APPENDIX 4-3

CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Planning and Environmental Consultants

Construction and Environmental Management Plan

Maughanaclea Renewable Energy Development, Co. Cork

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1. INTRODUCTION

This Construction and Environmental Management Plan (CEMP) has been prepared by MKO on behalf of the Applicant, Maughanaclea Ltd. who intends to apply to An Coimisiún Pleanála (ACP) for planning permission to construct a renewable energy development comprising 14 no. wind turbines, and associated infrastructure in the townlands of Maughanaclea and adjacent townlands, near Kealkill in Co. Cork, and a 110kV on-site substation and associated works, including underground 110kV cabling and associated ancillary apparatus to connect to the national grid at the existing Dunmanway 110kV substation, in the townland of Ballyhalwaick, Co. Cork.

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', 'Site' and 'Proposed Wind Farm site'. 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 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 and operation. The Contractor, as appointed by the Project Developer, 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 Environmental Clerk of Works (ECoW).

1.1 Scope of the Construction and Environmental Management Plan

This CEMP is presented as a guidance document for the construction of the Proposed Development.

The Proposed Project is located within the EIAR Site Boundary or the 'Site' which measures approximately 1,175 hectares (ha). The Proposed Project layout is illustrated on Figure 2-3 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 and 3) operational-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 and 3) operational-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.

1.2 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 site is located within a rural setting in west Co. Cork, approximately 2.3 km east of the village of Kealkill, 9.5 km northeast of the town of Bantry, and 12.2 km west of Dunmanway. The nearest Natura 2000 site to the Proposed Wind Farm site, i.e., Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Derryclogher (Knockboy) Bog SAC which is located approximately 6.9km northwest of the Proposed Wind Farm site. Elevations within the Proposed Wind Farm site range from ~428mOD (metres above Ordnance Datum) to 132mOD.

The Proposed Grid Connection consists of c.20.5km of 110kV underground electrical cabling from the proposed 110kV onsite substation, in the townland of Maughanaclea, Co. Cork to the existing Dunmanway 110kV substation in the townland of Ballyhalwick, Co. Cork to facilitate the connection of the Proposed Wind Farm to the national electricity grid. The Proposed Grid Connection is primarily located along the public road corridor, with a short section located across private land/tracks. The Proposed Grid Connection follows the R585, L4909, L4609, L4615, R587, and the R586 to the existing Dunmanway 110kV substation. The townlands that the Proposed Grid Connection will pass through are detailed in Table 1-1 of Chapter 1. The nearest Natura 2000 site to the Proposed Grid Connection is the Bandon River SAC. A section of the Proposed Grid Connection overlaps with the Bandon River SAC. Please see Section 4.4.2 for further details on the Proposed Grid Connection.

Current land-use on the Proposed Wind Farm site is predominantly commercial forestry, with agricultural pastures and rough grazing also present. Current land-use along the Proposed Grid Connection comprises of the public road corridor, public open space, pastures, and private land principally used by agriculture. Land-use on the wider landscape comprises a mix of pastoral agriculture, low-density residential, and small-scale commercial properties.

The existing uses of the site for agriculture and forestry will continue in conjunction with the Proposed Project.

The townlands in which the Proposed Project is located are listed in Table 1-1 in Chapter 1 of this EIAR.

2.2 Description of the Proposed Project

A detailed description of the Proposed Project is provided in Chapter 4 (Description of the Proposed Project) of this EIAR.

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

The Proposed Wind Farm site layout is shown in Figure 2-1. The Proposed Grid Connection layout is illustrated on Figure 2-2. Figure 2-3 illustrates the overall layout of the Proposed Project (i.e. the Proposed Wind Farm and Proposed Grid Connection together). Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to the EIAR.

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Microsoft, Vantor

1:2,500 Scale of Turbine Foundation and Hardstand

Microsoft, Vantor

1:1,200 Scale of Proposed Met Mast Location

0 0.9 1.8 km

Map Legend

- EIAR Site Boundary
- Proposed Turbine Locations
- Proposed Grid Connection
- Proposed Internal 33kV Cabling Route
- Proposed Turbine Foundations
- Proposed Met Mast Location
- Proposed Hardstands
- Proposed 110kV Onsite Substation
- Proposed New Roads
- Exisitng Roads/Tracks to be Upgraded
- Proposed Peat and Spoil Management Areas
- Proposed Borrow Pits
- Proposed Security Cabins
- Proposed Tempoary Construction Compounds

BMEP Enhancement Areas

- Kerry Slug Enhancement Area
- Peatland Restoration Area
- Native Woodland Planting

SITE LOCATION - NOT TO SCALE

Drawing Title: Proposed Wind Farm Layout

Project Title: Maughanaclea Renewable Energy Development

Project No.	Drawing No.	Scale
240225	Figure 2-1	1:18,000
Drawn By	Checked By	Date
SOR	RK	24/03/2026

