west towards Dromore West. Delivery vehicles will then head south on the L2702 before turning east towards the Site entrance in the townland of Crowagh or Dunneill Mountain, along the L6309. Further details in Chapter 4 Section 4.5.3.

General construction deliveries and staff will access the Proposed Wind Farm via 5 no. total site entrances. These include existing site entrance from the L6309 Local Road, previously used for the Existing Wind Farm as well as 1 no. existing access location along the L2702, 2 no. new access locations along the L2702 and 1 no. new access location along the L6309 as described in Section 4.5.1 of the EIAR. As set out in Chapter 15, Section 15.1.2.3, based on the location of potential suppliers of concrete and crushed stone, there are 2 no. additional routes (the R314 and L1321 to the N59 from the direction of Ballina, Co. Mayo in the west) that may be used for the delivery of these materials. Transportation of large turbine components will be carried out at night when traffic is at its lightest and in consultation with the relevant Roads Authorities and An Garda Síochána with deliveries accompanied by Garda escort.

3.4.2 Deliveries of Stone and Ready-Mix Concrete from Quarries

While it is proposed to source crushed stone for the construction of the Proposed Project from the onsite borrow pits, a certain volume of crushed stone and hardcore materials and all ready-mix concrete that will be required during the construction phase will be sourced from local, appropriately authorised quarries. Construction materials will be delivered to the Site via selected haul routes that will be determined based on the source of the construction material. All construction materials will ultimately access the wider Proposed Wind Farm via the main site entrance off the L6309 local road.

3 no. existing, authorised quarries, located within 25km of the Proposed Wind Farm have been selected that could potentially provide stone and concrete. Traffic movements generated by the Proposed Project are discussed in Section 15.1 of Chapter 15, Material Assets.

- Frank Harrington Limited, Co. Sligo - 16.3km east of the Proposed Wind Farm
- Molloy Concrete Limited, Co. Sligo – 23.1km southwest of the Proposed Wind Farm
- Killala Rock, Co. Mayo – 24.1km west of the Proposed Wind Farm

3.4.2.1 Proposed Grid Connection Route

It is proposed to connect the onsite 110kV substation to the existing 220kV Srananagh substation in the townland of Ballysumaghan, Co Sligo via 110kV underground electrical cabling. The underground electrical cabling route is illustrated in Figure 2-2 above in Section 2.3, is approximately 41.6km in length and located primarily within the public road corridor, with approx. 130m located within the Proposed Wind Farm.

The Proposed Grid Connection Route will originate at the proposed onsite 110kV substation and run northeast for approx. 130m through a proposed access track before turning east and then north along the L6309 Local Road network for approx. 6.6km. The Proposed Grid Connection Route then follows the N59 National Road east for approx. 22.9km before continuing southeast for 6.9km on the R290 Regional Road. The Proposed Grid Connection Route then joins the R284 Regional Road heading southeast for 2.8km on the L6234 Local Road before heading east onto the L5204 Local Road for 1.8km. From the L5204 the Proposed Grid Connection Route turns left and travels a final 400m into the existing Srananagh 220kV substation.

The Proposed Grid Connection Route is illustrated in Figure 2-2 above in Section 2.3.5. The cross section of the 110V underground cabling trench is shown in Appendix 4-8 of the EIAR. The construction methodology for the Proposed Grid Connection is outlined in Section 2.3.4.1 above.

Deliveries of materials for the construction of the Proposed Grid Connection Route infrastructure and underground cabling route will be via the public road network along the identified route. The proposed works will be rolling in nature; approximately 100-150m will be constructed along the road network at any one time.

The potential diversion routes that may be used during the construction of the various sections of the Proposed Grid Connection Route are set out in Chapter 15 Section 15.1.8 of the EIAR. For sections 1, 4 and 5, which comprises 11.2 km of the total route, the diversions will result in existing traffic from regional and local roads being diverted onto other local and reginal roads of a similar standard.

With respect to the traffic volumes that will be generated during the construction of the underground electrical cabling route, it is estimated that there will be approximately 15 daily return trips made by a truck transporting materials, and 4 made by a car to transport 10 construction staff to and from the Site. The construction methodology of providing a Proposed Grid Connection Route under and along local road networks is well established and accepted nationwide. There are in excess of 300 wind farms currently operational in Ireland and the majority of these are connected to the national grid via underground cabling connections predominantly along the public road networks.

Before works commence, updated surveying will take place along the Proposed Grid Connection Route, with all existing culverts and services identified, as detailed in Section 4.8.3 of the EIAR. All relevant bodies i.e., ESBN, Sligo County Council, GNI etc. will be contacted and all up to date information for all existing services sought. Structural bridge surveys will be carried out and the current proposals will be subject to detailed design prior to construction. HDD launch and reception pits at locations along the Proposed Grid Connection underground cabling route will be determined following site investigations.

When the Proposed Grid Connection Route is located on public roads, a traffic management plan will be prepared prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services.

3.4.3 Traffic Mitigation Measures During the Construction Stage

The successful completion of the Proposed Project will require significant coordination and planning and a comprehensive set of mitigation measures will be put in place before and during the construction stage of the Proposed Project in order to minimise the effects of the additional traffic generated by the Proposed Project. The range of measures will include the following which are also set out in Chapter 15 of the EIAR.

A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures set out within this CEMP along with Chapter 15 of the EIAR, will be finalised and detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. The detailed TMP will include the following:

- **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the development, and this person will be the main point of contact for all matters relating to traffic management.
- **Delivery Programme** – a programme of deliveries will be submitted to Sligo County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, Transport Infrastructure Ireland (TII) and Motorway Maintenance and Renewal Contractors (MMaRC) will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Proposed Wind Farm.
- **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night via letter drops and posters in public places. Information will include the contact details of the Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.
- **A Pre and Post Construction Condition Survey** – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.
- **Liaison with the relevant local authority** - Liaison with Sligo County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads Section of Sligo County Council will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager.
- Implementation of temporary alterations to road network at critical junctions – at locations highlighted in Section 15.1.9.
- **Identification of delivery routes** – These routes will be agreed with Sligo County Council and adhered to by all contractors.
- **Delivery times of large turbine components** - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.
- **Travel plan for construction workers –** While the assessment above has assumed the worst case in that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will

include the identification of routes to / from the Site and identification of an area for parking.

- **Additional measures** - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on site and sweeping / cleaning of local roads as required. These are set out in the CEMP which is contained in Appendix 4-5.
- **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.
- **Diversion routes during grid construction –** The identification and agreement with Sligo County Council of suitable diversion routes during the construction of the Proposed Grid Connection Route.

3.5 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, peat, etc. and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the haul route.

In periods of extended dry weather, dust suppression may be necessary within the Proposed Wind Farm, along haul roads and along the public road corridor, proposed new roads in private agricultural land, and proposed upgrades to existing private track associated with the Proposed Grid Connection Route to ensure dust does not cause a nuisance. If necessary, water will be taken from stilling ponds in the Site's drainage system and will be pumped into a bowser or water spreader to dampen down the relevant areas to prevent the generation of dust. Silty or oily water will not be used for dust suppression, as this would generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.

Proposed measures to control dust include:

- Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads, site roads, Proposed Grid Connection Route, road widening sections, substation, and construction compounds and around the borrow pit area to ensure dust does not cause a nuisance.
    - Water bowser movements will be carefully monitored to ensure water is evenly dispersed and sprayed to address potentially dusty areas.
- All plant and materials vehicles shall be stored in dedicated areas within the Site.
- Areas of excavation will be kept to a minimum and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat and spoil management areas and restoration of borrow pits.
- The Proposed Turbines components, construction materials and the associated infrastructure for the Proposed Grid Connection Route will be transported to the site on specified haul routes only, as agreed with the local authority.
    - The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager.
- The transport of construction materials may have the potential to generate dust in dry weather conditions. Roads will be watered down to suppress dust particles in the air as deemed necessary by the Site Supervisor/Manager.
- The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection Route infrastructure and for the Proposed Wind Farm will be covered by tarpaulin where necessary.

- The transport of dry excavated material from the on-site borrow pits, which may have potential to generate dust will be minimised. If necessary, such as in periods of dry weather, excavated material will be dampened prior to transport from the borrow pits.
- Weather will be monitored in conjunction with visual checks on dust generation in order to decrease response times. Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal.
    - The MRF facility will be local to the Proposed Project to reduce the amount of emissions associated with vehicle movement.

When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper. The Site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Project.

3.6 Noise Control

The operation of plant and machinery, including construction vehicles, is a source of potential impact that will require mitigation at all locations within the Site.

The following proposed measures to control noise will be implemented in full include:

- Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- Establishing channels of communication between the contractor/developer, Local Authority and residents;
- Appointing a site representative responsible for matters relating to noise and vibration; and
- Monitoring typical levels of noise and vibration during critical periods and at sensitive locations.

Section 8 of BS5228-1:2009+A1:2014 as outlined in Chapter 12 (Noise & Vibration) of the EIAR, further recommends a number of simple control measures as summarised below that will be employed onsite:

- Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance;
- Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use;
- All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Machines will be shut down between work periods (or when not in use) or throttled down to a minimum;
- Regularly maintain all equipment used onsite, including maintenance related to noise emissions;
- Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and

- All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided.
- At any location within 30m of a residential receptor, where directional drilling activities are required for the Proposed Grid Connection Route, the installation of temporary boarding alongside the drilling rig or 'acoustic blanket panels' hanging from heras fencing (or similar) may be used to mitigate noise emissions.

3.7 Invasive Species Management

A baseline invasive species survey was carried out at the Site to identify the presence and location of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) by a suitably qualified ecologist. As outlined in Chapter 6 of the EIAR, *Rhododendron ponticum* was found within the Proposed Wind Farm.

An Invasive Species Management Plan is included as Appendix 6-5 of the EIAR.

3.7.1 Site Management

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

- A pre-commencement survey for Rhododendron will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the Proposed Wind Farm and to determine whether there have been any changes in the extent of the infestation since the undertaking of previous surveys.
- The locations and extent of Rhododendron within the Proposed Wind Farm will be clearly marked out using hazard tape to ensure they are not disturbed.
- For Rhododendron stands that occur outside of the construction footprint and will not be directly impacted, a 10m buffer zone (Higgins, G.T. 2008) surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils.

Due to the young age and small size of the infestations recorded within the Proposed Wind Farm, it is proposed to treat the plant *in-situ*. The recommended option for *in-situ* treatment is to manually remove the upper parts of the plant and apply the Ecoplug method (Willoughby *et al.* 2017) as to avoid spray drift and to minimise the potential for spraying of non-target species. The Ecoplug method is outlined below.

- Cut the tree/plant as close to the ground as possible. This should be carried out from October to early March, outside the bird nesting season.
- The cut material can be stacked and stored onsite, used as firewood or mulched.
- A 30 mm hole 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.
- Where immature plants occur, hand pulling can be undertaken at any time of the year and left to dry out on an impermeable surface.

Where the Ecoplug method is unsatisfactory or where the plant requires removal due to being present within the construction footprint, physical extraction of the root/stump from the ground will be carried out.

- Cut the tree/plant as close to the ground as possible. This should be carried out from October to early March, outside the bird nesting season.
- The root/stump will be removed from the ground using hand tool or an excavator.
- The cut material can be stacked and stored within the Proposed Wind Farm, used as firewood or mulched.

- The root/stump will be placed on an impermeable surface such as palettes or a radon barrier membrane and left to dry out.

Following treatment or eradication of the plant, excavated soil from the site of infestations at the Proposed Wind Farm will still be considered to be contaminated on a precautionary basis. In order to avoid the potential spread of the species, the top layer of soil/peat from the 10m buffer zone will be removed and if possible, used as back fill within the same infested area or stored outside of the construction footprint within the Proposed Project Boundary. This area will then be then fenced off and will be monitored and if necessary, re-treated following the initial treatment and should continue until no growth is recorded for a period of at least two consecutive years.

Alternatively, the excavated spoil from within the buffer zone can be transported to an offsite waste facility, under license from the NPWS.

3.7.2 Establish Good Site Hygiene

The following site hygiene and biosecurity measures will be adhered to for the management of invasive species within the Site:

- All works in relation to the invasive species will be supervised by an ECoW.
- All staff will be given a Toolbox Talk, by a suitably qualified person or ecologist, on invasive species removal in relation to Rhododendron and its management on site.
- The contractor will assign a member of their team as Environmental Officer to ensure the management plan is adhered to throughout the proposed works.
- A designated bio-secure area/exclusion zone will be set up at recorded invasive species locations to prevent disturbance in these areas. Invasive species will be marked with hazard tape in order to identify the species prior to vegetation clearance works and to keep it separate from other brash material.
- All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.
- Machinery that is used for excavation and onsite removal of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of invasive plant material are present.
- Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area.
- As a precautionary measure, machinery will be thoroughly cleaned down before exiting the Site to prevent potential spread of invasive species elsewhere.
- Clean down will be carried out using brushes and shovels and power washing will be avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the Site.
- Material used for tracking machinery out of the contaminated areas onsite e.g. plywood will be thoroughly cleaned down under supervision of the ECoW prior to removal off site.
- Any soil and topsoil required on the Site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.

3.8 Resource and Waste Management Plan

This section of the CEMP provides a resource and waste management plan (RWMP) which outlines the best practice procedures during the excavation and construction phases of the project. The RWMP will outline the methods of waste prevention and minimisation by recycling, recovery, and reuse at each stage of construction of the Proposed Project. Disposal of waste will be seen as a last resort.

3.8.1 Legislation

The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the Site to ensure that all contractors hired to remove waste from the Site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

The RWMP has been produced in line with the following guidance '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' (EPA, 2021)[3].

3.8.2 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing in the following order:

Prevention and Minimisation:

The primary aim of the RWMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project.

Reuse of Waste:

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill.

Recycling of Waste:

There are a number of established markets available for the beneficial use of Construction waste such as using waste concrete as fill for new roads.

At all times during the implementation of the RWMP, disposal of waste to landfill will be considered only as a last resort.

3.8.3 Construction Phase Waste Management

3.8.3.1 Description of the Works

The construction of the Proposed Project will involve the removal of the existing 23 no. turbines and meteorological mast onsite as outlined in Section 2.3.3 above and in accordance with SSE Renewables standards, whereby all elements of the turbines will be recycled and reused, and no components will be sent to landfill. The removal of turbines from the Existing Wind Farm turbines will be completed in agreement with Sligo County Council (SCC) and in line with the conditions of the current planning

[3] *EPA, 2021. Best practice guidelines for the preparation of resource & waste management plans for construction and demolition projects. Available at: https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf*

permission for Dunneill Wind Farm (Pl Ref: SCC PL03/619 & ABP Pl. Ref. 21.204790, as amended by SCC Reg. Ref PL10/371 and PL10/388).

The turbines and meteorological mast will be manufactured off-site and delivered to the Proposed Wind Farm where on site erection will occur.

The foundations of Proposed Turbines will consist of stone from the onsite borrow pits and a concrete base which will contain reinforcing steel. These concrete foundations will be shuttered with steel formwork specifically designed for the works and re-usable off site on similar projects.

The new excavated access tracks, upgrades of existing access tracks, upgrades to existing floating access tracks and upgrades to existing public roads will be constructed with rock sourced from the onsite borrow pits.

The proposed onsite 110kV substation and control buildings will be constructed on a concrete foundation with the buildings constructed with concrete masonry blocks with a timber roof structure and roof tile or slate covering. The roof structure will be made up of prefabricated roof trusses manufactured off site to minimise timber cutting on site. The construction of the underground electrical cabling (Proposed Grid Connection Route and Proposed Wind Farm) will consist of excavating sections of a trench, laying the ducting and cabling and backfilling.

The waste types arising from the construction phase of the Proposed Project are outlined in Table 3-2 below.

Table 3-2 Expected waste types arising during the Construction Phase

Material Type	Example	EWC Code
Cables	Electrical wiring	17 04 11
Cardboard	Boxes, cartons	15 01 01
Composite packaging	Containers	15 01 05
Fibreglass	Turbine blade component	10 11 03
Metals	Copper, aluminium, lead, iron and steel	17 04 07
Inert materials	Sand, stones, plaster, rock, blocks	17 01 07
Mixed municipal waste	Daily canteen waste from construction workers, miscellaneous	20 03 01
Plastic	PVC frames, electrical fittings	17 02 03
Plastic packaging	Packaging with new materials	15 01 02
Tiles and ceramics	Slates and tiles	17 01 03
Wooden packaging	Boxes, pallets	15 01 03
Tarmac/Bitumen	Road surfacing along the Proposed Grid Connection underground cabling route	17 03 02

Hazardous wastes that may occur on site during the construction phase of the Proposed Project may include oil, diesel fuel, chemicals, paints, preservatives etc. All hazardous wastes will be stored in

bunded containers/areas before being collected by an authorised waste contractor and brought to an EPA licensed waste facility. As mentioned above, hazardous wastes will be kept separate from non-hazardous wastes so that contamination does not occur.

3.8.3.2 Waste Arising and Proposals for Minimisation, Refuse and Recycling of Construction Waste

Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste. The removal of the existing 23 no. turbines, existing met mast and existing 20kV electrical cabling will also give rise to construction waste.

Appropriate measures will be taken to ensure excess waste is not generated during construction, including:

- Ordering of materials will be on an 'as needed' basis to prevent over supply to the Site. Co-ordination is required with suppliers enabling them to take/buy back surplus stock;
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on-site;
- Request that suppliers use least amount of packaging possible on materials delivered to the Site;
- Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal;
- Ensuring correct sequencing of operations;
- Use reclaimed materials in the construction works.

Hazardous waste will be kept separate from all other construction waste to prevent contamination and removed appropriately.

3.8.3.3 Waste Arising from Construction Activities

All waste generated on site will be contained in waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein.

All waste generated on site during the construction phase will be source segregated at the Site and contained in covered waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor to be recycled, recovered or disposed of appropriately.

The waste generated from the and the removal of the existing 23 no. turbines, existing met mast and existing 20kV electrical cabling and turbine erection will be limited to the associated protective covers which are generally reusable. Considering the specialist nature of this packaging material the majority will be taken back by suppliers for their own reuse. Any other packaging waste generated from the turbine supply will be deposited into the on-site skips and subsequently transferred to the MRF.

Site personnel will be instructed at induction that under no circumstances can waste be brought on site for disposal in the on-site waste skips. It will also be made clear that the burning of waste material on site is forbidden.

Site personnel will be instructed at induction that under no circumstances can waste be brought to site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on site is forbidden.

3.8.3.4 Reuse

Many construction materials can be reused a number of times before they have to be disposed of:

- Concrete can be reused as aggregate for roads or cable trench backfilling material.
- Plastic packaging etc. can be used to cover materials on site or reused for the delivery of other materials.

3.8.3.5 Recycling

If a certain type of construction material cannot be reused onsite, then recycling is the most suitable option. The opportunity for recycling on site will be restricted to the associated packaging from the wind turbines.

All waste that is produced during the construction phase including dry recyclables will be deposited in the on-site skip initially and sent for subsequent segregation at a remote facility. The anticipated volume of all waste material to be generated at the development is low which provides the justification for adopting this method of waste management.

3.8.3.6 Implementation

3.8.3.6.1 *Roles and Responsibilities for Waste Management*

Prior to the commencement of the development a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.

3.8.3.6.2 *Training*

It is important for the Construction Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the waste management plan. All employees working on site during the construction phase of the project will be trained in materials management and thereby, should be able to:

- Distinguish reusable materials from those suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with site manager on the best locations for stockpiling reusable materials;
- Separate materials for recovery; and
- Identify and liaise with waste contractors and waste facility operators.

3.8.3.6.3 *Record Keeping*

The RWMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The RWMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the Site will be required to provide documented records for all waste dispatches leaving the Site. Each record will contain the following:

- Consignment Reference Number

- Material Type(s) and EWC Code(s)
- Company Name and Address of Site of Origin
- Trade Name and Collection Permit Ref. of Waste Carrier
- Trade Name and Licence Ref. of Destination Facility
- Date and Time of Waste Dispatch
- Registration no. of Waste Carrier vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail
- Date and Time of Waste Arrival at Destination
- Site Address of Destination Facility

3.8.3.7 Waste Management Plan Conclusion

The RWMP will be properly adhered to by all staff involved in the Proposed Project which will be outlined within the induction process for all site personnel. The waste hierarchy will always be employed when designing the plan to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

This preliminary RWMP has been prepared to outline the main objectives that are to be adhered to for the preparation of a more detailed RWMP to be completed after the planning phase of the Proposed Project.

4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION

4.1 Roles and Responsibilities

The Project Developer will appoint a design team to prepare the detailed design for the Proposed Project prior to the commencement of construction and ensure all planning and environmental obligations are met. The developer will appoint a Project Contractor who will be responsible for the construction of the Proposed Project in accordance with this CEMP which will be updated by the contractor as required during the construction phase of the Proposed Project. Any updated CEMP must meet or exceed the standards and requirements set out in this document.

The Ecological Clerk of Works (ECoW) will be nominated by the Project Developer to oversee the Project Contractor's effective implementation of the Proposed Project's environmental requirements and obligations, as captured in the CEMP. The ECoW will be responsible for monitoring the works of the Project Contractor from an environmental perspective on behalf of the Project Developer. For the sake of expediency, the ECoW will report their ongoing audit findings, monitoring results and site observations to both the Project Developer and the Project Contractor, having been nominated by the developer to fulfil the role.

The ECoW will have the power to halt the works, should the need arise and will be supported by the developer to ensure the contractor adheres to such an instruction.

The ECoW will also have to call upon the Project Ecologist, Project Hydrologist, Project Archaeologist or other members of the Project Developer's design team, as required, to oversee the contractor's works on-site. An organogram structure for the construction stage roles is as outlined below.

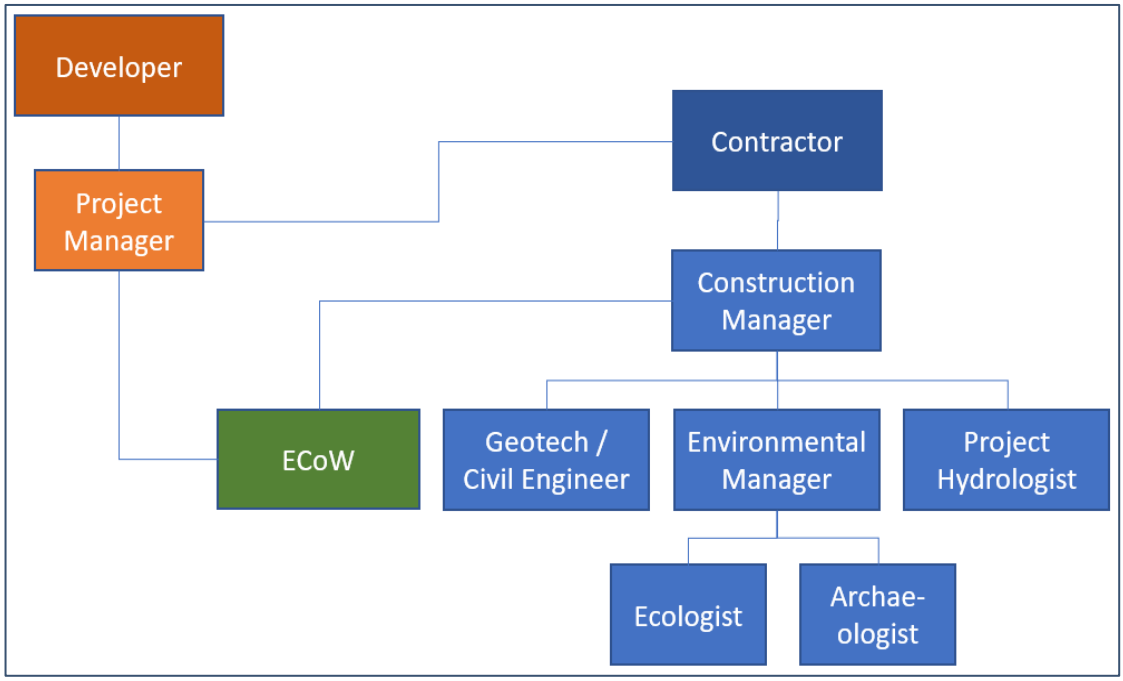

Figure 4-1 Proposed Project Organogram

Any requirement of the granted permission, for the works to be supervised by an engineer with professional indemnity insurance, who upon completion of the works, shall certify the said works, will be adhered to. Such an engineer will be appointed to oversee and supervise the construction phase of the Proposed Project.

4.1.1 Construction Manager

The Project Contractor will be required to nominate a Construction Manager, i.e. an Environmental Representative, who will have responsibility for the organisation and execution of environmental requirements outlined in this CEMP or any further versions thereof. The Construction Manager will have an assigned deputy who will fulfil the role of Environmental Manager. To implement the CEMP, the Construction Manager with the assistance of the Environmental Manager will be required to:

- Implement all Proposed Project design requirements to minimise environmental risk;
- Implement all CEMP requirements and measures to minimise environmental risk;
- Ensure any site personnel responsible for directing works on site are familiar with all requirements of the CEMP;
- Propose revisions to the Proposed Project's CEMP for approval of the Project Developer, project design team and ECoW, only where any such revisions meet or exceed the standards and requirements set out in this document;
- Ensure that all environmental standards are achieved during the construction phase of the Proposed Project;
- Promptly implement any remedial action required to rectify and close-out any non-compliant items identified by the ECoW;
- Ensure immediate notification of environmental incidents are issued to the ECoW, the Project Developer and the relevant authorities, initially by phone and as soon as is practicable by e-mail;
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers.
- Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced.

4.1.2 Site Ecological Clerk of Works

The Project Developer will be required to engage an independent and suitably qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of ECoW to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP on site. The responsibilities and duties of the ECoW will include the following:

- Review/approval of the CEMP and supporting environmental documentation and review/approval of contractor method statements;
- Undertake environmental monitoring, inspections and reviews to ensure the works are carried out in compliance with the CEMP by the Project Contractor;
- Manage the water quality monitoring programme and turbidity monitors;
- Maintain a live Actions List and accompanying map outlining any corrective actions across the Site requiring attention or action by the contractor;
- Confirm for the Project Contractor that pre-commencement requirements have been met to allow construction activities to commence;
- Highlight for the contractor, any abandonment triggers that are occurring and inform the contractor that works are to cease;
- Generate environmental reports as required to show environmental data trends and ensure environmental records are maintained throughout the construction period;
- Advise site management/contractor/sub-contractors on:
    - Prevention of environmental pollution and improvement to existing working methods;
    - Changes in legislation and legal requirements affecting the environment;
    - Suitability and use of plant, equipment and materials to prevent pollution;

- Environmentally sound methods of working and systems to identify environmental hazards;

- Assist the contractor in coordinating the required inputs and site visits from the Project Ecologist or Project Hydrologist to support the ECoW role;
- Ensure immediate notification of any environmental incidents are issued to the Construction Manager and Project Developer;
- Support the investigation of incidents of significant, potential or actual environmental damage and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties.
- Liaise with the Project Design Team and attend meetings to report on audit findings.
- Support the contractor who will be responsible for providing toolbox talks and site induction content to ensure the requirements of the CEMP are delivered on site.
- The geotechnical design requirements of the Proposed Project are not within the remit of the ECoW.

The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer's Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Project.

4.1.3 Project Ecologist/Ornithologist

The Project Ecologist/ Ornithologist will be available to support the ECoW on matters relating to the protection of sensitive habitats and species encountered prior to or during the construction phase of the Proposed Project. The Project Ecologist will not be full time on site but will undertake pre-commencement surveys and visit the Site as required. The responsibilities and duties of the Project Ecologist/Ornithologist will include the following:

- Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided.
- Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site.
- Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise.
- Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.
- Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress.

4.1.4 Project Hydrologist

The Project Hydrologist is part of the design team that will prepare the detailed drainage design for the construction phase of the Proposed Project, but will also support the ECoW in monitoring, overseeing and auditing the effective implementation of the detailed drainage design by the Project Contractor. The Project Hydrologist will not be full time on site but will be required to visit as necessary to oversee the implementation of their drainage design.

The responsibilities and duties of the Project Hydrologist will include the following:

- Preparation of detailed drainage design before construction commences;
- Input to the CEMP in respect of drainage design and water quality management;
- Attend site to support ECoW and oversee and audit the effective implementation of the detailed drainage design;

- Complete ongoing inspection and monitoring of the development, particularly in areas of drainage control in support of the ECoW in monitoring the effectiveness of the drainage design as it is implemented on-site.

4.1.5 Project Archaeologist

The Project Archaeologist will report to the Environmental Manager/ECoW and is responsible for archaeological monitoring of the Site during the construction phase. This will include monitoring of site investigations and excavation works as well as the monitoring and metal detection of spoil during construction.

If new archaeological material is detected during the pre-construction re-inspection, testing or monitoring, the project archaeologist will be responsible for ensuring they are preserved by record (archaeologically excavated) and therefore permanently removed with a full record made.

The responsibilities and duties of the Project Archaeologist will include the following:

- Confirm designated buffers surrounding sensitive archaeological features to be implemented and maintained within the Proposed Wind Farm site throughout construction.
- Inform and educate on-site personnel of the archaeological sensitivities within the site.
- Oversee management of archaeological issues during the construction period and advise on archaeological issues as they arise.
- Ongoing inspection and monitoring of the Proposed Project and ensure construction is carried out as specified in the EIAR and in relevant planning conditions.

4.1.6 Project Geotechnical Engineer/Civil Engineer

The Geotechnical Engineer will report to the Construction Manager and is responsible for inspection and review of geotechnical aspects associated with construction of the Proposed Project. The Geotechnical Engineer will not be full time on site but will visit site at least once a month during the construction phase civil works and on a weekly basis during site preparation/groundworks.

The responsibilities and duties of the Geotechnical Engineer will include the following:

- Visit site regularly, or at least once a month during the construction phase, to complete geotechnical audits and reviews and report any issues to the Construction Manager;
- Ensuring that identified hazards are listed in the Geotechnical Risk Register and that these are subject to ongoing monitoring; and,
- Ongoing inspection and monitoring of the Proposed Project, particularly in temporary stockpile areas, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, NIS and in relevant planning conditions.

4.2 Water Quality and Monitoring

4.2.1 Pre-Construction Baseline Monitoring

The methodology for water quality monitoring before, during and after the construction phase of the Proposed Project is outlined in detail in Section 4 of the Surface Water Management Plan (SWMP) which is included as Appendix 4-4 of the EIAR.

This document includes details in relation to baseline monitoring, daily visual inspections, continuous monitoring, monthly laboratory analysis, field monitoring and reporting.

4.2.2 Construction Phase Monitoring

4.2.2.1 Daily Visual Inspections

An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Daily visual inspections of drains and outfalls will also be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction be higher than the existing levels, the source will be identified, and additional mitigation measures implemented. 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.

During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and Environmental Quality Standards (EQSs) should be undertaken for each primary watercourse along the Proposed Grid Connection underground cabling route and specifically following heavy rainfall events (i.e. weekly, monthly and event based).

Inspection sheets and photographic records will be kept on site. Inspection points will include the in-situ field monitoring point locations and the laboratory analysis sampling points. Inspection points will depend on works being completed within the catchment upstream of the identified monitoring locations. Visual inspections will also be completed after major rainfall events, i.e. after events of >25mm rainfall in any 24-hour period and data including photographs will be collected by visual inspections and independently assessed by the Project Hydrologist who will monitor and advise on the records being received.

The following periodic inspection regime will be implemented:

- Daily general visual inspections of site operations and inspections of all drainage infrastructure within the Site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW;
- Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify and maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter will be noted and corrective action will be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement;
- Event based inspections by the ECoW as follows:
    - >10 mm/hr (i.e. high intensity localised rainfall event);
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
    - Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week).
- Monthly site inspections by the Project Hydrologist/ ECoW during construction phase;
- Quarterly site inspections by the Project Hydrologist/ ECoW after construction for a period of one year following the construction phase; and,
- A written record will be maintained or available on-site within this CEMP which will be maintained on-site during the construction phase.

4.2.2.2 Continuous Turbidity Monitoring

Turbidity monitors or sondes can be installed where required at locations surrounding the Site. The sondes will provide continuous readings for turbidity levels in the watercourse. This equipment will be supplemented by daily visual monitoring at their locations as outlined in the sections below.

4.2.2.3 Laboratory Analysis

Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken as per water monitoring programme for the Proposed Project. This will not be restricted to just these locations around the Proposed Windt site with further sampling points added as deemed necessary by the ECoW in consultation with the Project Hydrologist and Site Manager.

During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs should be undertaken for each primary watercourse along the Proposed Grid Connection Route and specifically following heavy rainfall events (i.e. weekly, monthly and event based).

4.2.2.4 Field Monitoring

Field chemistry measurements of unstable parameters, (pH, conductivity, temperature) will be taken at the surface water monitoring locations, as per water monitoring programme for the Proposed Project and each primary watercourse along the Proposed Grid Connection underground cabling route. The ECoW or the Project Hydrologist will undertake monthly surface water monitoring programme (which includes baseline pre-construction monitoring, construction phase monitoring and post-construction monitoring). In-situ field monitoring will also be completed after major rainfall events, i.e. after events of >25mm rainfall in any 24-hour period. The Project Hydrologist will monitor and advise on the readings collected by in-situ field monitoring.