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

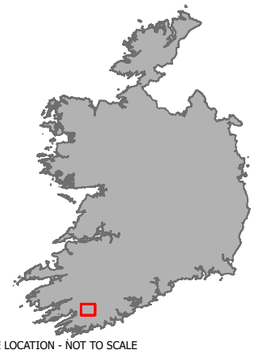
510000 515000 520000 525000

560000 555000 550000

0 2.5 5 km

Map Legend

- EIAR Site Boundary
- Proposed Grid Connection
- Existing Dunmanway 110kV Substation



SITE LOCATION - NOT TO SCALE

Drawing Title
Proposed Grid Connection Layout

Project Title
Maughanaclea Renewable Energy Development

Project No.	Drawing No.	Scale
240225	Figure 2-2	1:55,000
Drawn By	Checked By	Date
SOR	RK	24/03/2026

MKO
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505000 510000 515000 520000 525000 530000 535000

575000 570000 565000 560000 555000 550000

T01 T02 T03 T04 T05 T06 T07 T08 T09 T10 T11 T12 T13 T14

Kealkill

Dunmanway

0 5 10 km

Microsoft Vantor

Map Legend

- EIAR Site Boundary
- Proposed Turbine Locations
- Existing Dunmanway 110kV Substation
- Proposed Grid Connection
- Proposed Internal 33kV Cabling
- Proposed Turbine Foundations
- Proposed Met Mast Location
- Proposed New Roads
- Exisitng Roads to be Upgraded
- Proposed Peat and Spoil Management Areas
- Proposed Borrow Pits
- Proposed 110kV Onsite Substation
- Proposed Hardstands
- Proposed Tempoary Construction Compounds
- Proposed Security Compounds

BMEP Enhancement Areas

- Kerry Slug Enhancement Area
- Habitat Restoration Area
- Native Woodland Planting

SITE LOCATION - NOT TO SCALE

Drawing Title

Proposed Project Layout

Project Title

Maughanaclea Renewable Energy Development

Project No.	Drawing No.	Scale
240225	Figure 2-3	1:100,000
Drawn By	Checked By	Date
SOR	RK	27/03/2026

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2.3 Construction Management Practices Overview

2.3.1 Introduction

An experienced main 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.

Proposed Wind Farm:

- Turbine Foundations
- Turbine Hardstanding Areas;
- Meteorological Mast Foundation;
- Site Roads (New and Upgrade to existing tracks);
- Site Drainage System;
- Site Entrance Management;
- Watercourse/Culvert Crossings;
- Peat and Spoil Management Areas;
- Temporary Construction Compounds;
- Tree Felling and Replanting;
- Biodiversity Management and Enhancement Measures;
- Underground Electrical (33kV) and Communication Cabling;
- Onsite 110kV Electricity Substation and Control Buildings;

Proposed Grid Connection:

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

2.3.3 Proposed Wind Farm

2.3.3.1 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 3.5m respectively, which has been assessed in the EIAR.

After the foundation level of each turbine has been formed 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 site 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 site with excavated peat and spoil being transported to the identified peat and spoil management areas within the Site.*

2.3.3.2 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.

2.3.3.3 Meteorological Mast Foundation

One meteorological (met) mast is proposed as part of the Proposed Wind Farm. The met mast will be equipped with wind monitoring equipment at various heights. The proposed met mast will be located at E509109, N555194 (ITM) as shown on the Proposed Wind Farm site layout drawing in Figure 2-1 above and the detailed site layout drawings included as Appendix 4-1. The met mast will be a free-standing slender lattice structure 30m in height. It will be constructed on a hard-standing area sufficiently large to accommodate the equipment that will be used to erect the mast. A standard detail of a meteorological mast is shown in Ch. 4: Description of the Proposed Project; Figure 4-11 of the EIAR.

The met mast foundation will be formed at a suitable level directed by the Geotechnical Engineer/Designer. The foundation area will be prepared 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 met mast;*
3. *No material will be removed from the Proposed Wind Farm site 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 met mase 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 met mast foundation.*

The met mast foundation will then be installed using the standard excavated reinforced concrete bases methodology as detailed above in Section 2.3.3.1.

2.3.3.4 Site Roads

To facilitate travel within the Site and to connect the various project components together, existing onsite tracks will need to be upgraded and new access roads will need to be constructed. The Proposed Project makes use of the existing track network insofar as possible. The proposed site access roads will be constructed using the methodology summarised below.

Upgrade of Existing Access Roads

As noted in Chapter 4: Description of the Proposed Project, 2.1 km of existing roads and access tracks will be upgraded as part of the Proposed Wind Farm construction phase Existing roads 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 roads or tracks is summarised below.

i. *Access road construction will be to the line and level requirements as per design drawings.*
ii. *For upgrading of all existing access roads, the following guidelines apply:*
    a. *Excavation of the access road will take place to a competent stratum beneath the peat, removing all peat and soft clay and backfilled with suitable granular fill.*
    b. *Benching of the excavation will be required between the existing section of access road and the widened section of access road where the depth of excavation exceeds 500mm.*
    c. *For a founded access road, the surface of the existing access road will be overlaid with up to 500mm of selected granular fill.*
    d. *Access roads will be finished with a layer of capping across the full width of the road.*
    e. *A layer of geogrid/geotextile may be required at the surface of the existing access road where the existing roads shows signs of rutting, etc.*
    f. *For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability.*
iii. *The finished road width will have a minimum running width of 5m, with wider sections on bends and corners.*
iv. *On side long sloping ground any road widening works required will be done on the upslope side of the existing access road, where possible.*

Construction of New Roads

As noted in Ch. 4: Description of the Proposed Project, approximately 12.1 km of new roads will be constructed in order to facilitate the Proposed Project. which will comprise a roadway with a final running width of approximately five metres, with wider sections at corners and the laying of appropriate

surface dressing on the new roadway where necessary. Approximately 12.0km of proposed new road will be excavated road and approximately 85 metres of proposed new road will be floating road.

The construction methodology for the proposed new excavated access roads is outlined as follows:

i. *Prior to commencing the construction of the excavated roads, 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 Geotechnical & Peat Stability Assessment, FT, 2025, Appendix 8-1) as requiring monitoring.*
ii. *Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area.*
iii. *Excavation of roads will be to the line and level given in the design requirements. Excavation will take place to a competent stratum beneath the peat.*
iv. *Road construction will be carried out in sections of approximately 20m lengths i.e. no more than 20m of access road will be excavated without replacement with stone fill. This length will be reduced to 5m in areas identified within the peat stability risk assessments.*
v. *Excavation of materials with respect to control of peat stability:*
    a. *Acrotelm (to about 0.3 to 0.4m of peat) will be required for landscaping and 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 to the designated peat and spoil management areas or the borrow pit.*
vi. *Once excavated, non-catotelm peat will be temporarily stored in localised areas adjacent to*
7. *excavations for roads and hardstands before being placed into the permanent storage areas*
8. *within the borrow pits, in the designated peat and spoil management areas, or reused for*
9. *landscaping purposes. All peat placement areas will be inspected by the Project Geotechnical Engineer before material is stored in the area. No material is to be sidecast on the downslope side of the access roads.*
vii. *Excavation side slopes in peat will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Should areas of weaker peat be encountered then slacker slopes will be required. Battering of the side slopes of the excavations will be carried out as the excavation progresses.*
viii. *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.*
ix. *The excavated access road will be constructed with an average of 750mm of selected granular fill. Granular fill to be placed and compacted in layers in accordance with the TII Specification for Road Works.*
x. *Access roads will be finished with a layer of capping across the full width of the road.*
xi. *A layer of geogrid/geotextile may be required at the surface of the competent stratum, where this stratum is cohesive in nature.*
xii. *Where slopes of greater than 5 degrees are encountered along with relatively deep peat (i.e. greater than 1.5m) 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.*
xiii. *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 road, 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 9.1, Appendix 4-2) will also be installed downslope of the works area to allow for ongoing monitoring during the construction works.*

xiv. *A final surface layer will be placed over the excavated road and graded to accommodate wind turbine construction and delivery traffic.*

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

i. *Prior to commencing floating road construction, movement monitoring posts will be installed upslope and downslope of the floating road and will be monitored daily as the road is constructed. Monitoring posts will be located along the road at 10m intervals in areas of deep peat (greater than 2m). These survey points will be surveyed on a weekly basis, and more frequently when construction activities are ongoing in the area.*
ii. *Base geogrid will be laid directly onto the existing peat surface along the line of the road in accordance with geogrid provider's requirements.*
iii. *Tracking of machinery on the open peatland will be restricted to the machinery required to construct this section of floating road.*
iv. *The typical make-up of the new floated access road will be up to 1,000mm of selected granular fill with 2 no. layers of geogrid with possibly the inclusion of a geotextile separator.*
v. *Granular fill to be placed and compacted in layers in accordance with the TII Specification for Road Works, Series 600 (2024).*
vi. *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.*
vii. *The finished road width will be approximately 5m, with wider sections on bends and corners.*
viii. *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.*
ix. *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.*
x. *Where it is not possible to end-tip over a 10m length of constructed floating road then dumpers delivering stone to the floating road 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 road.*
xi. *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.*
xii. *A final surface layer will be placed over the full width of the floating road, as per design requirements, to provide a road profile and graded to accommodate wind turbine construction and delivery traffic.*
xiii. *No excavations (e.g., drainage, peat cuttings) will be carried out within 5m distance of a completed floated access road edge, or at a distance determined following site inspection. The presence of excavations can destabilise the road. Temporary excavations will be excavated in short lengths and backfilled as soon as practicable.*
xiv. *No materials will be sidecast or stored on the peat on either side of the floating road during construction.*
xv. *Settlement of a floated access road is expected and will likely be in the order of several 100mm in the deeper peat areas; as such it will be necessary to re-level the road at convenient intervals during the works. The magnitude and extent of settlement is likely to be greater in areas of deeper peat with the rate of settlement reducing over time. Prior to completion of the works, the road will be re-levelled using crushed stone.*
xvi. *The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis during the works, particularly before/following trafficking by heavy vehicular loads.*

2.3.3.5 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 4.7.3 of the EIAR.