4.2.2.5 Monitoring Parameters

The analytical determinants of the monitoring programme (including limits of detection and frequency of analysis) will be as per S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations and European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009. The likely suite of determinants will include:

- pH (field measured)
- Electrical Conductivity (field measured)
- Temperature (field measured)
- Dissolved Oxygen (field measured)
- Alkalinity (pH measured)
- Total Phosphorus
- Chloride
- Nitrate
- Nitrite
- Total Nitrogen
- Ortho-Phosphate
- Total Ammonia N
- Biochemical Oxygen Demand
- Total Suspended Solids
- True Colour
- Dissolved organic carbon

4.2.3 Construction Phase Drainage Inspections & Maintenance

Drainage performance will form part of the civil works contract requirements. During the construction phase, the Project Contractor will be responsible for the effectiveness of drainage measures. This responsibility extends to drainage maintenance, to ensure that the installed drainage measures continue to perform as intended by the detailed drainage design. Silt fences, check dams, level spreaders and other drainage measures likely to form part of the detailed drainage design, require regular maintenance to ensure they continue to function effectively, and the Project Contractor is entirely responsible for this maintenance.

Regular inspections of all existing and installed drainage measures should be undertaken by the Project Contractor, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water within the system. The contractor will devise a system of recording the findings of these inspections. Any excess build-up of silt levels at check dams, the settlement ponds, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. For this reason, the drainage measures installed on-site should be inspected at least weekly by the contractor and maintained as required during the construction phase of the Proposed Project to ensure good performance.

The ECoW will monitor the effectiveness of the on-site drainage during changing weather, ground or drainage conditions encountered on site, through their regular visual inspections of on-site watercourses and water monitoring programme. Where it appears that additional drainage measures will be required to ensure the drainage system remains effective, the ECoW will notify the contractor, the developer and project design team including the Project Hydrologist. The ECoW's role in this regard does not replace the need for the weekly (at least) inspections of the drainage system's measures by the Project Contractor.

4.2.4 Surface Water Monitoring Reporting

Visual inspection and laboratory analysis results of monthly surface water quality monitoring shall assist in determining requirements for any necessary improvements in drainage controls and pollution prevention measures implemented on site.

It will be the responsibility of the ECoW to present the ongoing results of water quality and weather monitoring at or in advance of regular site meetings.

Reports on water quality will consider all field monitoring and visual inspections, and results of laboratory analysis completed for that period. Reports will describe how the results compare with baseline data as well as previous reports on water quality. The reports will also describe whether any deterioration or improvement in water quality has been observed, whether any effects are attributable to construction activities and what remedial measures, or corrective actions have been implemented. Any proposed alteration to sampling frequency will be agreed with the Planning Authority in advance.

4.3 Environmental Awareness and Training

4.3.1 Environmental Induction

The Environmental Induction will be integrated into the general site induction on a case-by-case basis for each member of staff employed on-site depending on their assigned roles and responsibilities on site.

Where necessary, the Environmental Induction will as a minimum include:

- A copy of the Environmental Management Site Plans and discussion of the key environmental risks and constraints;
- An outline of the CEMP structure;
- A discussion of the applicable Works Method Statement;
- The roles and responsibilities of staff, including contractors, in relation to environmental management; and,
- An outline of the environmental Incident Management Procedure.

4.3.2 Toolbox Talks

Toolbox talks would be held by the ECoW or Construction Manager at the commencement of each day, or at the commencement of new activities. The aims of the toolbox talks are to identify the specific work activities that are scheduled for that day or phase of work. In addition, the necessary work method statements and sub plans would be identified and discussed prior to the commencement of the day's activities. The toolbox talks will include training and awareness on topics including:

- On-site Ecological Sensitivities;
- Buffers to be upheld – watercourses, archaeology, ecology;
- Sediment and Erosion Control;
- Good site practice;
- On-site Traffic Routes and Rules;
- Keeping to tracks – vehicle rules;
- Strictly adhering to the development footprint;
- Fuel Storage;
- Materials and waste procedures

Site meetings would be held on a regular basis involving all site personnel. The objectives of site meetings is to discuss the coming weeks activities and identify the relevant work method statements and sub plans that will be relevant to that week's activities. Additionally, any non-compliance identified during the previous week would also be discussed with the aim to reduce the potential of the same noncompliance reoccurring.

During construction of the Proposed Project, all staff will be made aware of and adhere to the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013 (Updated 2017)'*. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan.

5. HEALTH AND SAFETY

Construction of the Proposed Project will necessitate the presence of a construction site and travel on the local public road network to and from the Site. Construction sites and the machinery used on them pose a potential health and safety hazard to construction workers if site rules are not properly implemented. The Proposed Project will be constructed in accordance with all relevant Health and Safety Legislation, including:

- Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);
- Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016);
- S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and
- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

The following measures below are also detailed in Chapter 18: Schedule of Monitoring and Mitigation Measures of the EIAR.

- A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage.
- All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted.
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on operating voltages of overhead electricity lines running over the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site will be made aware of the location of overhead electricity lines before they come on to Site.
- Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site.
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'.

This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan.

The scale and scope of the project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'*. The PSDP appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

- Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;
- Where possible, eliminate the hazards or reduce the risks;
- Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan;
- Ensure that the work of designers is coordinated to ensure safety;
- Organise co-operation between designers;
- Prepare a written Safety and Health Plan;
- Prepare a safety file for the completed structure and give it to the client; and
- Notify the Authority and the client of non-compliance with any written directions issued.

The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

- Development of the Safety and Health Plan for the construction stage with updating where required as work progresses;
- Compile and develop safety file information.
- Reporting of accidents / incidents;
- Weekly Site meeting with PSCS;
- Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out:
    - Induction of all Site staff including any new staff enlisted for the project from time to time;
    - Toolbox talks as necessary;
    - Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;
- Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;
- Monitor the compliance of contractors and others and take corrective action where necessary; and
- Notify the Authority and the client of non-compliance with any written directions issued.

6. EMERGENCY RESPONSE PLAN

6.1 Overview

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency. The ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and suppliers as the project progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this within this document.

This is a working document that requires updating throughout the various stages of the Proposed Project.

6.1.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Supervisor/Construction Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 6-1. In a situation where the Site Supervisor/ Construction Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 6-1. This will be updated throughout the various stages of the Proposed Project.

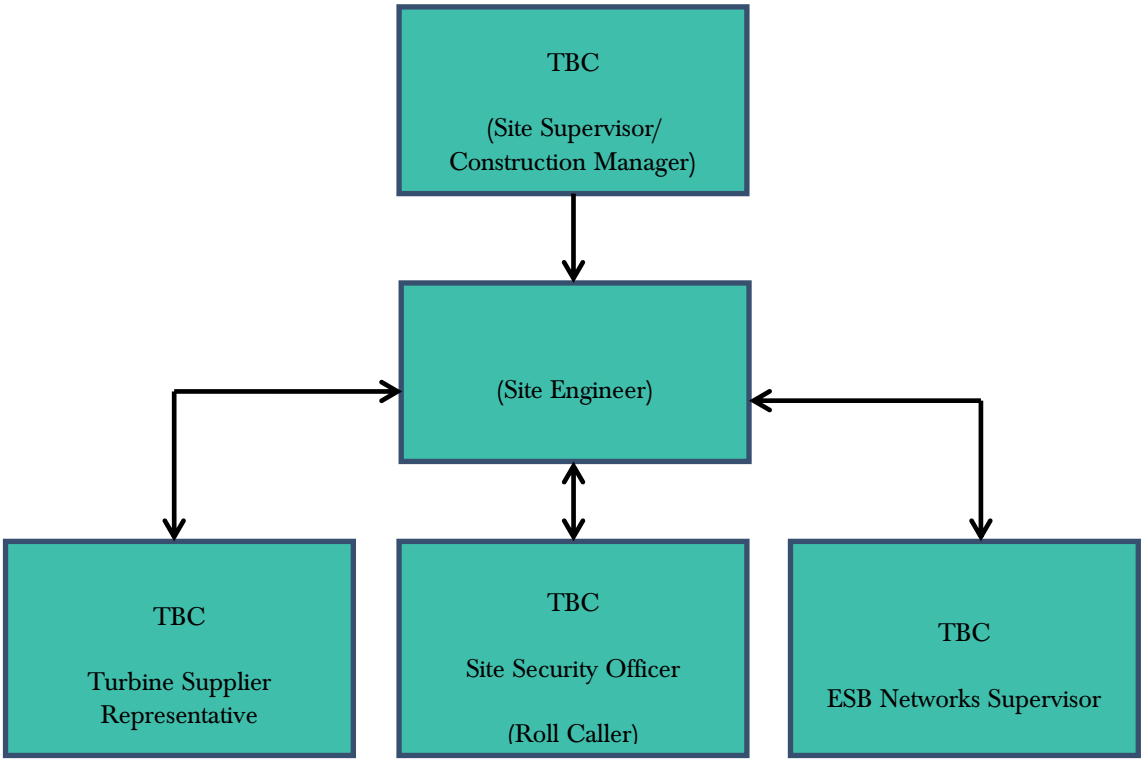

Figure 6-1 Emergency Response Procedure Chain of Command

6.1.2 Hazard Identification

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 6-1 Hazards associated with potential emergency situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools	Entanglement, amputation or electrical shock associated with portable tools.
Contact with services	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire.
Falls from heights including falls from scaffold towers, scissor lifts, ladders, roofs and turbines.	Injury to operative after a fall from a height.
Sickness	Illness unrelated to site activities of an operative e.g., heart attack, loss of consciousness, seizure.
Turbine Specific Incident	This will be included when the upon agreement and section of the final turbine type.
Siltation of watercourses, Fuel Management and Spill Control	Run-off to watercourses casing pollution.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 6-1 the Site Supervisor/Construction Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the Site. The Site Supervisor/Construction Manager must proceed to the assembly point if the emergency poses any significant threat to their welfare and if there are no injured personnel at the scene that require assistance. The Site Supervisor/Construction Manager will be required to use their own discretion at that point. In the case of fire, the emergency evacuation of the Site should proceed, without exception. The Site evacuation procedure is outlined in Section 6.1.3.
- Make safe the area if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone. If delegating the task, ensure that the procedures for contacting the emergency services as set out in Section 6.3 is followed.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g., cordon off an area where an incident associated with electrical issues has occurred.

- Contact any regulatory body or service provider as required e.g., ESB Networks the numbers for which as provided in Section 6.3.
- Contact the next of kin of any injured personnel where appropriate.

6.1.3 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Security Officer to account for all personnel on site.
- The Site Security Officer will inform the Site Supervisor/Construction Manager when all personnel have been accounted for. The Site Supervisor/Construction Manager will decide the next course of action, which be determined by the situation that exists at that time and will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

6.1.4 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction phase of the Proposed Project. Oil/fuel spillages are one of the main environmental risks that will exist on the Site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the Site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Sligo County Council, Inland Fisheries Ireland (IFI), National Parks and Wildlife Service (NPWS), etc. if deemed necessary.

The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The ECoW must be immediately notified.
- If necessary, the Construction Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site (pSPA or cSAC), the ECoW will liaise with the Project Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the ECoW will liaise with the Project Archaeologist.

A record of all environmental incidents will be kept on file by the ECoW and the Project Contractor. These records will be made available to the relevant authorities such as Sligo County Council, IFI, NPWS, etc. if required. The ECoW will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Project Contractor as appropriate.

6.2 Contacting the Emergency Services

6.2.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps will be taken:

Stay calm. It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but do not get frustrated. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.

Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.

If you reach a recording, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.

Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.

Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.

Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.

Do not hang up the call until directed to do so by the call taker.

Due to the remoteness of the Site, it may be necessary to liaise with the emergency services on the ground in terms of locating the Site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the Site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.

6.3 Contact Details

A list of emergency contacts is presented in Table 6-2. A copy of these contacts will be included in the Site Safety Manual and in the Site offices and the various site welfare facilities.

Table 6-2 Emergency Contacts

Contact	Telephone no.
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Skreen Family Practice	071 9166619
Hospital – University Hospital Sligo – Sligo Town	071 917 1111
ESB Emergency Services	1800 372 999
Gas Networks Ireland Emergency	1800 20 50 50
Gardaí – Enniscrone Garda Station	096 36103
Health and Safety Co-ordinator - Health & Safety Services	TBC
Health and Safety Authority	0818 289 389
Inland Fisheries Ireland (IFI)	0818 347 424
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client: SSE Renewables (Ireland) Ltd.	TBC

6.4 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin. In the event of a site operative becoming in an emergency situation where serious injury has occurred and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

6.5 Induction Checklist

Table 6-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the Site. This will be updated throughout the various stages of the Proposed Project.

Table 6-3 Emergency Response Plan Items Applicable to the Site Induction Process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction	
It may be necessary to liaise with and assist the emergency services on the ground in terms of locating the Site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the Site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

7. MITIGATION PROPOSALS

All mitigation measures relating to the pre-commencement and construction, phases of the Proposed Project are set out in the various sections of the Environmental Impact Assessment Report (EIAR), NIS prepared as part of the planning application to An Coimisiún Pleanála.

This section of the CEMP groups together all of the pre-commencement and construction mitigation measures presented in the EIAR. The Mitigation Measures are presented in the following pages and are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures. Operational Phase and Decommissioning Phase mitigation measures are not included in the table below, however, they are provided Chapter 18 and Appendix 4-6 (Decommissioning Plan) of the EIAR, respectively.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the Proposed Project. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

Table 7-1 Proposed Mitigation Measures

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
EIAR Chapter 4 – Description of the Proposed Project					
Pre-Construction Phase					
MM1	Environmental Management	EIAR Chapter 4 Appendix 4-5	› All proposed construction activities and associated mitigation measures for the site will be provided for in a Construction and Environmental Management Plan (CEMP). A CEMP has been prepared for the Proposed Project and is included in Appendix 4-5 of this EIAR. › The CEMP sets out the key environmental considerations to be considered by the contractor during construction of the Proposed Project. The CEMP includes details of drainage, peat and spoil management, waste management, and details the mitigation and monitoring measures to be implemented in order to comply with the environmental commitments outlined in the EIAR and NIS. The contractor will be contractually obliged to comply with all such measures. In the event planning permission is granted for the Proposed Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for approval		
MM2	Environmental Management	Appendix 4-5	› The Project Developer will be required to engage an independent and suitably qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of ECoW to oversee the construction works and audit the implementation of the CEMP. The ECoW will report to the Project Developer and Project Contractor but will liaise closely with the Construction Manager in relation to the Project Contractor's day-to-day implementation of the CEMP on site. › The level, detail and frequency of reporting expected from the ECoW for the Construction Manager, Developer's Project Manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the Proposed Project.		
MM3	Surface Water Quality	Appendix 4-4	› Water quality field testing and laboratory analysis will be undertaken prior to commencement of felling and construction at the Site. The monitoring programme will be		

			subject to agreement with Sligo County Council but will be based on the planning stage programme already outlines in the EIAR, CEMP and SWMP. › Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken for each stream that drains the construction site. › Baseline sampling will be completed on at least two occasions, and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell. › There is an existing drainage network across the Site and runoff drains relatively freely to local watercourses and streams. This existing drainage system will continue to function as it is during the pre- construction phase. › Prior to commencement of works in sub-catchments across the Site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. These inspections will be done on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously.		
MM4	Site Drainage Plan	EIAR Chapter 4 Appendix 4-4 Appendix 4-5 Appendix 4-7	› The Project Hydrologist will complete a detailed drainage design and maintenance plan before construction commences and will attend the Site to set out and assist with micro-siting of proposed drainage controls as outlined in Section 4.6 of the EIAR › The drainage system will be excavated and constructed in conjunction with the access track and hard standing construction. Drains will be excavated, and settlement ponds constructed to eliminate any suspended solids within surface water running off the Site. › Prior to commencement of works in sub-catchments across the Site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. › Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off.		

			▸ The routes of any natural drainage features will not be altered as part of the Proposed Project. Turbine locations have been selected to avoid natural watercourses. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from watercourses. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings. ▸ Where artificial drains are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert artificial drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. ▸ Existing artificial drains in the vicinity of Existing Wind Farm access tracks will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas post treatment, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If access track widening or improvement works are necessary along the existing access tracks, where possible, the works will take place on the opposite side of the access track to the drain. ▸ The key principles of drainage design that will be implemented and adhered to as part of the Proposed Project are as follows: ▸ Keep clean water clean by intercepting it upgradient of works areas and divert it around the works areas for discharge as diffuse overland flow or for rewetting of land. ○ Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line, treatment and outfall controls prior to controlled diffuse release as overland flow or for rewetting of land. ○ No direct hydraulic connectivity from construction areas to watercourses or drains connecting to watercourses. ○ Where possible, maintain 50-metre watercourse buffer zones for the wind turbines.		