2.3.3.6 Site Entrance Management

Construction and Operational Site Entrance

It is proposed to access southern turbine cluster of the Proposed Wind Farm utilising the existing commercial forestry road off the R585. It is proposed to access the northern turbine cluster of the Proposed Wind Farm via a new proposed entrance road that will travel northbound off the R585, with a short section crossing the existing L8777 Local Road. All construction traffic will enter via the two aforementioned site entrances off the R585. The access arrangements will include the upgrade of approximately 350m of the L8777. The Proposed Wind Farm site access off the R585 was subject to Autotrack assessments to identify the turning areas required, as described in Section 15.1.10 of the Traffic and Transport Assessment in Chapter 15 of this EIAR. Appropriate sightlines will be established to the Proposed Wind Farm site access for the safe egress of traffic.

It is proposed to access the proposed 110 kV onsite substation via the same existing commercial forestry entrance to the Proposed Wind Farm's southern turbine cluster.

A Traffic Management Plan is included in Appendix 15-2 of this EIAR and the CEMP in Appendix 4-3 of this EIAR. In the event planning permission is granted for the Proposed Project, the final Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures that are conditioned.

2.3.3.7 Watercourse/ Culvert Crossings

The Proposed Wind Farm site is extensively drained by a network of natural watercourses and manmade land drains. The majority of watercourses and manmade drains at the Proposed Wind Farm drain into the Owngar River, which flows in an east to west direction between the northern and southern turbine clusters. In addition, several headwater streams rise within the Site and streams flow towards Owngar River, Mealagh River and Gortloughra River.

To facilitate the construction of the Proposed Wind Farm roads, there are a total of 5 no. new watercourse crossing locations over natural watercourses (rivers and streams). The crossing locations are outlined below:

- A new crossing is proposed over the Owngar River along the proposed access road to the northern turbine cluster and to facilitate the 33kV internal wind farm cabling;
- A new crossing on the proposed access road to turbine T4;
- A new crossing on the proposed access road between turbines T11 and T12;
- A new crossing on the proposed access road to turbine T13; and,
- A new crossing on the proposed access road between the proposed 110kV onsite substation and turbine T10.

The above watercourse crossings will all be achieved via new clear span crossings.

In addition to the 5 no. new watercourse crossings to facilitate the construction of the Proposed Wind Farm roads outlined above, there is 1 no. existing watercourse crossing proposed along the R585 between the northern turbine cluster and the southern turbine cluster to facilitate the construction of the 33kV internal wind farm cabling. Further details of this crossing are provided in Section 4.9.1.6.1 below.

Within the Proposed Wind Farm site, there are a total of 3 no. existing watercourse crossings that will require upgrading to facilitate the construction of site roads. The crossing locations are as follows:

- 3 no. existing culverts along the forestry road between the proposed 110kV onsite substation and proposed turbine location T10.

In addition to the natural watercourses, there are manmade agricultural, peat and forestry drains within the Proposed Wind Farm site, which will rerouted around the Proposed Wind Farm infrastructure and/or integrated into the proposed drainage design as required.

2.3.3.8 Clear-Span Watercourse Crossing

It is proposed to construct a clear-span watercourse crossing at the 5 no. locations where new watercourse crossings are required within the Proposed Wind Farm site. The locations 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 road 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.

A standard design drawing of a pre-cast concrete, clear span crossing is shown in Ch. 4: Description of the Proposed Project; Figure 4-28 of the EIAR and included within the detailed planning drawings in Appendix 4-1.

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.

2.3.3.9 Culvert Crossing

Within the Proposed Wind Farm site, there are a total of 3 no. existing watercourse culvert crossing location that will require upgrading. 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. Some culverts may be installed to manage drainage waters from works areas of the Proposed Wind Farm, particularly where the waters have to be taken from one side of an existing 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.

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 Ch. 4: Description of the Proposed Project; Figure 4-29 of the EIAR for details.

2.3.3.10 Peat and Spoil Management Areas

The peat and spoil management areas within the Proposed Wind Farm site have been selected based on the depth of peat and the slope angle. The following recommendations and best practice guidelines for the placement of spoil in the identified peat and spoil management areas, alongside the site access roads, and as landscaping around turbines will be adhered to during the construction of the Proposed Project:

i. *Excavated peat will be placed/spread across the designated areas within the Proposed Wind Farm site.*
ii. *The peat placed within the peat and spoil management areas will be restricted to a maximum height of 1.5m. Weak/liquified peat must be placed within the proposed borrow pits and not stored within these areas.*
iii. *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.*
iv. *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.*
v. *It will be ensured that the surface of the placed peat is 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 placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability in the placed peat.*
vi. *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.*

vii. *On the downslope side of the storage areas at T08 a stone berm is shown to provide stability to the placed peat. The berm is 1.5m in height and will be constructed of free draining crushed rock. The berm will be founded on competent ground below the in-situ peat.*
viii. *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 within the placement areas.*
ix. *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.*
x. *Supervision by the Project Geotechnical Engineer is required for the works.*
xi. *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.*
xii. *A collector drain will be installed on the downslope side of the peat placement areas to capture any surface runoff from the storage areas.*

All the above-mentioned commitments will be undertaken by the Contractor during construction.

2.3.3.11 Temporary Construction Compounds

The 3 no. temporary construction compounds within the Proposed Wind Farm site will be constructed as follows:

- 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 perimeters of the temporary construction compounds;
- The compound platforms will be established using a similar technique as the construction of the substation platform as discussed below;
- A layer of geo-grid will be installed where deemed necessary by the designer 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 compounds will be constructed as site roads and used as vehicle hardstandings 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 compounds;
- The compounds will be fenced and secured with locked gates if necessary; and,
- Upon completion of the construction phase of the Proposed Project, the temporary construction compounds will be decommissioned and allowed to vegetate naturally.

2.3.3.12 Biodiversity Management and Enhancement Plan

A Biodiversity Management and Enhancement Plan (BMEP) has been prepared for the Proposed Project and is included as Appendix 6-4 of this EIAR. This plan has been developed to offset the loss of habitats identified within the Proposed Wind Farm site and further enhance the biodiversity of the Site and its environs. These enhancement measures have also been considered in the landscape & visual assessment which is included at Chapter 14: Landscape & Visual, of this EIAR. Similarly, the drainage design for the Proposed Project has been prepared by Hydro Environmental Services Ltd. (HES) and is included in Appendix 4-4 of this EIAR.

High value habitats were identified during initial habitat surveys of the Proposed Wind Farm site and include Annex I areas of dry siliceous heath, wet heath, and upland blanket bog. High-quality, intact heath and bog habitats within the Proposed Wind Farm site have been deliberately avoided where

possible in the design of the Proposed Project. Additionally, hand searches confirmed the presence of Kerry slug at one location within the Proposed Wind Farm site, within an area of recently felled woodland (WS5) within the southern turbine cluster of the Proposed Wind Farm site. Full details on the current ecological baseline of the Site are provided in Section 6.3 of Chapter 6: Biodiversity of the EIAR.

2.3.3.12.1 *Enhancement Measures*

Three different types of enhancement areas within the Proposed Wind Farm site have been selected for biodiversity enhancement measures as part of the Proposed Project and to enhance the Proposed Wind Farm site for species and habitats known to occur within the Proposed Wind Farm site.

Kerry slug enhancement areas

The necessary bat felling buffers for the Proposed Project, as shown in Ch. 4: Description of the Proposed Project; Figure 4-18 of the EIAR will be managed as peat and spoil management areas and to enhance Kerry slug habitat, as this species is known to occur within the Proposed Wind Farm site. Enhancement will include the felling of existing conifer plantations within 3 no. felling buffers and leaving the stumps in place and to protrude from the additional peat and spoil deposits, as these provide refuge for this species. These areas combined amount to approx. 3.9 ha. Monitoring of Kerry Slug in the areas adjacent to the Proposed Wind Farm site works will be undertaken to provide a before and after impact assessment. This will ensure that populations remain stable post-construction.

Native woodland planting

As shown in Ch. 4: Description of the Proposed Project; Figure 4-17 of the EIAR, 0.54ha of coniferous forestry within the Proposed Wind Farm site will be felled and planted with native woodland. Trees will be of native origin and will be of advanced nursery stock where possible. This habitat will connect to a parcel of previously established native woodland and will be located at the boundary of a larger area of conifer plantation. Planting will follow recommendations to establish an oak woodland. Trees will be of native origin and will be of advanced nursery stock where possible.

Peatland Restoration

As part of the BMEP, it is proposed to restore 5.3 ha of peat habitat. The location of the proposed peatland enhancement area encompasses an area of recently afforested conifer plantation and degraded wet heath habitat, and is shown in Ch. 4: Description of the Proposed Project; Figure 4-17. The selected area for enhancement was recently planted with Sitka spruce. Peat in this area is shallow (<0.5 m), and the understory between the young trees is dominated by Molinia caerulea with stands of Pteridium aquilinum being locally dominant.

Summary

The BMEP sets out the measures to manage and enhance the biodiversity in the locality of the Proposed Project. Specifically, proposed peatland restoration will result in enhancement of wet heath habitat on the Proposed Wind Farm site, while also offsetting the losses of degraded wet heath to facilitate the Proposed Wind Farm. The establishment of native woodland will enhance the woodland habitat within the Proposed Wind Farm site. Finally, establishment of both wet heath and woodland within the Proposed Wind Fam site, along with enhancement measures within the proposed bat felling buffers, will result in habitats of higher suitability for Kerry Slug within the Proposed Wind Farm site.

This BMEP has set out measures to be implemented during establishment and management phases to ensure that the targets of this BMEP are successful. It also provides for monitoring of the target habitats by an ecologist to ensure the success of the measures outlined in the BMEP.

Full details of the enhancement measures outlined above, including monitoring and management measures and measures to control the growth of invasive species, are outlined in Appendix 6-4: Biodiversity Management and Enhancement Plan of this EIAR.

2.3.3.13 Tree Felling and Vegetation Removal

Tree felling will be required within and around the Proposed Wind Farm infrastructure footprint to allow for the construction of the proposed turbines, access roads underground cabling, proposed 11-konsite substation, and the other ancillary infrastructure.