			○ No alteration of natural watercourses. ○ Maintain the existing hydrology of the Site. ○ Blocking of existing manmade drainage as appropriate. ○ Daily inspection and recording of surface water management system by onsite Environmental Manager and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the Site. ○ Use of siltbuster or equivalent system if required.		
MM5	Preparative Site Drainage Management	Chapter 4 Appendix 4-5 Appendix 4-7	› The detailed drainage design will specify all materials and equipment necessary to implement the drainage measures effectively, which will be brought on site in advance of any works commencing. › An adequate quantity of straw bales, clean stone, terram, stakes, etc. will be kept on site at all times to implement the detailed drainage design measures as necessary. The detailed drainage measures will be installed prior to, or at the same time as the works they are intended to drain.		
MM6	Drainage Inspection	Appendix 4-4 Appendix 4-5 Appendix 4-7	› Prior to commencement of works in sub-catchments across the Site, main drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. › An inspection and maintenance plan for the drainage system onsite will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be carried out, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist.		
MM7	Collector Drains	EIAR Chapter 4 Appendix 4-5	› Collector drains will be installed downgradient of the main works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and collected silt and sediment. Swales will intercept the potentially silt-laden water from the excavations and construction areas of the site and prevent it reaching natural watercourses.		

		Appendix 4-7	› New collector drains and sediment traps will be installed during ground preparation to intercept water upgradient of felling areas and divert it away. Collector drains will be excavated at an acute angle to the contour (0.3%-3% gradient), to minimise flow velocities. › All new collector drains will taper out before entering the aquatic buffer zone to ensure the discharging water gently fans out over the buffer zone before entering the aquatic zone.		
MM8	Interceptor Drains	EIAR Chapter 4, 9 Appendix 4-5 Appendix 4-7	› Interceptor drains will be installed upgradient of any works areas to collect clean surface flow runoff and prevent it reaching excavations and construction areas of the Site where it might otherwise have come into contact with exposed surfaces and picked up silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. This will minimise the volume of potentially silty runoff to be managed within the construction area. › The interceptor drains will be installed in advance of any main construction works commencing		
MM9	Watercourse Inspection	EIAR Chapter 4 Appendix 4-5	› Confirmatory inspections of the proposed watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		
MM10	Drainage Maintenance	Chapter 4 Appendix 4-5 Appendix 4-7	› An inspection and maintenance plan for the drainage system onsite will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be carried out, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist. › If necessary, any excess sediment build up behind check dams will be removed. For this reason, check dams will be inspected and maintained weekly during the construction phase of the Proposed Project to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam. › Check dams will also be inspected weekly during the construction phase of the Proposed Project and following rainfall events to ensure the structure of the dam is still effective in		

			controlling flow. Any scouring around the edges of the check dams or overtopping of the dam in normal flow conditions will be rectified by reinforcement of the check dam. › Drainage swales will be regularly inspected for evidence of erosion along the length of the swale. If any evidence of erosion is detected, additional check dams will be installed to limit the velocity of flow in the channel and reduce the likelihood of erosion occurring in the future. › Silt traps will be inspected weekly during the construction phase of the Proposed Project and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows. › The frequency of drainage system inspections will be reduced following completion of the construction phase of the Proposed Project. The Project Hydrologist will inspect and review the drainage system after construction has been completed to provide guidance on the requirements of an operational phase drainage system.		
MM11	Pre-construction Drainage	Appendix 4-4 Appendix 4-5 Appendix 4-7	› Prior to commencement of works in sub-catchments across the Site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the Site, as works in all areas will not commence simultaneously. › Drainage and associated pollution control measures will be implemented onsite before the main construction works commence. Where possible drainage controls will be installed during seasonally dry ground conditions. This will reduce the possibility of impact on surface waters by suspended sediment released during construction and entrained in surface run-off. Prior to the commencement of new tracks/hardstands (or track upgrades) 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 watercourse such as at watercourse crossings.		

			› Where drains, mainly forestry drains, are currently in place in the vicinity of proposed works areas, these drains may have to be diverted around the proposed works areas to minimise the amount of water in the vicinity of works areas. Where it may not be possible to divert forestry drains around proposed work areas, the drains will be blocked to ensure sediment laden water from the works areas has no direct route to other watercourses. Where drains have to be blocked, the blocking will only take place after an alternative drainage system to handle the same water has been put in place. › Existing drains in the vicinity of existing Proposed Wind Farm tracks will be maintained in their present location where possible. If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains. If road widening or improvement works are necessary along the existing roads, where possible, the works will take place on the opposite side of the road to the drain.		
MM12	Tree Felling Drainage Measures	Appendix 4-5	Prior to the commencement of tree felling for subsequent road construction the following key temporary drainage measures will be installed: › All existing land and forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps; › Clean water interceptor drains will be installed upgradient of the works areas; › Check dams/silt fence arrangements (silt traps) will be placed in all existing that have surface water flows; and, › A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. Before the commencement of any felling works, an Ecological Clerk of Works (ECoW) shall be appointed to oversee the keyhole and extraction works. The ECoW shall be experienced and competent, and shall have the following functions and operate their record using a Schedule of Works Operation Record (SOWOR), as proposed in the planning application: › Attend the Site for the setup period when drainage protection works are being installed and be present onsite during the remainder of the forestry keyhole felling works. › Prior to the commencement of works, review and agreement of the positioning by the Operator of the required Aquatic Buffer Zones (ABZs), silt traps, silt fencing (see below), water crossings and onsite storage facilities for fuel, oil and chemicals (see further below).		

			› Be responsible for preparing and delivering the Environmental Toolbox Talk (TBT) to all relevant parties involved in site operations, prior to the commencement of the works. › Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness in accordance with Section 4.2 and Appendix 3 (Site Monitoring Form (Visual Inspections)) of the Forestry & Freshwater Pearl Mussel Requirements. › Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures. › Collect water samples monthly for analysis by a 3rd party accredited laboratory, adhering to the following requirements: › Surface water samples shall be collected upstream and downstream of the keyhole felling at suitable sampling locations. › Sampling shall be taken from the stream / riverbank, with no in-stream access permitted. › The following minimum analytical suite shall be used: pH, EC, TSS, BOD, Total P, Ortho-P, Total N, and Ammonia. › Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions. › Prepare and maintain a contingency plan. › Suspend work where potential risk to water from siltation and pollution is identified, or where operational methods and mitigation measures are not specified or agreed. › Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW. To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities. › All relevant measures, best practice methods and requirements set out in Chapter 9 of the EIAR will be adhered to including Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines. › The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing. › Machine combinations (i.e. handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; › All machinery will be operated by suitably qualified personnel;		

			› Checking and maintenance of tracks and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use track infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; › Machines will traverse the Site along specified access track routes (referred to as racks); › The location of racks will be chosen to avoid wet and potentially sensitive areas; › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal should take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; › Silt fences will be installed at the outfalls of existing drains downstream of felling areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling works and will provide surface water settlement for runoff from work areas and will prevent sediment from entering downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected spoil repository areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; › In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed onsite during construction; › Double silt fencing will also be put down slope of felling areas which are located in close proximity to streams and/or relevant watercourses; › Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded; › Timber will be stacked in dry areas, and outside watercourse buffer zones. Check dams and silt traps will be emplaced on the down gradient side of timber storage/processing sites; › Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff; › All refuelling will be completed outside of the designated 50m hydrological buffer zones. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; and,		

			› Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.		
MM13	Peat and Spoil Management	EIAR Chapter 4 Appendix 4-2	› An interceptor drain will be installed upslope of the designated peat management areas to divert any surface water away from these areas. This will help ensure stability of the placed peat and reduce the likelihood of debris run-off. › All the recommendations/best practice guidelines for the placement of spoil in identified spoil management areas and alongside access tracks will be confirmed by the Geotechnical Engineer prior to construction.		
MM14	Proposed Grid Connection Route	EIAR Chapter 4 Appendix 4-5	› Before works commence, updated surveying will take place along the Proposed Grid Connection Route, with all existing culverts and services identified, as detailed in Section 4.8.3 of the EIAR. All relevant bodies i.e., ESBN, Sligo County Council, GNI etc. will be contacted and all up to date information for all existing services sought. Structural bridge surveys will be carried out and the current proposals will be subject to detailed design prior to construction. HDD launch and reception pits at locations along the Proposed Grid Connection Route will be determined following site investigations. › When the Proposed Grid Connection Route is located on public roads, a traffic management plan will be prepared prior to any works commencing. A road opening licence will be obtained where required and all plant operators and general operatives will be inducted and informed as to the location of any services.		
MM15	Underground Cabling and Communications Cabling	EIAR Chapter 4 Appendix 4-5	› Before works commence, updated surveying will take place along the underground cabling route, with all existing culverts and services identified, as detailed in Section 4.8.3 of the EIAR. All relevant bodies i.e., ESBN, Sligo County Council, GNI etc. will be contacted and all up to date information for all existing services sought. Structural bridge surveys will be carried out and the current proposals will be subject to detailed design prior to construction. HDD launch and reception pits at locations along the underground cabling route will be determined following site investigations. › On completion, the ground will be reinstated as described in Section 4.8.2.6. All underground cabling watercourse crossings along the public road corridor		

			(L2702 and L6309 local roads) will be completed via horizontal directional drilling methodology. Details of all watercourse crossing methodologies for the Proposed Project are outlined in Section 4.8.3.2 below.		
MM16	Waste Management	EIAR Chapter 4 Appendix 4-5	› Prior to the commencement of the development a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the development adheres to the management plan.		
MM17	Traffic Management	EIAR Chapter 4, 15 Appendix 4-5 Appendix 15-2	› A detailed Traffic Management Plan (TMP), incorporating all the mitigation measures set out within this CEMP along with Chapter 15 of the EIAR, will be finalised and detailed provisions in respect of traffic management agreed with the roads authority and An Garda Síochána prior to construction works commencing on Site. The detailed TMP will include the following: › **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the development, and this person will be the main point of contact for all matters relating to traffic management. › **Delivery Programme** – a programme of deliveries will be submitted to Sligo County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, Transport Infrastructure Ireland (TII) and Motorway Maintenance and Renewal Contractors (MMaRC) will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Proposed Wind Farm. › **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night via letter drops and posters in public places. Information will include the contact details of the Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.		

			• **A Pre and Post Construction Condition Survey** – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. • **Liaison with the relevant local authority** - Liaison with Sligo County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and "prior to commencement" status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads Section of Sligo County Council will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager. • Implementation of temporary alterations to road network at critical junctions – at locations highlighted in Section 15.1.9 of the EIAR. • **Identification of delivery routes** – These routes will be agreed with Sligo County Council and adhered to by all contractors. • **Delivery times of large turbine components** - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. • **Travel plan for construction workers –** While the assessment above has assumed the worst case in that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the Site and identification of an area for parking. • **Additional measures** - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on site and sweeping / cleaning of local roads as required. These are set out in the CEMP which is contained in Appendix 4-5. • **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.		

			› **Diversion routes during grid construction –** The identification and agreement with Sligo County Council of suitable diversion routes during the construction of the Proposed Grid Connection Route.		
Construction Phase					
MM18	Refuelling	EIAR Chapter 4, 8, 9 Appendix 4-5 Appendix 4-6 Appendix 4-7	› Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. › All plant will be inspected and certified to ensure that they are leak free and in good working order prior to use at the Site. › On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the Site. › Heavy plant and machinery will be refuelled on-site by a fuel truck, with spill kits kept onboard, that will come to the Site as required on a scheduled and organised basis. › Other refuelling will be carried out using mobile double skinned fuel bowser. The fuel bowser will be parked on a level area in the construction compound when not in use › Only designated trained operatives will be authorised to refuel plant on-site; › Refuelling or maintenance of machinery will not occur within the delineated hydrological buffer zones; › Fuels stored on the Proposed Wind Farm will be minimised; › Any diesel or fuel oils stored at the temporary construction compound will be bunded. The bund capacity will be sufficient to contain 110% of the storage tank's maximum capacity; and, › An emergency plan for the construction phase to deal with accidental spillages will be contained within the CEMP. Spill kits will be available to deal with accidental spillages		
MM19	Concrete-Based Products Deliveries and Management	EIAR Chapter 4, 9 Appendix 4-5	› No batching of wet-concrete products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place: › Where possible pre-cast elements for culverts and concrete works will be used; › Where concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning will be undertaken at lined concrete washout ponds; › Weather forecasting will be used to plan dry days for pouring concrete; and,		

			› The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event; › Concrete truck bodies will not be washed out on the Site but will be directed back to their batching plant for washout; › Site access tracks will initially be constructed with a subgrade and compacted with the use of a roller to allow concrete delivery trucks access all areas where the concrete will be needed. The final wearing course for the Site access tracks will not be provided until all turbine foundations have been poured. No concrete will be transported around the Site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of turbine foundations will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed; › The arrangements for concrete deliveries to the Site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout and discussing emergency procedures; › Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted at the Site.		
MM20	Concrete Pouring	EIAR Chapter 4 Appendix 4-5	› Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast. › Restricting concrete pumps and machine buckets from slewing over watercourses (including drains and ditches) while placing concrete. › Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets. › Ensuring that covers are available, and used, when necessary, for freshly placed concrete to avoid the surface washing away in heavy rain. › The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, › Disposing of surplus concrete after completion of a pour in agreed suitable locations away from any watercourse or sensitive habitats.		

MM21	Road Cleanliness	EIAR Chapter 4 Appendix 4-5	› The Proposed Wind Farm roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. › A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Project. › When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper.		
MM22	Watercourse Buffers	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-5	› 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. › The Proposed Project has where possible, been kept a minimum of 50 metres from natural watercourses. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from watercourses.		
MM23	Water Discharge	EIAR Chapter 4, 9 Appendix 4-5 Appendix 4-7	› 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 such as check dams, sandbags, 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.		
MM24	Wastewater Management	EIAR Chapter 4	› During the construction phase there will be 4 no. temporary construction compounds each of which will contain a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works; › Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by a permitted waste collector to a licensed wastewater treatment facility. It is not proposed to treat wastewater on-site		
MM25	Interceptor Drains	EIAR Chapter 4, 9 Appendix 4-5 Appendix 4-7	› Interceptor drains will be installed upgradient of any works areas to collect surface flow runoff and prevent it reaching excavations and construction areas of the site where it might otherwise have come into contact with exposed surfaces and collected silt and sediment. The drains will be used to divert upslope runoff around the works area to a location where it can be redistributed over the ground surface as sheet flow. › The interceptor drains will be installed in advance of any construction works commencing.		
MM26	Check Dams	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	› The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive › Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events. › If necessary, any excess sediment build up behind the dams will be removed. For this reason, check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.		

MM27	Vegetation Filters	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	› Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.		
MM28	Stilling / Settlement Ponds	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	› Stilling ponds will be used to attenuate runoff from works areas of the Site during the construction phase and will remain in place to handle runoff from roads and hardstanding areas of the Proposed Project during the operational phase. › Stilling ponds will be located towards the end of swales, close to where the water will be reconverted to diffuse sheet flow. Upon exiting the stilling pond system, water will be immediately reconverted to diffuse flow via a fan-shaped rock apron if there is adequate space and ground conditions allow. Otherwise, a swale will be used to carry water exiting the stilling pond system to a level spreader to reconvert the flow to diffuse sheet flow.		
MM29	Silt Bags	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	› Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water. The silt bags provide a passive non-mechanical method of removing any remaining silt contained in the potentially silt-laden water collected from works areas within the site. › Dewatering silt bags can also be used as an additional filtration measure downgradient of settlement ponds, wherever it is deemed appropriate, throughout the site. The water will flow, via a pipe, from the settlement ponds into the silt bag. The silt bag will allow the water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. The dewatering silt bags will ensure that there will be no loss of silt into the stream. › The dewatering silt bag, when full, will be removed from the Proposed Wind Farm by a waste contractor with the necessary waste collection permit, who will then transport the silt bag to an appropriate, fully licensed waste facility.		

MM30	Siltbuster	Chapter 4 Appendix 4-5	› A "siltbuster" or similar equivalent piece of equipment may be used to filter any water pumped out of excavation areas, if necessary, prior to its discharge to settlement ponds or swales. 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.		
MM31	Clear Span Watercourse crossing	EIAR Chapter 4 Appendix 4-5	The watercourse crossing will be constructed to the specifications of the OPW bridge design guidelines '*Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945*', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		
MM32	Culvert Crossing	EIAR Chapter 4, 9. Appendix 4-5	› All new proposed culverts and proposed culvert upgrades at field drain crossings required for the Proposed Wind Farm will be suitably sized for the expected peak flows in the relevant drain. › Some culverts may be installed to manage drainage waters from works areas of the Proposed Wind Farm, particularly where the waters must be taken from one side of an existing roadway to the other for discharge. The size of culverts will be influenced by the depth of the track or road sub-base but will have a minimum 900m diameter. In all cases, culverts will be oversized to allow mammals to pass through the culvert. › All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.		
MM33	Silt Fences	EIAR Chapter 4, 9	› Silt fences will be installed as an additional water protection measure around existing watercourses where works are proposed within the 50m zone of a stream or 100m buffer zone of a lake. These areas include around existing culverts and around the headwaters of watercourses.		