Approximately 44 hectares of forestry (conifer plantation (WD4)) will be felled to accommodate the Proposed Wind Farm infrastructure and bat buffers, inclusive of proposed Turbines T01, T02, T03, T05, T06, T07, T08, T09, T10, T11 and associated infrastructure, and as part of the BMEP for the Proposed Project. Ch. 4: Description of the Proposed Project; Figure 4-18 of the EIAR shows the extent of the commercial forestry to be permanently felled as part of the Proposed Wind Farm.

The Proposed Wind Farm will also require the removal of a small section (23m) of hedgerow (WL1) and 0.6ha of scrub (WS1) to facilitate the construction of an access road. The loss of hedgerow and scrub for the Proposed Project will be offset through the planting of native woodland as part of the BMEP included in Appendix 6-4 of this EIAR.

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

2.3.3.13.1 *Tree and Vegetation Replanting*

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

The identified 44 hectares of conifer plantation that will be permanently felled for the Proposed Wind Farm will be replaced or replanted on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the Proposed Wind Farm felling. Replanting is a requirement of the Forestry Act and is primarily a matter for the statutory licensing processes that are under the control of the Forest service. The replacement of the felled forestry as part of the Proposed Wind Farm may occur on any lands, within the State benefitting from Forest Service Technical Approval[1] for afforestation, should the Proposed Wind Farm receive planning permission. Under the Forestry Regulations 2017, all applications for licences for afforestation require the prior written approval (technical approval) of the Minister for Agriculture, Food and the Marine. Before the Minister can grant approval, he/she must first determine if the project is likely to have significant effects on the environment (for EIA purposes) and assess if the development, individually or in combination with other plans or projects is likely to have a significant effect on a European site (for Appropriate Assessment purposes).

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

It is proposed to plant approximately 0.54 hectares of natural woodland within the Proposed Wind Farm site as shown in Ch. 4: Description of the Proposed Project Figure 4-17 of the EIAR. Please see Chapter 6 Biodiversity and Appendix 6-4 Biodiversity Management and Enhancement Plan for details.

For the balance of the replanting obligation, the applicant commits to replanting the 43.5 hectares of conifer forestry, outside the hydrological catchment within which the Proposed Wind Farm is located. On this basis, it is concluded that there will be no cumulative effects associated with the replanting of 43.5 hectares of conifer forestry. Therefore, the conifer forestry replanting is not considered further in the impact assessment chapters of this EIAR. In addition, the applicant commits to not commencing the Proposed Project until both a felling and afforestation licence(s) is in place and, therefore, this ensures the afforested lands are identified, assessed and licenced appropriately by the relevant consenting authority.

As identified above, the Proposed Wind Farm will also require the removal of a small section of hedgerow (23m) for the construction of an access road. The loss of hedgerow for the Proposed Wind Farm will be offset through the planting of native woodland as part of the BMEP included in Appendix 6-4 of this EIAR.

2.3.3.14 Borrow Pits

The estimated volume of stone material to be extracted from the borrow pit for the construction of the Proposed Wind Farm is up to 170,000m^3 This figure presented is the anticipated maximum volume; however, the actual volumes to be removed from the borrow pits will be confirmed at the time of construction and following detailed pre-construction site investigation works. It is intended to obtain the majority of materials for the construction of the Proposed Wind Farm from the 4 no. proposed onsite borrow pits (engineer's specified material may be imported onto the Site should sufficient volumes of suitable material not be encountered during the excavation phase of the proposed infrastructure, to be sourced from local, licenced quarries).

The onsite borrow pits will be excavated and backfilled as follows:

i. *Peat and overburden will be removed and temporarily stored in localised areas adjacent to the borrow pit locations before being placed in the permanent peat and spoil management areas within the borrow pits. Data from the available ground investigation undertaken to date indicates that the rock in the area should be suitable, but testing will be undertaken to ensure the bedrock, although this would be a suitable method for removal of the rock.*
ii. *It is proposed to construct the borrow pits so that the base of the borrow pit is below the level of the adjacent section of access road. An excavation progression into the back edge of the borrow pits, localised deepening of the borrow pit floors may be required depending on extraction operations.*
iii. *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. Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance.*
iv. *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.*
v. *Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/front face. The contractor executing the work will be required to develop the borrow pit in a way which will allow the excavated peat and spoil to be reinstated safely.*
vi. *In order to maximise the storage capacity, a perimeter berm will be required along the lower edge of the borrow pits. The berm will be constructed of rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for the perimeter berm will be intact bedrock and will be inspected and approved by the Project Geotechnical Engineer.*
vii. *The height of the perimeter berm will be greater than the height of the stored peat and spoil to prevent any surface run-off. The crest of the stone berm will be a minimum of 0.5 m above the height of the placed peat and spoil.*
viii. *It will be necessary to construct internal rock buttresses founded on in-situ rock within borrow pit 3 and 4 to create individual cells (either 1 or 2 no.). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for each rock buttress will be intact bedrock and will be inspected and approved by the Project Geotechnical Engineer.*
ix. *The rock buttresses will be constructed in stages to allow infilling of peat and spoil within cells. The buttresses will be constructed of selected rock fill and placed and compacted in suitable layers to form rock buttresses sufficient stability to retain the placed peat and spoil.*
x. *Rock buttresses to form cells within borrow pits 3 and 4 will be required to ensure access for trucks and excavators can be achieved. The locations of the rock buttresses shown in the Peat and Spoil Management Plan (Appendix 4-2) for the borrow pits are indicative only and may change subject to final conditions encountered on site during construction and as a result of the confirmatory ground investigation.*

xi. *The internal rock buttresses will be wide enough (up to 4 m at the crest) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The perimeter side slopes of the rock buttress will be constructed between 35° (based slope) to 60° (inside slope) degrees.*

xii. *In order to prevent water retention occurring behind the buttresses, the buttresses will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of about 100 mm up to typically 500 mm in size. In addition, drains will be placed through the buttresses to allow surface water to drain from the surface of the placed peat.*

xiii. *The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required.*

xiv. *The surface of the placed peat and spoil will be shaped to allow efficient run-off of surface water from the placed arising towards the perimeter of the borrow pit.*

xv. *As the internal buttresses are slightly higher than the retained peat, drains will be provided at regular intervals through the berms, at the same level as the top of the peat surface, to prevent ponding of water around the edges of the repositories. These drains will be 150 mm diameter flexible plastic drainage pipe or equivalent.*

xvi. *A layer of geogrid to strengthen the surface of the placed peat and spoil within the borrow pits will be required.*

xvii. *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.*

xviii. *Temporary control of groundwater within the borrow pits will be required and measures will be determined as part of the ground investigation programme. A temporary pump and suitable outfall locations will be required during construction.*

xix. *Settlement ponds have been designed at the lower side/outfall location of the borrow pits.*

xx. *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.*

xxi. *Supervision by the Project Geotechnical Engineer is required for the development of the borrow pits.*

All the above-mentioned requirements will be implemented by the Contractor during construction.

2.3.3.15 Underground Electrical (33kV) and Communication Cabling

The transformer in each turbine is connected to the proposed 110kV onsite substation through a network of underground electrical and communication cabling. The ground is trenched using a mechanical excavator. The top layer of soil (or road surface) is removed and saved so that it is replaced on completion. The cables ducting will be bedded with suitable material unless the ground conditions are such that no bedding is required. 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 cable trench and Plate 2-2 illustrating an example of a trefoil 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.

Plate 2-1 Typical Single Cable Trench View

Plate 2-2 Typical Trefoil Cable Trench View

Where any underground services are encountered along the internal wind farm IPP cabling route, they will be traversed using one of the methods outlined in Section 4.9.2.2 of the EIAR.

2.3.3.16 Proposed 110kV Onsite Substation and Control Buildings

A detailed drawing of the proposed 110kV onsite substation is shown in Appendix 4-1 of the EIAR. The proposed 110kV onsite substation will be constructed using the following methodology:

- The area of the proposed 110kV onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to a nearby spoil management area for later use in landscaping. Any excess material will be sent to one of the on-site peat and spoil management areas.

- 2 no. control buildings will be built within the proposed110kV onsite substation compound;
- The building 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 and electrical equipment 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;
- The electrical equipment will be installed and commissioned.
- Perimeter fencing will be erected.
- The construction and components of the proposed 110kV onsite substation will be built to EirGrid specifications.

2.3.4 Proposed Grid Connection

2.3.4.1 Underground Cabling (110kV)

The underground cabling works will consist of the installation of ducts in an excavated trench to accommodate electrical and fibre communications cabling and facilitate the connection between the proposed 110kV onsite substation and the existing Dunmanway 110kV substation. Further details are included in Appendix 4-1 of the EIAR.

The underground cabling will be laid beneath the surface of the Proposed Wind Farm and the public road using the following methodology:

- Before works commence, updated surveying will take place along the proposed cable route, with all existing culverts identified. All relevant bodies i.e. ESB, Cork County Council, etc. will be contacted and all up to date drawings for all existing services sought.
- When the cable 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.
- A tracked 360-degree excavator will then proceed to dig out the proposed trench, typically to a depth of c.1300mm, within which the ducts will be laid.
- The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts.
- Trench supports will be installed, or the trench sides will be benched or battered back where appropriate and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse.
- Once the trench has been excavated, a base-layer will be laid and compacted, comprising Clause 804, or 15 Newton CBM4 concrete as required.
- The ducting will be installed as per specification, with couplers fitted and capped to prevent any dirt etc. entering the duct. In poor ground conditions, the ends of the

ducts will be shimmed up off of the bed of the trench, to prevent any possible ingress of water dirt. The shims will be removed again once the next length has been connected. Extreme care will be taken to ensure that all duct collars (both ends) are clean and in good condition prior to ducts being joined.

- As the works progress, the as-built location of the ducting will be recorded using a total station or GPS.
- As per the associated base-layer (Clause 804 material or 15 Newton CBM4 concrete) will be installed and compacted as per approved detail, with care not to displace the ducting.
- Spacers will be used to ensure that the correct cover is achieved at both sides of the ducting.
- The remainder of the trench will be backfilled in two compacted layers with approved engineer's specified material.
- Yellow marker warning tape will be installed across the width of the trench, at 300mm depth,
- The finished surface is to be reinstated, as per original specification. Off-road cabling may be finished with granular fill to facilitate access to the trench for any potential maintenance that is required during the operational phase of the Proposed Project.
- Marker posts will then be placed at regular intervals (generally at joint bays and any change in direction) to denote the location of the underground power cables.