		Appendix 4-5 Appendix 4-7	› Silt fences will be installed as single, double or a series of triple-silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document *'Control of Water Pollution from Linear Construction Projects'* published by CIRIA (No. C648, 2006). › All silt fencing will be formed using Terrastop Premium or equivalent silt fence product. › Silt fences will be inspected regularly to ensure water is continuing to flow through the fabric and the fence is not coming under strain from water backing up behind it.		
MM34	Sedimats	EIAR Chapter 4 Appendix 4-5 Appendix 4-7	› Sediment entrapment mats, consisting of coir or jute matting, will be placed at the outlet of the silt bag 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.		
MM35	Internal Cabling Trench	EIAR Chapter 4 Appendix 4-5	For the trenching and ducting works the following step by step methodology will apply: › Grade, smooth and trim trench floor when the required 1315mm depth and 825mm width have been obtained. › Place bedding layer of Cement Bound Granular Mixture B (CBGM B) material in accordance with the specification and compact it so that the compacted thickness is as per the drawings. › Lay the bottom row of ducts in trefoil formation as detailed on the design drawings. Use spacers as appropriate to establish horizontal duct spacing. Fit a secure cap / bung to the end of each duct run to prevent the ingress of dirt or water. › Carefully surround and cover ducts with CBGM B in accordance with the design drawings and specifications and thoroughly compact without damaging ducts. › Place cable protection strips on compacted CBGM B directly over the ducts. › Lay the top row of ducts onto the freshly compacted CBGM B including the cable protection strips above the bottom row of ducts. Place a secure cap at the end of each duct to prevent the ingress of dirt or water.		

			› Carefully surround and cover ducts with CBGM B material in accordance with the drawings and thoroughly compact without damaging ducts. › Place red cable protection strip on top of compacted CBGM B over each set of ducts as shown on the drawings. › Place and thoroughly compact CBGM B material or Clause 804 backfill, or soil backfill as specified and place warning tape at the depth shown on the drawings. › For concrete and asphalt/bitmac road sections, carry out immediate permanent reinstatement in accordance with the specification and to the approval of the local authority and/or landowners, unless otherwise agreed with local authority (Figure 3). › For unsurfaced/grass sections, backfill with suitable excavated material to ground level leaving at least 100 mm topsoil or match existing level at the top to allow for seeding or replace turves as per the specification of the local authority or landowner (Figure 4). › Clean and test the ducts in accordance with the specification by pulling through a brush and mandrel. Install 12 mm polypropylene draw rope in each duct and seal all ducts using robust duct end seals fitted with rope attachment eyes in preparation for cable installation at a later date. All the works should be witnessed by ESBN Clerk of Works (CoW) as required.		
MM36	Temporary Construction Compound	EIAR Chapter 4 Appendix 4-5	› The area to be used as the compounds will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter; › A limited amount of fuel will have to be stored in appropriately bunded containers and a designated area for oil storage will be constructed within the compound. › A waste storage area will be provided within the compound; › Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by a permitted waste collector to a licensed wastewater treatment facility, and; › The water supply to the Site will be from temporary water storage tanks which will be filled using mobile water tanks which will source water locally as required. › The compounds will be fenced and secured with locked gates if necessary; and, › Upon completion of the Proposed Project, the temporary construction compounds will be decommissioned and allowed to vegetate naturally.		
EIAR Chapter 5: Population and Human Health					

Pre-construction Phase					
M37	Human Health	EIAR Chapter 5	› Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made known. Local access to properties will also be maintained throughout any construction works and local residents will be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum.		
MM38	Traffic and Transport	EIAR Chapter 5	› A Traffic Management Plan (TMP) has been developed in order to minimise any potential effect on the local population during the construction phase of the Proposed Project due to traffic.		
Construction Phase					
MM39	Human Health	EIAR Chapter 5 Appendix 4-5	The Proposed Project will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including: › Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005); › Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); › S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and › Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006). › A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage. › All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the		

			implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted. › Goal posts will be established, where necessary, under overhead electricity lines for the entirety of the construction phase of the Proposed Wind Farm. › The suitability of machinery and equipment for use near power lines will be risk assessed. › All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site. › Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire. › When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site. › All staff will be made aware of and adhere to the Health & Safety Authority's '*Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021*[4]. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan. › Temporary diversion routes avoiding the L6309 local road will be in place along the Sligo Way trail during the duration of the construction period.		

[4] *Health & Safety Authority (2013) Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013. Available at: https://www.hsa.ie/eng/publications_and_forms/publications/construction/guidelines_on_the_procurement_design_and_management_requirements_of_the_safety_health_and_welfare_at_work_construction_regulations_2013_updated_.pdf*

			The scale and scope of the Proposed Project necessitates that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's *'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'*. The PSDP appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project; › Where possible, eliminate the hazards or reduce the risks; › Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan; › Ensure that the work of designers is coordinated to ensure safety; › Organise co-operation between designers; › Prepare a written Safety and Health Plan; › Prepare a safety file for the completed structure and give it to the client; and › Notify the Authority and the client of non-compliance with any written directions issued. The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; › Compile and develop safety file information. › Reporting of accidents / incidents; › Weekly Site meeting with PSCS; › Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: › Induction of all Site staff including any new staff enlisted for the project from time to time; › Toolbox talks as necessary;		

			› Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date; › Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance; › Monitor the compliance of contractors and others and take corrective action where necessary; and › Notify the Authority and the client of non-compliance with any written directions issued.		
MM40	Air Quality: Dust and Exhaust Emissions	EIAR Chapter 5, 10	The majority of aggregate material for the construction of roads and turbine bases will be sourced from the onsite borrow pits, therefore limiting the distance needed to transport material to the Proposed Wind Farm. Truck wheels will be washed to remove mud and dirt before leaving the Proposed Wind Farm. All plant and materials vehicles shall be stored in the temporary construction compound areas or other dedicated areas. Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. Construction traffic will be restricted to defined routes, and a speed limit will be implemented. The active construction area along the Proposed Grid Connection Route will be small, ranging from 100-200m in length at any one time. Should separate crews be used during the construction phase they will generally be separated by 1-2km. All construction machinery will be maintained in good operational order while on-site, minimising any emissions that are likely to arise. Aggregate materials for the construction of the cabling route will be sourced locally to reduce the amount of emissions associated with vehicle movements. Potential dust emissions during the construction period will not be significant and will be relatively short-term in duration. All mitigation as outlined in order to reduce insofar as possible, impacts on air quality in the vicinity of Proposed Project construction works are detailed in MM99 to MM101.		

MM41	Water Quality	EIAR Chapter 5 EIAR Chapter 9	› A bespoke drainage design which includes but is not limited to interceptor drains, check dams, swales and ponds will be implemented on the Site and will be subject to review, finalisation and updating (if required), please see Section 4.6 in Chapter 4 for details on the different type of drainage measures to be implemented on the Site. Chapter 9 of this EIAR details all best practice and mitigation measures to minimise the potential for entrainment of suspended sediment or potential hydrocarbon leak. Please see Chapter 9 for details		
MM42	Noise and Vibration	Chapter 5, 12 Appendix 4-5	Good onsite practices, both for construction of the Proposed Wind Farm and the Proposed Grid Connection Route will be implemented to minimise the likely effects. Particular care will be taken at watercourse crossings along the Proposed Grid Connection Route. Section 8 of BS 5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite: › Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; › All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; › Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; › All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; › Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; › Regularly maintain all equipment used onsite, including maintenance related to noise emissions; › Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and › All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided.		

			At any location within 30m of a residential receptor, where directional drilling activities are required for the Proposed Grid Connection Route, the installation of temporary boarding alongside the drilling rig or 'acoustic blanket panels' hanging from heras fencing (or similar) may be used to mitigate noise emissions.		
MM43	Major Accidents & Natural Disasters	Chapter 5, 16	› The Proposed Project will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission 'Guidance on the preparation of Environmental Impact Assessment Reports' 2017, a Risk Management Plan will be prepared and implemented on site to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures. › The Proposed Project will also be subject to a fire safety risk assessment in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, which will assist in the identification of any major risks of fire on site, and mitigation of the same during operation. › A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Project and is included in Appendix 4-5 of this EIAR. Upon a grant of planning permission for the Proposed Project, the CEMP will be updated to reflect the conditions stipulated in the consent prior to the commencement of the development. The CEMP will be a live document maintained by the contractor that will work to ensure that potential risks of major accident and/or disaster are identified, avoided and mitigated, as necessary. Refer to Appendix 4-5 for the CEMP that sets out the minimum standards to be employed by the contractor. › Potential effects associated with contamination during construction, operation and decommissioning are addressed fully in Chapter 8: Land, Soils and Geology, and Chapter 9: Hydrology and Hydrogeology The mitigation measures outlined in Chapter 8 and Chapter 9 to protect environmental receptors as well as the procedures and measures described in the CEMP will ensure that the risk from these sources is low.		
EIAR Chapter 6 Biodiversity					
Pre-Construction					

MM44	Invasive Species Management	EIAR Chapter 6 Appendix 6-5	A pre-commencement survey for invasive species within the footprint of the Proposed Wind Farm will be carried out by a suitably qualified ecologist to ensure there is no new growth of Third Schedule invasive species in these areas. If additional invasive species are recorded within the construction areas, an Invasive Species Management Plan will be prepared in advance of construction which will incorporate the measures necessary to prevent spread additional to the measures laid out below. A Toolbox Talk will be given by the Ecological Clerk of Works (ECoW) in relation to the management of invasive species within construction areas. *Rododendron ponticum*, a species listed under the Third Schedule of the S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, was recorded within the Proposed Project site. A pre-commencement survey for *Rhododendron* will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the Proposed Wind Farm and to determine whether there have been any changes in the extent of the infestation since the undertaking of surveys in 2023, 2024 and 2025. The locations and extent of *Rhododendron* within the Proposed Wind Farm will be clearly marked out using hazard tape to ensure they are not disturbed. For *Rhododendron* stands that occur outside of the construction footprint and will not be directly impacted, a 10m buffer zone surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils.		
MM45	Flora and Fauna	EIAR Chapter 6	**Otter** No otter holts were recorded within 150m of any Proposed Project infrastructure within the Proposed Project site. However, it is noted that this is a mobile species and could potentially migrate within the site. As such, prior to the commencement of construction works associated with the installation of watercourse crossings, a pre-commencement otter survey will be undertaken 150m upstream and downstream any the proposed watercourse crossings to ensure that no otter holts/breeding sites have been established since the original surveys undertaken (TII, 2008). This will be undertaken by a suitably qualified ecologist in accordance with		

			standard best practice guidance. The new watercourse crossing within the Proposed Wind Farm will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat. If a holt is found within 150m of construction areas, the works will be undertaken in line with TII guidelines and if a potential for disturbance is identified, these works will not be undertaken until a derogation licence is obtained. **Badger** Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction badger survey will be carried out in order to assess activity levels at setts and to identify any sett entrances that may have been established in the intervening period. All setts within 50m of the Proposed Wind Farm infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by badgers and levels of activity. All badger survey work will be undertaken in line with current best practice guidance. If a sett is found within 50m of the Proposed Project, further monitoring and mitigation in line with TII guidelines, and in consultation with the NPWS will be prescribed as appropriate.		
Construction Phase					
MM46	Surface Watercourses and Sensitive Aquatic Faunal Species	EIAR Chapter 6, 9 Appendix 4-4	**Aquatic Habitats** A minimum distance of 100m between the SAC and proposed infrastructure was maintained in the design of the Proposed Wind Farm. Only the proposed turbine T5 is located within the Easky Margaritifera catchment, however a distance of over 100m was maintained between any proposed infrastructure and the Easky River draining into the Margaritifera catchment. Instream works are not required at any watercourse crossing along the Proposed Grid Connection Route. Watercourses will not be directly impacted upon since no instream works are proposed.		

			The new watercourse crossing within the Proposed Wind Farm will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat. A drainage design for the Proposed Project is provided in the Surface Water Management Plan in Appendix 4-4 of this EIAR. This plan provides details of how water quality will be protected during the construction of the Proposed Project.		
MM47	Bats	EIAR Chapter 6 Appendix 6-2	› The following construction best practice will be employed to minimise general noise and disturbance potential. › During the construction phase, plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001). › Where lighting is required, directional lighting will be used to prevent overspill on to forestry edges. Exterior lighting during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Development, and consequently on bats i.e. Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories can be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. › The proposed lighting around the site shall be designed in accordance with the Institute of Lighting Professionals Guidance Note 08/23 Bats and artificial lighting at Night. In addition, the Applicant commits to the use of lights during construction (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations: › Every light needs to be justifiable, › Limit the use of light to when it is needed, › Direct the light to where it is needed, › Reduce the light intensity to the minimum needed, › Use light spectra adapted to the environment, › When using white light, use sources with a “warm” colour temperature (less than 3000K).		

MM48	Habitats	EIAR Chapter 6, 9	**Aquatic Habitats** The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. The environmental management framework to be adhered to during the construction phase of the Proposed Project includes comprehensive detail regarding site set up, pollution prevention and hydrocarbon management and incorporates mitigating measures as detailed in Chapter 9 of the EIAR and in the CEMP in Appendix 4-5 to ensure that there is no significant effect on water quality or aquatic receptors within or downstream of the Proposed Project. The measures include the use of interceptor drains and collector drains to collect and intercept run-off from construction areas, temporary settlement ponds to attenuate and treat runoff, the use of silt fences between works and watercourses and dewatering silt bags to remove silts from pumped waters. The measures are outlined in full in Chapter 9. **Habitats** The Proposed Project has been specifically designed to avoid uncut and good condition areas of blanket bog habitat where possible and to minimise impacts thereon. This was achieved through an early-stage ecological constraints study informed by field surveys and habitat mapping. The proposed layout was thereby altered through the iterative design process to avoid uncut blanket bog habitats. Proposed new wind farm access tracks and road upgrades will be constructed sensitively to ensure that hydrological connectivity is maintained between areas of peatland habitat. Upgrades to the existing road along the adjacent QI blanket bog habitat of the Ox Mountains Bogs SAC will only be carried out westwards, away from the SAC habitat. No stockpiling within, or access to, the SAC area is permitted. Upgrade works along this stretch of road are to be supervised by the ECoW. The loss of 0.66ha of marginal upland blanket bog for the Proposed Project, considered significant, will be fully offset through the implementation of the Biodiversity Management and Enhancement Plan (BMEP) which includes for the enhancement and management of an area of degraded blanket bog measuring 36ha (Tawnadremira Bog) which is located between two sections of the Ox Mountains Bogs SAC. The design of the Proposed Wind Farm infrastructure fully avoids the area of wet heath		

			habitat. In advance of construction of the Proposed Wind Farm, the area will be fenced off from the surrounding infrastructure; this fencing is to be maintained throughout the lifetime of the Proposed Wind Farm. In advance of construction of the Proposed Wind Farm, the Project Ecologist/ ECoW will inspect the fencing surrounding the habitat to ensure it is in good repair and that there is no possibility of access to the area, or any storage of materials. Site workers will be fully briefed on the sensitivity of the habitat. Signage will be installed on the fences outlining that no access or placement of materials is permitted.		
MM49	Flora and Fauna	EIAR Chapter 6	**Otter** The pathways that would allow potential impacts to occur due to deterioration of water quality were considered in the design of the Proposed Project. Specific mitigation is provided in relation to water quality in Chapter 9 of this EIAR. The Construction Environmental Management Plan (CEMP) provided in Appendix 4-5 provides the details of how the measures will be implemented during construction. **Badger** During the breeding season (December to June inclusive) no works will be undertaken within 50m of active setts. If such works are required, exclusion measures will be put in place (as outlined above) prior to construction in line with TII Guidelines to ensure that the sett is evacuated. All of the above works will be undertaken or supervised by an appropriately qualified ecologist. **Geyer's Whorl Snail** The design of the Proposed Wind Farm infrastructure fully avoids the area of Geyer's whorl snail habitat. In addition, the following measures will be in place:		

			› In advance of construction of the Proposed Wind Farm, the area will be fenced off from the surrounding infrastructure; this fencing is to be maintained throughout the lifetime of the Proposed Wind Farm. › In advance of construction of the Proposed Wind Farm, the Project Ecologist/ ECoW will inspect the fencing surrounding the habitat to ensure it is in good repair and that there is no possibility of access to the area, or any storage of materials. › Site workers will be fully briefed on the sensitivity of the habitat. › Signage will be installed on the fences outlining that no access or placement of materials is permitted. › The area will be checked by the site ECoW periodically during the decommissioning of the existing Dunneill Wind Farm. ›		
EIAR Chapter 7 Birds					
Pre-Construction Phase					
MM50	Birds	EIAR Chapter 7 Appendix 7-7	› It is proposed that major construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. › A pre-commencement survey will be undertaken prior to the initiation of works at the Proposed Wind Farm. This survey will be conducted a maximum of three weeks before the commencement of works. Following commencement, construction phase surveys will be conducted during works. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). These surveys will continue to be conducted each season for the duration of the construction period. The aim of the pre-commencement and construction phase surveys is to identify sensitive sites (e.g., nests or roosts) in proximity to works.		
Construction Phase					
MM51	Birds	EIAR Chapter 7	› A Construction and Environmental Management Plan has been prepared and will be in place prior to the start of the construction phase. Full details are available in Appendix 4-5 of this EIAR. Note that the majority of these measures are proposed as industry best practice		

		Appendix 7-7 Appendix 4-5	rather than to mitigate any identified significant effect and will be updated as required to address any conditions of a permission or findings of any pre-construction survey results. › The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2022. Where sections of woody vegetation are removed for the purposes of the junction and road upgrades, these will be replaced with suitable hedge/tree species which are common in the local context. › During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. › Silt fences will be installed as an additional water protection measure around existing watercourses. › If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g., NatureScot, 2022). No works shall be permitted within the buffer until it can be demonstrated that the birds are no longer dependent on the roost/nest. › The closest infrastructure to the dunlin breeding territory is a section of new road and the Proposed Turbine hardstands for T1 and are located 360m from DN-1. There is no infrastructure to the west of the access track of T1, T3 and T5, therefore there will be no construction works to the west of the development footprint of the Proposed Wind Farm. Given this distance and the existing land use at this location, significant impacts to breeding dunlin are considered unlikely. › Notwithstanding this, a pre-construction survey should be undertaken prior to any works during the dunlin breeding season (March to July) to establish whether the territory remains occupied. If the potential for breeding dunlin is recorded during pre-construction surveys, an Ecological Clerk of Works (ECoW) will supervise works in the vicinity of DN-1 or any territories found in proximity to works. The role of the ECoW will be to monitor for the following risks: (1) disturbance of the nesting pair and their young; (2) injury of the nesting pair, nest, eggs or young or; (3) damage to habitat depended on by the nesting pair or their young. If the ECoW determines a high level of risk for any of these events to occur, works will cease within the risk area until the dispersal of juveniles from the natal		

			area. Should works be required within 200m of a confirmed breeding territory, these will be scheduled outside the dunlin breeding season (March to July), from when initial territory establishment may occur until the likely dispersal of juveniles from the natal area (see also Appendix 7-7).		
EIAR Chapter 8 Land, Soils and Geology					
Construction Phase					
MM52	Peat, Subsoil and Bedrock Excavation	EIAR Chapter 4, 8 Appendix 4-2	All work will be in accordance with the Peat and Spoil Management Plan (Appendix 4-2). The site layout design has been iteratively developed using comprehensive site-specific site investigation dataset, which includes peat probes, gouge cores, boreholes and trial pits. <u>Proposed Wind Farm</u> • Utilisation of Existing Wind Farm infrastructure where possible to reduce extent of new works; • Placement of turbines and associated infrastructure in areas with suitable ground conditions (based on detailed site investigation data – the areas of deeper peat and high instability have been avoided by the Proposed Wind Farm infrastructure); • The peat/soils and subsoils which will be removed during the construction of turbine hardstands will be localised to the turbine locations. The peat/soil/subsoil will be placed/used for landscaping alongside the excavations or stored within the designated peat management areas or borrow pits; • Excavated peat/soils/subsoils shall be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards; • The peat placed within the peat management areas will be restricted to a maximum height of 1.25m. Weak/liquified peat will be stored in the centre of the peat management areas with firmer/drier peat placed around the outside; • The placement of excavated peat will be avoided without first establishing the adequacy of the ground to support the load. The placement of peat within the peat management areas will require the use of long reach excavators, low		

			ground pressure machinery and possibly bog mats in particular for drainage works; • It will be ensured that the surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat and spoil management area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat; • Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate; • Where available, the acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the management areas; Movement monitoring instrumentation will be placed around the areas where peat has been placed. The locations where monitoring is required will be identified by the Project Geotechnical Engineer on site; Supervision by the Project Geotechnical Engineer will be carried out for the works; and, An interceptor drain will be installed upslope of the designated peat management areas to divert any surface water away from these areas. This will help ensure stability of the placed peat and reduce the likelihood of debris run-off. (interceptor drains will not be required at all areas as the existing drainage network can function as interceptor drains – silt fences will be installed upgradient of the peat management areas in these locations). <u>Proposed Grid Connection Route</u>: Excess spoil material or pavements materials containing tar generated during the cable route construction will be transported by permitted waste contractors to a suitable permitted/licensed site for disposal/recovery. ›		

MM53	Leakages and Spillages	EIAR Chapter 4, 8 Appendix 4-4 Appendix 4-5	› On-site re-fuelling will be undertaken at the compound or using a mobile fuel bowser with spill kits kept both onboard and on site for accidental leakages or spillages; › Only designated trained operatives will be authorised to refuel plant on-site; › Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system; › All fuel storage areas will be bunded appropriately for the duration of the construction phase. Ancillary equipment such as hoses, pipes will be contained within the bunded area; › Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; › The proposed 110kV onsite substation and Existing Wind Farm control buildings will be bunded appropriately to the volume of oils likely to be stored and to prevent leakage of any associated chemicals to groundwater or surface water. The bunded area will be 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 response plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (which is contained in Appendix 4-5).		
MM54	Erosion of Exposed Subsoils and Peat	Chapter 8 Appendix 4-2	› Peat removed from turbine locations and access tracks will be used for landscaping close to the extraction area; › Where possible, the upper vegetative layer (where still present) of peat will be stored with the vegetation part of the sod (acrotelm) facing the right way up to encourage growth of plants and vegetation at the surface of the stored peat within the peat storage areas; › Re-seeding and spreading/planting will also be carried out in these areas; and, › A full Peat and Spoil Management Plan for the development is included in Appendix 4-2 of the EIAR. ›		
MM55	Peat Instability and Failure	Chapter 8 Appendix 8-1	› Appointment of experienced and competent contractors; › The site should be supervised by experienced and qualified personnel; › Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a localised peat movement); › Prevent undercutting of slopes and unsupported excavations; › Maintain a managed robust drainage system;		

			› Prevent placement of loads/overburden on marginal ground; › Set up, maintain and report findings from monitoring systems (as outlined in the Geotechnical and Peat Stability Report); › Ensure construction method statements are developed and agreed before commencement of construction and are followed by the contractor; and, › Revise and amend the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction. ›		
MM56	Erosion of Exposed Peat, Soils and Subsoils During Tree Feling	EIAR Chapter 8	All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment. In addition, the following mitigation measures will be implemented during felling operations: › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; › The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines; › All machinery will be operated by suitably qualified personnel; › These machines will traverse the Proposed Wind Farm along specified off-road routes (referred to as racks); › Brash mats will be placed on the racks to support the vehicles on soft ground, reducing mineral soil disturbance and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur; › As felling progresses, the harvester will collect brash produced by the felling and place it in front of the machine before it advances forward along the rack; › The condition of the racks will be continually monitored and fresh brash will be applied when the brash mat becomes heavily used and worn, ensuring that the mat remains effective throughout the operational phase; and, › The location of racks will be chosen to avoid wet and potentially sensitive areas. ›		

MM57	Biodiversity Management and Enhancement Plan (BMEP)	EIAR Chapter 8	A site-specific monitoring and evaluation programme will be implemented to ensure that the success of the proposed measures remains long-term. It will also assist in situations where the habitat establishment may not have been successful by providing evidence of shortcomings, allowing a revised management plan to be formulated. Monitoring results will be reported by the Project Ecologist will produce monitoring reports per the schedule outlined in the BMEP. Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan will be prepared. The enhancement plan will be updated and amended where required to improve the efficacy of the enhancement work.		
MM58	Turbine Delivery Route	EIAR Chapter 8	› All works are minor and localised and cover very small areas › These works are distributed over a wide area › All works are temporary in nature		
EIAR Chapter 9 Hydrology and Hydrogeology					
Construction Phase					
MM59	Clear Felling	Chapter 9	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, 2015); › Forest Protection Guidelines (Forest Service, 2002); › Forest Operations and Water Protection Guidelines (Coillte, 2013); › Forestry and Water Quality Guidelines (Forest Service, 2000b); › Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 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 (Cross and Collins, 2017); › Native Woodland Scheme Framework (Forest Service, 2018); and, › Code of Best Forest Practice (Forest Service, 2000). **Mitigation by Avoidance:** There is a requirement in the Forest Service Code of Practice and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Minimum buffer zone widths recommended in the Forest Service (2000) guidance document *"Forestry and Water Quality Guidelines"* During the Proposed Project design phase a self-imposed buffer zone of 50 metres was maintained for all natural watercourses where Proposed Wind Farm infrastructure such as Proposed Turbines, borrow pits, peat and spoil management areas and temporary construction compounds were kept outside of buffer zones. Due to downstream Freshwater Pearl Mussel populations in the Easky River, a 100m buffer will be maintained for a tributary stream of the Easky River which flows to the south of Proposed Turbine T5. These buffer zones are shown on Figure 9-9 of the EIAR and Appendix 4-3. With the exception of minor encroachment of proposed felling areas inside the 50m buffer zone at Proposed Turbines T8 (0.31ha), T13 (0.195ha) and T17 (0.67ha), the majority of the proposed felling areas (27.92ha of the total 29.3ha proposed) are located outside of imposed buffer zones. Additional mitigation (detailed below) will be carried out where tree felling is required inside the buffer zones. The large distance between most of the proposed felling areas (which are outside the 50m and 100m buffer zone) and sensitive aquatic zones means that potential poor-quality 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; › All machinery will be operated by suitably qualified personnel; › Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works; › Machines will traverse the Site along specified off-road routes (referred to as racks); › The location of racks will be chosen to avoid wet and potentially sensitive areas; › 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 (approximately 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 and 100m 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 50m and 100m 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; › Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Fuel truck, 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 will be carried out during pre-felling inspections and after: › Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines; › Inspection of all areas reported as having unusual ground conditions; › Inspection of main drainage ditches and outfalls. Main drainage ditches will be identified during pre-felling inspections. The pre-felling inspection will be carried out during rainfall; › Following tree felling all main drains will be inspected to ensure that they are functioning; › Extraction tracks near drains will be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; › Culverts on drains exiting in 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 (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on-site for record and inspection.		
MM60	Earthworks Resulting in Suspended Soils Entrainment in Surface Waters	EIAR Chapter 4, 9 Appendix 4-3 Appendix 4-4 Appendix 4-5 Appendix 8-1	**Mitigation by Avoidance:** The key mitigation measure during the construction phase of the Proposed Wind Farm is the avoidance of sensitive aquatic areas where possible. From Figure 9-9 of the EIAR it can be seen that all of the key areas of the Proposed Wind Farm infrastructure are located significantly further from the 50m and 100m delineated buffer zones with the exception of 9 no. existing watercourse crossing locations that are proposed for upgrade and TDR overrun areas. No works are proposed inside the 100m buffer imposed for a tributary stream of the Easky River which flows to the south of Proposed Turbine T5. The large setback distance from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures (discussed below) to be properly installed and operated effectively. The proposed buffer zone will: › Avoid physical damage to watercourses, and associated release of sediment; › Avoid excavations within close proximity to 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 ○ 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. It should be noted that a network of bog, forestry, wind farm and roadside drains already exist at the Proposed Wind Farm, and these will be integrated and enhanced as required and used within the Proposed Project drainage system. The integration of the existing drainage network and the Proposed Project network is relatively simple. The key elements being the upgrading and improvements to water treatment elements, such as in line controls and treatment systems, including silt traps, stilling ponds and buffered outfalls. The main elements of interaction with existing drains will be as follows: › Apart from interceptor drains, which will convey clean runoff water to the downstream drainage system, there will be no direct discharge (without treatment for sediment reduction, and attenuation for flow management) of runoff from the Proposed 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 such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt fences will be used during the upgrade construction works. Regular buffered outfalls will also be added to these drains to protect downstream surface waters. **Pre-commencement Temporary Drainage Works** Prior to the commencement of new tracks/hardstands (or track upgrades) 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 watercourse such as at watercourse crossings. Refer to the drainage plan (Appendix 4-3) for the location of these temporary measures. **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 structures during construction phase will be carried out on a weekly basis. 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 50m 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 Wind Farm infrastructure footprint has been divided into drainage catchments (based on topography, outfall locations, and catchment size) and stormwater runoff rates based		

			on the 10-year return period rainfall event were calculated for various catchment areas in order to size the settlement ponds as shown in Table 9-18 of the EIAR. The location and dimensions of proposed settlement ponds are shown on the Proposed Wind Farm drainage plan drawings (Appendix 4-3). All proposed settlement pond locations have been thoroughly assessed from a geotechnical and peat stability perspective (refer to Appendix 8-1 for the Geotechnical and Peat Stability Assessment Report). **Level Spreaders and Vegetation Filters:** Level spreaders and vegetation filters will be implemented at the settlement ponds. 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. In the absence of level spreaders, the potential for ground erosion is significantly greater than not using them. Vegetation filters are essentially end-of-line polishing filters that are located at the end of the treatment train. In fact, vegetation filters are ultimately a positive consequence of not discharging directly into watercourses which is one of the mitigation components of the drainage philosophy. This makes use of the natural vegetation of the Site to provide a polishing filter for the Proposed Wind Farm drainage prior to reaching the downstream watercourses. Again, vegetation filters are not intended to be a single or primary treatment component for treatment of works area runoff. They are not stand alone but are intended as part of a treatment train of water quality improvement/control systems (i.e. source controls→check dams→silt traps→settlement ponds→level spreaders →silt fences→vegetation filters). **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 are available and will be used on a daily basis at the site to direct proposed construction activities: › General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; › MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; › 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; › 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 provides a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest. Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event. Works will be suspended if forecasting suggests either of the following is likely to occur: › >10 mm/hr (i.e., high intensity local rainfall events);		

			› >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, › >half monthly average rainfall in any 7 days. Prior to works being suspended the following control measures will be completed: › 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 dedicated peat and spoil management areas as well as placement of peat/spoil in the 3 no. proposed borrow pits once the rock is fully extracted. › All proposed peat and spoil storage areas including borrow pits have been thoroughly assessed from a geotechnical and peat stability perspective (refer to Appendix 8-1 for the Geotechnical and Peat Stability Assessment Report). › All proposed peat and spoil management areas, including the 3 no. borrow pits are located outside of 50m and 100m watercourse buffer zones (refer to Figure 9-9 of the EIAR). › 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 pond with appropriate storage and settlement designed for a 1 in 10-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.		

			› Therefore, at each stage of the peat and spoil management area development the above mitigation measures will be deployed to ensure protection of downstream water quality. **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.		
MM61	Groundwater Levels during Excavation Works	EIAR Chapter 9	**Impact Assessment/Proposed Mitigation Measures by Design:** The proposed 3 no. borrow pits are located in competent Quartzites, Gneisses & Schists bedrock which is generally unproductive in terms of groundwater flow (Poor Aquifer classification) Also, the topographical and hydrogeological setting of the proposed borrow pits and Proposed Turbines means no significant groundwater dewatering is anticipated to be required during the operation of the borrow pits or turbine base construction. Moreover, direct rainfall and surface water runoff will be the main inflows that will require water volume and water quality management. For the avoidance of doubt dewatering is defined as a requirement to permanently drawdown the local groundwater table by means of over pumping, e.g. as would be required for the operation of a bedrock quarry in a valley floor. It is considered that this example is very different in scale and operation from the proposed operation of a temporary shallow borrow pit on elevated ground. The basis for this consideration is as follows: › Firstly, the 3 no. proposed borrow pit areas are located on elevated ground where the ground elevation is >240mOD and therefore are rock outcrops (which are visible to the eye); › These elevations are above the elevations of the local valleys and streams;		

			› The proposed borrow pits will be between approximately 13 – 19mbgl which is notable. However, in the context of the topographical/elevated setting of the proposed borrow pits, this depth range is relatively shallow; › The local bedrock is 'poorly productive' and typically has low intrinsic permeability due to the competency of the rock. This means that groundwater flows will be limited to seepages at worst; › The flow paths (i.e. the distance from the point of recharge to the point of discharge) in this type of geology is short, localised, and will also be relatively shallow; › Regional groundwater flow regime, i.e. large volumes of groundwater flow, will not be encountered at these elevations; › Therefore, shallow groundwater inflows will largely be fed by recent rainfall, and possibly by limited groundwater seepage form localised shallow bedrock; › The sloping nature of the ground/ridges on the hills where the borrow pits are proposed along with the coverage of soil means groundwater recharge will be very low; › As such the shallow groundwater flow system will be small in comparison to the expected surface water flows from the bog surface; › This means that there will be a preference for high surface water runoff as opposed to groundwater recharge and flow; and, › Hence, the management of surface water will form the largest proportion of water to be managed and treated. Similarly, no significant groundwater dewatering is anticipated to be required during the construction of the Proposed Turbine bases.		
MM62	Surface Water Quality from Excavation Dewatering	EIAR Chapter 9 Appendix 4-3	**Proposed Mitigation Measures:** Management of excavation inflows and subsequent treatment prior to discharge into the drainage network will be undertaken as follows: › Appropriate interceptor drainage (as shown in Appendix 4-3), 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 silt bags or silt buster; › There will be no direct discharge to surface watercourses, and therefore no risk of hydraulic loading or contamination will occur; › Daily monitoring of excavations by 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 turbine locations and borrow pits adequately sized settlement ponds will be constructed to treat pumped water prior to discharge into a local manmade drain; and, › A mobile 'Siltbuster' or similar equivalent specialist treatment system can be made available at turbine locations for emergencies in order to treat sediment polluted waters from settlement ponds or excavations should they occur. Siltbusters are mobile silt traps that can remove fine particles from water using a proven technology and hydraulic design in a rugged unit. The mobile units are specifically designed for use on construction-sites. They will be used as final line of defence if needed.		
MM63	Leakages or Spillages from Hydrocarbons	EIAR Chapter 4, 9 Appendix 4-4	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 fuel truck at a dedicated refuelling area located at the temporary construction compounds. The fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages; › Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; › On-site 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 Construction and Environmental Management Plan (Appendix 4-4). Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area. ›		
MM64	Wastewater Disposal	EIAR Chapter 9	› It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. It is not proposed to treat wastewater on-site. › During the construction phase there will be 4 no. temporary construction compounds each of which will contain a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works. ›		
MM65	Release of Cement-Based Products	EIAR Chapter 9	› 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 will be undertaken at lined cement washout ponds located outside 50m and 100m watercourse buffer zones); › 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 a sudden rainfall event.		
MM66	Watercourse Crossing Works	EIAR Chapter 9	› The 1 no. replacement culvert will be bottomless or clear span structure and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location; › Where the proposed internal cable route follows an existing track or track proposed for upgrade, the cable will pass over or below the culvert within the access track;		

			▸ All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland5 is 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 the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May 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; ▸ The upgraded watercourse crossing 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; and, ▸ The crossing structure will be designed to accommodate a 100-year design flood with allowance for 300mm freeboard. The watercourse crossing will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. Confirmatory inspections of the proposed new watercourse crossing location will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing.		

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

			In relation to the new proposed culverts and proposed culvert upgrades at forestry drain crossings, the culverts will be suitably sized (approx 900mm) for the expected peak flows in the relevant drain. All culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.		
MM67	Hydrologically Connected Designated Sites	EIAR Chapter 9	› Drainage mitigation measures for surface water quality protection during the construction phase are summarised again below: (Please refer to Sections 9.5.2.1, 9.5.2.2 and 9.5.2.4 in Chapter 9: Hydrology and Hydrogeology for the full description of these measures and how they will be applied). › The proposed mitigation measures will include 50m to 100m buffer zones for avoidance of sensitive hydrological features (streams and rivers); › Pre-construction drainage control measures (Section 9.5.2.2); › Robust drainage control measures (i.e. interceptor drains, swales, settlement ponds and treatment trains such as Siltbuster) will ensure that the quality of runoff from Proposed Project areas will be very high; and, › Best practice measures with regard use of oils, fuels (Section 9.5.2.5) and cement based compounds (Section 9.5.2.7).		
MM68	Turbine Delivery Route Works	EIAR Chapter 9	› All works are minor and localised and cover very small areas; › These works are distributed over a wide area; › All works are typically temporary in nature or with very minor permanent adjustments; › All areas will be reinstated shortly after the works and reseeded; and, › Application of the Pre-Construction Drainage Measures (see Section 9.5.2.2) for surface water quality protection.		
MM69	WFD Status and Objectives	EIAR Chapter 9	Comprehensive surface water mitigation and drainage controls are outlined in Section 9.5.2.1 (Felling of Coniferous Plantations), Section 9.5.2.2 (Earthworks), Section 9.5.2.4 (Excavation Dewatering), Section 9.5.2.5 (Hydrocarbons), Section 9.5.2.7 (Cement-based Products) and		

			Section 9.5.2.8 (Morphological Changes to Watercourses). These will ensure the protection of surface water quality and flows in all downstream receiving watercourses.		
MM70	Use of Siltbuster	EIAR Chapter 9	Measures employed to prevent overdosing and potential chemical carryover: › The siltbuster system comprises an electronic in-line dosing system which provides an accurate means of adding reagents, so overdosing cannot occur; › Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff will be carried out, which means the correct amount of chemical is added by the dosing system; › Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; › Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, › Use of biodegradable chemical will be used at very sensitive sites (i.e. upstream of SACs).		
MM71	Earthworks and Watercourse Crossings (Proposed Grid Connection Route)	EIAR Chapter 9	Pre-commencement Temporary Drainage Works: Prior to the commencement of the cable trenching or crossing works the following key temporary drainage measures will be installed: › All existing roadside drains (where present) that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; › Culverts, manholes and other drainage inlets (where present) will also be temporarily blocked; and, › A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside a watercourse 50m buffer zone. › › The following mitigation measures will be implemented for the underground cabling watercourse crossing works: › › No stock-piling of construction materials will take place along the Proposed Grid Connection Route;		

			› No refuelling of machinery or overnight parking of machinery is permitted within 100m of a watercourse crossing; › No concrete truck chute cleaning is permitted along the Proposed Grid Connection Route; › Works will not take place at periods of high rainfall, and will be scaled back or suspended if heavy rain is forecast; › Local road drainage, culverts and manholes will be temporarily blocked during the works; › Machinery deliveries will be arranged using existing structures along the public road; › All machinery operations will take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or will occur; › Any excess construction material will be immediately removed from the area and sent to a licenced waste facility; › Spill kits will be available in each item of plant required to complete the stream crossing; and, › Silt fencing will be erected on ground sloping towards watercourses at the stream crossings if required. Fracture Blow-out (Frac-out) Prevention and Contingency Plan for HDD: › 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; › Double 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.		
MM72	Biodiversity Management and Enhancement Plan	EIAR Chapter 9	All proposed habitat management and enhancement works will be in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte, DAFM and NatureScot guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment. Given the nature of the restoration measures the following mitigation measures are proposed: › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff; › Proposed off-road routes will be walked in advance of any machinery; › All machinery operators will be experienced; › The proposed areas will be walked before a machine goes off-road; › Bog mats will be used where the excavator is required to travel over wet ground; › A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.		
MM73	Freshwater Pearl Mussel Populations	EIAR Chapter 9 Appendix 4-3	As discussed above, only the western section of the Proposed Wind Farm is located within the Easky River catchment and only 1 no. Proposed Turbine (T5) is located upstream of where freshwater pearl mussel populations potentially exist. This is positive in terms of potential negative effects on freshwater pearl mussel populations. The Proposed Project design team were at all times aware that freshwater pearl mussel populations existed in the downstream watercourses, and as such all proposed mitigation and drainage design proposals were designed towards providing a “best in class” drainage management proposal for the development considering the significant catchment sensitivities. A 100m buffer will also be maintained for a tributary stream of the Easky River which flows to the south of Proposed Turbine T5. During the layout optimisation process, all surface waters at the site were classified as very sensitive/high importance. Very sensitive surface waters are receptors of high environmental importance such as designated sites (i.e. NHA or SAC) or a public drinking water supply		

			source. The surface waters at the Proposed Project were applied the highest possible sensitivity rating. As stated previously in the chapter, a comprehensive surface water management plan and drainage plan is proposed (refer to Appendix 4-3) and this will ensure that surface water runoff from the developed areas of the Site will be of a high quality and will therefore not impact on the quality of downstream rivers. Detailed drainage management design and pollution prevention measures proposed during the construction phase are presented above in this chapter. These proposals are best in class and in line with current best practice approaches for surface water quality protection on wind farm and forestry sites. As described in Section 9.5.2.2 of Chapter 9, while settlement ponds form an important element of the drainage proposals for the Site, they are not stand alone but occur as part of a treatment train of systems that will be applied in series to ensure protection of downstream watercourses. The treatment of site runoff occurs before and also continues after the settlement ponds, with the "after" treatment also utilising natural elements of the site such as the existing vegetated ground. Therefore, the final "polished" discharge effluent quality will not be achieved until the discharge passes through the last element of the treatment series train which is the vegetated ground upslope of the local watercourse (i.e. compliance point). A final line of defence can be provided by a water treatment train such as a "Siltbuster" if required. If the discharge water from construction areas fails to be of a high quality, 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. Daily inspections will be undertaken to assess the effectiveness of the water treatment trains and this will include a visual assessment of water quality and also portable probes for field hydrochemistry monitoring (turbidity, pH, electrical conductivity etc) will be used by the Ecological Clerk of Works (ECoW) to make on the spot checks.		

MM74	Existing Wind Farm Turbine Removal	EIAR Chapter 9	Pre-commencement Temporary Drainage Works: Prior to the commencement of the removal works the following key temporary drainage measures will be installed: › All existing roadside drains (where present) that intercept the proposed works area will be temporarily blocked down-gradient of the works using check dams/silt traps; › Culverts, grips and other drainage inlets (where present) will also be temporarily blocked; and, › A double silt fence perimeter will be placed along the road verge on the down-slope side of works areas that are located inside a watercourse 50m buffer zone. › Once the turbine base and hardstand are backfilled and covered with soil material, vegetation will be established to prevent risk to downstream surface water quality due to runoff.		
EIAR Chapter 10 Air Quality					
Construction Phase					
MM75	Exhaust Emissions: Construction of the Proposed Project Infrastructure	EIAR Chapter 10 Appendix 4-5	› Proposed Project Construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager will produce and follow a site inspection and machinery checklist which will be followed and updated as required. › All plant and materials vehicles shall be stored in dedicated areas (onsite). Machinery will be switched off when not in use. › Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details. › Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. › All waste generated during the construction of the Proposed Wind Farm will be source segregated at the Site. The waste will be separated, and put in labelled, covered skips to promote reuse, recycling and diversion from landfill. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed		

			waste contractor where the waste will be recycled, recovered or disposed of appropriately. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements. › The majority of aggregate materials for the construction of the Proposed Project will be obtained from the borrow pits on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-5). The CEMP includes measures to reduce exhaust emissions.		
MM76	Exhaust Emissions: Transportation to and from the Site	EIAR Chapter 10 Appendix 4-5	› The majority of aggregate materials for the construction of the Proposed Project will be obtained from the borrow pits on site. This will significantly reduce the number of delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. › Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details. › All waste generated during the construction of the Proposed Wind Farm will be source segregated at the Site. The waste will be separated, and put in labelled, covered skips to promote reuse, recycling and diversion from landfill. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be recycled, recovered or disposed of appropriately. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements. › A CEMP will be in place throughout the construction phase (see Appendix 4-5).		
MM77	Dust Emissions: Construction of the Proposed Project and Transport to and from the Site	EIAR Chapter 10	› Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads, site access tracks, Proposed Grid Connection Route, road widening sections, substation, and construction compounds and around the borrow pit area to ensure dust does not cause a nuisance. ○ Water bowser movements will be carefully monitored to ensure water is evenly dispersed and sprayed to address potentially dusty areas. › All plant and materials vehicles shall be stored in dedicated areas within the Site.		

			▸ Areas of excavation will be kept to a minimum and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat and spoil management areas and restoration of borrow pits. ▸ The Proposed Turbines components, construction materials and the associated infrastructure for the Proposed Grid Connection Route will be transported to the site on specified haul routes only, as agreed with the local authority. ○ The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager. ▸ The transport of construction materials may have the potential to generate dust in dry weather conditions. Roads will be watered down to suppress dust particles in the air as deemed necessary by the Site Supervisor/Manager. ▸ The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection Route infrastructure and for the Proposed Wind Farm will be covered by tarpaulin where necessary. ▸ The transport of dry excavated material from the on-site borrow pits, which may have potential to generate dust will be minimised. If necessary, such as in periods of dry weather, excavated material will be dampened prior to transport from the borrow pits. ▸ Weather will be monitored in conjunction with visual checks on dust generation in order to decrease response times. Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal. ○ The MRF facility will be local to the Proposed Project to reduce the amount of emissions associated with vehicle movement. ▸ A CEMP will be in place throughout the construction phase (see Appendix 4-5). The CEMP includes dust suppression measures		
EIAR Chapter 11 Climate					
Construction Phase					

MM78	Greenhouse Gas Emissions	EIAR Chapter 11	› As is in line with SSE company policy, none of the turbine components will be sent to landfill after being removed from site. All turbine components will be broken down before their removal from site and will be reused in varying capacities. › Construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required. › All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. › When stationary, delivery and on-site vehicles will be required to turn off engines. › Turbines and construction materials will be transported to the site on specified routes only unless otherwise agreed with the Planning Authority. Please see Chapter 15 for details. › Areas of excavation will be kept to a minimum, and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat and spoil management areas › A Construction and Environmental Management Plan (CEMP) (Appendix 4-5) will be in place throughout the construction phase. › The CEMP (Appendix 4-5) includes a Resource Waste Management Plant (RWMP) which outlines the best practice procedures that will occur during the construction phase relating to waste material. › The WMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Project. Disposal of waste will be seen as a last resort. › Section 4.4.1.7 of Chapter 4 for this EIAR refers to the methodology that will be utilised to manage onsite waste. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor, › The MRF facility will be local to the Proposed Project to reduce the amount of emissions associated with vehicle movements. › Where applicable, low carbon intensive construction materials will be sourced and utilised onsite.		
EIAR Chapter 12 Noise					
Construction Phase					

MM79	Noise Mitigation Measures	EIAR Chapter 12 Appendix 12-1	No Mitigation measures proposed, though good practice during construction is recommended; Section 8 of BS 5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite: › Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern; › All vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance; › Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use; › All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; › Machines will be shut down between work periods (or when not in use) or throttled down to a minimum; › Regularly maintain all equipment used onsite, including maintenance related to noise emissions; › Vehicles will be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation; and › All ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures will be provided.		
EIAR Chapter 13 Landscape and Visual					
Construction Phase					
MM80	Landscape Effects during Construction	EIAR Chapter 13	› In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. › For the Proposed Grid Connection Route, where the cable trench is to be located in the road verge, subsoil will be piled on-site and re-used after cabling works. Should any medium planting be removed, it should be replaced with the same or similar species whenever it is not possible to salvage and reinstate.		

			› Any areas of bare soil remaining after the landscaping phase will be seeded as soon as possible with a grass-seed mix to minimise sediment run-off.		
MM81	Visual Effects during Construction	EIAR Chapter 13	› General housekeeping measures, necessary for Health & Safety requirements, will ensure that the active construction areas will be kept tidy, mitigating localised visual impacts during the Construction Phase.		
EIAR Chapter 14 Cultural Heritage					
Construction Phase					
MM82	Recorded Monuments (Direct Effects)	EIAR Chapter 14	› Archaeological monitoring of the ground works associated with the Proposed Grid Connection Route where it extends across recorded monument SL019-111— Ringfort -rath. The monitoring will be carried out under licence from the National Monuments Service (NMS) by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. › The location of recorded monument SL019-111— Ringfort should be clearly shown in the Construction and Environmental Management Plan (CEMP).		
MM83	Previously Unrecorded Monuments within the Site	EIAR Chapter 14	› A walk-over survey of the forested areas of the Site where proposed infrastructure will be located will be carried out post-clear-felling but prior to any other works. › The location of any potential Cultural Heritage features therein will be recorded and a photographic record made of same. A report on the results of the walk-over survey will be compiled on completion of same and will include any further required mitigation measures such as buffer zones, etc, deemed necessary. ›		

MM84	Sub-Surface Archaeological Potential	EIAR Chapter 14	› Archaeological monitoring under licence from the NMS of any geotechnical / engineering trial pits or investigations will be carried out by a suitably qualified archaeologist. A report detailing the results of the monitoring will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. › Pre-development testing, under licence from the NMS, will be carried out in areas where peat depths allow a meaningful investigation. Testing will only be undertaken in areas where ground disturbance will take place as part of the Proposed Project. Where peat depths become a limitation to testing, monitoring at the construction stage will be undertaken. The areas to be tested will be chosen by the appointed archaeologist and the number of test trenches agreed between the archaeologist and the NMS through the licensing system. A report on the testing will be compiled on completion of the work. Should archaeological finds, structures or deposits be uncovered as a result of the testing further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented, where relevant, following consultation with the NMS. › Archaeological monitoring of ground works during the construction stage of the Proposed Wind Farm under licence from the NMS will be carried out by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body. › Archaeological monitoring of ground works associated with the construction of the Proposed Grid Connection Route through the Zones of Notification for the recorded monuments specified above. The monitoring will be carried out under licence from the NMS by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the NMS. A report detailing the results of the		

			monitoring and/or any further necessary mitigation as referred to above will be compiled on completion of the work and submitted to the NMS and Planning Authority/Body.		
EIAR Chapter 15 Material Assets					
Material Assets - Traffic					
Construction Phase					
MM85	Mitigation by Design	Chapter 15	Mitigation by design has been implemented by selecting the most appropriate delivery route to transport the wind turbine components, requiring the least amount of remedial works to accommodate the vehicles as set out in Section 15.1.2.3.		
MM86	Delivery of Abnormal Loads	Chapter 15	The following are the main points to note for these deliveries which will take place after peak evening traffic: › The delivery of turbine components is a specialist transport operation with the transportation of components carried out at night when traffic is at its lightest and the impact minimised. › The deliveries will be made in consultation with the Local Authority and An Garda Síochána. › It is estimated that 120 abnormal sized loads will be delivered to the site, comprising 45 convoys of 3 vehicles, undertaken over 45 separate nights. › These nights will be spread out over an approximate period of 9 weeks and will be agreed in advance with the relevant authorities, › In order to manage each of the travelling convoys, for each there will be two Garda escort vehicles that will stop traffic when required at the front and rear of the convoy of 3 vehicles. › There will also be two escort vehicles provided by the haulage company for each convoy.		

MM87	Other Traffic Management Measures	EIAR Chapter 15 Appendix 15-2	› Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the development, and this person will be the main point of contact for all matters relating to traffic management. › Delivery Programme – a programme of deliveries will be submitted to Sligo County Council in advance of deliveries of turbine components to the Proposed Wind Farm. Liaison with the relevant local authorities, TII and MMaRC and will be carried out where required regarding requirements such as delivery timetabling. The programme will ensure that deliveries are scheduled in order to minimise the demand on the local network and minimise the pressure on the access to the Proposed Wind Farm. › Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. the delivery of turbine components at night via letter drops and posters in public places. Information will include the contact details of the Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided. › A Pre and Post Construction Condition Survey – Where required by the local authority, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. › Liaison with the relevant local authority - Liaison with Sligo County Council and An Garda Síochána, will be carried out during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. Once the surveys have been carried out and “prior to commencement” status of the relevant roads established, (in compliance with the provisions of the CEMP), the Roads Section of Sligo County Council will be informed of the relevant names and contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager. › Implementation of temporary alterations to road network at critical junctions – at locations highlighted in Section 15.1.9. › Identification of delivery routes – These routes will be agreed with Sligo County Council and adhered to by all contractors.		

			› Delivery times of large turbine components - The TMP will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage. › Travel plan for construction workers – While the assessment above has assumed the worst case in that construction workers will drive to the Site, the construction company will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the Site and identification of an area for parking. › Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on site and sweeping / cleaning of local roads as required. These are set out in the CEMP which is contained in Appendix 4-5. › Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. › Diversion routes during grid construction – The identification and agreement with Sligo County Council of suitable diversion routes during the construction of the Proposed Grid Connection Route.		
Material Assets - Other					
Pre-Construction/Construction Phase					
MM88	Electricity	EIAR Chapter 4, 5, 15 Appendix 4-5	› Goal posts will be established under overhead lines for the entirety of the construction phase. They will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks[6] ○ Prior to construction, the Applicant will engage with ESB via the 'Dial Before You Dig' procedure online. ESB will be contacted via dig@esb.ie before excavating near any overhead lines. › The suitability of machinery and equipment for use near power lines will be risk assessed. › All staff will be trained on the routes and operating voltages of overhead electricity lines running above the Proposed Grid Connection Route. All staff will be trained to be aware		

[6] https://www.esbnetworks.ie/docs/default-source/publications/code-of-practice-for-avoiding-danger-from-overhead-electricity-lines.pdf

			of the risks associated with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to site. › Barriers will run parallel to overhead lines at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire. › Prior to the delivery of turbines to the Proposed Wind Farm, a dry run of the route using vehicles with similar dimensions will occur. Please see Section 15.1.9 of chapter 15: Material Assets for details. › When activities must be carried out beneath overhead lines, e.g. component delivery or grid cable laying, a site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used is undertaken prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required. › Information on safe clearances will be provided to all staff and visitors. › Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site. › All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan. › All health and safety measures as detailed in Section 5 of the CEMP and Chapter 5 Population and Human Health will be adhered to during the construction, operation and decommissioning phases. › Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. › Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. › Excavation permits will be completed, and all plant operators and general operatives will be inducted and informed as to the location of any services. › The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. ›		

MM89	Water	EIAR Chapter 4, 5, 15 Appendix 4-5	› The contractor must comply with and standard construction codes of practice in relation to working around electricity, gas, water, sewage and telecommunications networks. › In advance of any construction activity, the contractor will undertake pre-commencement surveys to confirm the presence or otherwise of any services such as water supply. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. ○ In the event that water mains are encountered the water supply will be turned off by the utility so work can commence on diverting the service. The section of existing pipe will be removed and will be replaced with a new pipe along the new alignment of the service. The works will be carried out in accordance with the specifications of the relevant utility provider. ›		
MM90	Waste Management	EIAR Chapter 15 Appendix 4-5	› The CEMP, Appendix 4-5 of this EIAR, includes a Waste Management Plan (WMP) which outlines the best practice procedures during the construction and decommissioning phases of the project. › All waste generated on site during the construction phase will be contained in waste skips at waste storage areas on site. These waste storage areas will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein. › The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal. › Site personnel will be instructed at induction that under no circumstances can personal waste be brought on site for disposal in the onsite waste skip. It will also be made clear that the burning of waste material on site is forbidden. › Further details on waste management are presented in Section 3.8 of the CEMP, which is included as Appendix 4-5.		

8. MONITORING PROPOSALS

All monitoring proposals relating to the pre-commencement and construction phases of the Proposed Project are set out in various sections of the EIAR, NIS and Biodiversity Management and Enhancement Plan prepared as part of the planning application to An Coimisiún Pleanála.

This section of the CEMP groups together all of the pre-commencement and construction monitoring proposals presented in the EIAR. The Monitoring Proposals are presented in the following pages and are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures. Operational Phase and Decommissioning Phase monitoring measures are not included in the table below, however, they are provided Chapter 18 and Appendix 4-6 (Decommissioning Plan) of the EIAR, respectively.

By presenting the monitoring proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the Proposed Project. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

Table 8-1 Proposed Monitoring Measures

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
Pre-Construction Phase						
MX1	Invasive Species	EIAR Chapter 6 Appendix 4-5 Appendix 6-5	Ongoing monitoring will be required, with suitable follow-up management in order to control new growth or re-establishment of *Rhododendron ponticum* within the infested areas. Following the initial treatment and completion of the Proposed Wind Farm, the treated areas will be re surveyed annually and if necessary, re-treated until no growth is recorded for two consecutive years. If invasive plants are found to be re-establishing, they shall be treated as per the measures outlined in this report.	Once	As required	Project Ecologist
MX2	Birds	EIAR Chapter 7 Appendix 7-7	It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement surveys will be undertaken prior to the initiation of works at the Proposed Wind Farm. The survey will aim to identify sensitive sites (e.g., nests or roosts). Any requirement for construction works to run into subsequent breeding or winter seasons following the commencement of works will be subject to a repeat of the pre-construction bird surveys. These surveys will be conducted once per month during the breeding season (April to July) and once at the start of the winter season (October). Monitoring will be undertaken by a suitably qualified ornithologist. The survey will include a thorough walkover survey to a 500m radius of the development footprint and/or all works areas. If winter roosts	Once	As required	Project Ornithologist

			or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and earmarked for monitoring at the beginning of the first winter or breeding season of the construction phase. If the roost/nest is found to be active during the construction phase no works shall be undertaken, works will cease within a species-specific buffer of this location in line with best practice guidance (e.g., Forestry Commission Scotland, 2006; NatureScot, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied.			
MX3	Tree Felling	EIAR Chapter 9	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).	As Required	Monthly	ECoW
Construction Phase						
MX4	Health and Safety	EIAR Chapter 4, 5 Appendix 4-5	The Project Supervisor Construction Stage (PSCS) appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): › Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; › Compile and develop safety file information. › Reporting of accidents / incidents; › Weekly site meeting with PSCS;	Daily	Daily	PSCS

			› Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out: › Induction of all site staff including any new staff enlisted for the project from time to time; › Toolbox talks as necessary; › Maintenance of a file which lists personnel on site, their name, nationality, current SafePass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date; › Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and Personal Protective Equipment (PPE) compliance; › Monitor the compliance of contractors and others and take corrective action where necessary; and › Notify the Planning Authority and the client of non-compliance with any written directions issued.			
MX5	Drainage Maintenance	EIAR Chapter 4, 9 Appendix 4-5	An inspection and maintenance plan for the drainage system on-site will be prepared in advance of commencement of any works on the Proposed Project. Regular inspections of all installed drainage features will be necessary, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water at parts of the systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the Project Hydrologist. The drainage inspection and maintenance plan are included in the CEMP in Appendix 4-5 of this EIAR.	Ongoing	Monthly	Project Hydrologist
MX6	Reactive Site Drainage Management	EIAR Chapter 4, 9	The effectiveness of drainage measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW or supervising hydrologist onsite. The ECoW or supervising hydrologist will respond to changing weather, ground or drainage conditions on	As required	As Necessary	ECoW

			the ground as the project proceeds, to ensure the effectiveness of the drainage design is maintained. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary onsite. The drainage design may have to be modified on the ground as necessary, and the modifications will draw on the various features outlined above in whatever combinations are deemed to be most appropriate to situation on the ground as a particular time.			
MX7	Water Quality and Monitoring	EIAR Chapter 9 Appendix 4-4 Appendix 4-5	Daily inspection and recording of surface water management system by on-site ECoW and immediate remedial measures to be carried out as required and works temporarily ceased if a retained stormwater/sediment load is identified to have the potential to migrate from the site. The following periodic inspection regime will be implemented: › Daily general visual inspections of site operations and inspections of all drainage infrastructure within the site and in the surrounding area by the ECoW or a suitably qualified and competent person as delegated by the ECoW; › Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify and maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter will be noted and corrective action will be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; › Event based inspections by the ECoW as follows: › >10 mm/hr (i.e. high intensity localised rainfall event);	Daily	As Necessary	ECoW / Project Hydrologist

			› >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, › Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). › Monthly site inspections by the Project Hydrologist/ ECoW during construction phase;			
MX8	Tree Felling	EIAR Chapter 9	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. Existing drains will not be disturbed during felling works.	As Required	Monthly	ECoW
MX9	Plant and Equipment Inspections	EIAR Chapter 9	The plant used will be regularly inspected for leaks and fitness for purpose.	As Required	Monthly	ECoW
MX10	Traffic and Transport	Appendix 4-5	The agreed haul route roads adjacent to the Site will be regularly inspected for cleanliness and cleaned as deemed necessary by the construction Site Supervisor/Site Manager.	As Required	Monthly	ECoW
MX11	Biodiversity	Appendix 4-5	The Project Ecologist/ Ornithologist will be available to support the ECoW on matters relating to the protection of sensitive habitats and species encountered prior to or during the construction phase of the Proposed Project. The Project Ecologist will not be full time on site but will undertake pre-commencement surveys and visit the Site as required. The responsibilities and duties of the Project Ecologist/Ornithologist will include the following:	As Required	As required	Project Ecologist/Ornithologist

			› Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided. › Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site. › Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise. › Provide guidance to contractors to ensure legal compliance with respect to protected species onsite. › Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress.			
MX12	Birds	EIAR Chapter 7 Appendix 7-7	All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off to alert all personnel on site to the suspension of works within that area	Once	As required	Project Ornithologist
MX13	Peat and Spoil Management	EIAR Chapter 4 Appendix 4-2	Inspections of the peat and spoil management areas will be made by the Project Geotechnical Engineer through regular monitoring of the works	As required	As required	Project Geotechnical Engineer
MX14	Archaeological Monitoring	EIAR Chapter 14	Archaeological monitoring of ground works during the construction stage of the Proposed Project under licence from the NMS will be carried out by a suitably qualified archaeologist. Should archaeological finds, structures or deposits be uncovered as a result of the monitoring further mitigation measures such as preservation in situ or preservation by record (excavation) may be required and will be decided in consultation with the NMS. Such mitigation measures will be implemented where relevant following consultation with the	As Required	As Required	Project Archaeologist

			NMS. A report detailing the results of the monitoring and/or any further necessary mitigation as referred to above will be compiled on completion.			

9. PROGRAMME OF WORKS

9.1 Construction Schedule

The construction phase will take approximately 18-24 months to complete from starting on site to the commissioning of the to the commissioning of the Proposed Wind Farm..

The EIAR stipulates that in the interest of breeding birds, construction will not commence during the breeding bird season, which runs from 1st March to 31st August. The EIAR stipulates that construction may commence between September and the end of March, so that construction activities are ongoing by the time the next breeding bird season comes around and can continue throughout the next breeding season.

Construction activities will be carried out during normal daytime working hours (i.e., weekdays 0700 – 1900hrs and Saturdays 0700 – 1900hrs). However, to ensure that optimal use is made of good weather period or at critical periods within the programme (i.e., concrete pours) or to accommodate delivery of large turbine component along public routes it could be necessary on occasion to work outside of these hours. Any such out of hours working will be agreed in advance with the Local Authorities.

The phasing and scheduling main construction task items are outlined in Table 9-1 below.

Table 9-1 Indicative Construction Schedule

			Year 1				Year 2			
ID	Task Name	Task Description	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Health and Safety									
	Removal of existing turbines	Removal of existing turbines onsite, segmentation of blades, transport offsite								
2	Site Compounds	Site compounds, site access, fencing, gates								
3	Site Roads	Construction/upgrade of roads, install drainage measures, install water protection measures								
4	Substation and Electrical Works	Construction of onsite substation and 110kV grid connection cabling								
5	Upgrades to control buildings	Construction of internal cabling to existing onsite control buildings								
6	Turbine Hardstands	Excavate turbine bases								

7	Turbine Foundations	Fix reinforcing steel and anchorage system, erect shuttering, concrete pour								
8	Backfilling and Landscaping									
9	Turbine delivery and erection									
10	Turbine commissioning									

10. COMPLIANCE AND REVIEW

10.1 Site Inspections and Environmental Audits

Routine inspections of construction activities will be carried out on a daily and weekly basis by the ECoW and the Site Supervisor/Construction Manager to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this CEMP and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

10.2 Auditing

An Environmental audit will first be carried out prior to the construction phase of the Proposed Project to ensure the implementation of pre-construction mitigation measures, completion of baseline studies and implementation of pre-construction felling mitigation measures. Further environmental audits will be carried on a monthly basis during the construction phase of the Proposed Project and again after the commissioning of the wind turbines and substation.

In contrast to monitoring and inspection activities, audits are designed to shed light on the underlying causes of non-compliance, and not merely detect the non-compliance itself. In addition, audits are the main means by which system and performance improvement opportunities may be identified. Environmental audits will be carried out by the ECoW on behalf of the Project Developer, in an and objective manner. Environmental audits will be conducted at planned intervals to determine whether the CEMP is being properly implemented and maintained. The results of environmental audits will be provided to the Project Developer and Project Contractor.

An audit of compliance with the pre-commencement mitigation measures will be completed by the ECoW prior to the commencement of the construction phase of the Proposed Project. An audit of compliance with the construction phase mitigation measures will be completed monthly during the construction phase. The findings of each audit will be documented by the ECoW within the EMP. The findings of each audit will be made available to An Coimisiún Pleanála on request.

Once the Proposed Project is operational and turbines have been commissioned, a report of compliance with operational phase mitigation measures will be prepared.

10.3 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during construction of the Proposed Project:

Environmental Near Miss: An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident: Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the Site.

Environmental Exceedance Event: An environmental exceedance event occurs when monitoring results indicate that limits for a particular environmental parameter (as indicated in the Environmental Monitoring Programme) has been exceeded.

An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary.

Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter.

Environmental Non-Compliance: Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the EMP.

10.4 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Site Supervisor/Construction Manager, as advised by the Site ECoW. Corrective actions may be required as a result of the following:

- Environmental Audits;
- Environmental Inspections and Reviews;
- Environmental Monitoring;
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention, direct communications between the Site supervisor/Construction Manager and the Site ECoW will be conducted. This in turn will be passed down to the Site staff involved. A Corrective Action Notice will be completed at a later date.

10.5 Construction Phase Review

The Project Contractor's CEMP will be the subject of review by the ECoW on behalf of the Project Developer whenever a revised version of the CEMP is presented for approval.