2.3.4.2 Existing Underground Services

Any underground services encountered along the underground cabling 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 ducting and bottom of the service will be achieved. In deeper excavations an additional layer of marker tape will be installed between the communications duct 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.

2.3.4.3 Site Preparations

Prior to beginning construction work the contractor will scan the proposed route with a Cable Avoidance Tool (CAT), carry out visual inspection of the area and may carryout out further below ground surveys if deemed necessary. If any previously unidentified services are discovered the site engineer will inform the design of the issues and possibly recommend a solution that works with the new constraints.

In some instances, it may be necessary to relocate existing underground services such as water mains or existing cables. In advance of any construction activity, the contractor will undertake additional surveys of the proposed route to confirm the presence or otherwise of any services. 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.

If existing low voltage underground cables are found to be present, a trench will be excavated, and new ducting and cabling will be installed along the new alignment and connected to the network on either end. The trench will be backfilled with suitable material to the required specification. Warning strip and marking tape will be laid at various depths over the cables as required. Marker posts and plates will be installed at surface level to identify the new alignment of the underground cable, the underground cables will then be re-energised.

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 utility standards.

2.3.4.4 Trenching and Ducting

The proposed cable will be installed in a series of ducts in an excavated trench. Trenching will be achieved using a mechanical excavator. The top layer of soil or road surfacing will be removed and stockpiled separately for reuse. Material stockpiles should be stored at least 15m back from drains and watercourses on level ground with a silt fence inserted at the base to prevent runoff.

The trench base will be graded and smoothed once the required depth and width is achieved. A layer of bedding material will be placed and compacted to the required specification on the trench floor prior to laying the ducts in trefoil formation.

The ducting surrounds will be carefully backfilled and compacted in accordance with the required specification. Cable protection strips will be placed on compacted material directly above the ducting. A secure cap will be placed at the end of each duct to prevent the ingress of dirt or water.

Ground water and surface water accumulating in the base of trenches will not be pumped directly to roadside drains or watercourses unless it is clean and free from solids. Contaminated water will be either treated onsite prior to discharge or tankered offsite to a suitably licensed disposal facility.

For concrete and asphalt/bitumen road sections, surfaces will be permanently reinstatement in accordance with the specification and to the approval of the local authority and/or private landowners, unless otherwise agreed with local authorities. All trench works carried out in public roadways will be carried out in accordance with *'Guidelines for Opening, Backfilling and Reinstatement of trenches in Public Roads'* and any other conditions imposed by the relevant road authority.

For unsurfaced/grass sections, trenches will be backfilled 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.

Ducting will be cleaned and tested in accordance with the specification by pulling through a brush and mandrel. A draw rope will be installed in each duct in preparation for cable installation at a later date.

2.3.4.5 Joint Bays

Joint bays are typically pre-cast concrete chambers where lengths of cable will be joined to form one continuous cable. They will be located at various points along the ducting route generally between 700 to 800 metres intervals or as otherwise required by ESB/EirGrid and electrical requirements. Joint Bays are typically 2.5m x 6m x 1.75m pre-cast concrete structures installed below finished ground level.

Where possible, joint bays will be located in areas where there is a natural widening/wide grass margin on the road in order to accommodate easier construction, cable installation and create less traffic congestion. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible. During construction the joint bay locations will be completely fenced off once they have been constructed, they will be backfilled until cables are being installed. Once the cabling is installed, the joint bays will be permanently backfilled with the existing surface re-instated and there will be no discernible evidence of the joint bay on the ground.

In association with Joint Bays, Communication Chambers are required at every joint bay location to facilitate communication links between the proposed 110kV onsite substation and the existing

Dunmanway 110kV substation. Earth Sheath Link Chambers are also required approximately every second joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground power cables, installed in a flat formation, so that the circulating currents and induced voltages are eliminated or reduced. Earth Sheath Link Chambers and Communication Chambers are located in close proximity to Joint Bays. Earth Sheath Link Chambers and Communication Chambers will be pre-cast concrete structures with an access cover at finished surface level. The locations of the joint bays and chambers are shown on the Proposed Grid Connection Infrastructure drawings in Appendix 4-1 of the EIAR. Please see Ch. 4: Description of the Proposed Project; Figure 4-21 of the EIAR for a standard joint bay.

The precise siting of all Joint Bays, Earth Sheath Link Chambers and Communication Chambers within the planning corridor assessed is subject to approval by ESBN and EirGrid.

The installation of cabling normally involves pulling three individual conductors into three separate ducts. The cable pulling winch must be set at a predetermined cut off pulling tension as specified by the designer. The cable will be connected to the winch rope using approved suitably sized and rated cable pulling stocking and swivel or the pulling head fitted by the cable manufacturer. Once the "two sections" of cable are pulled into the joint bay, a jointing container will be positioned over the joint bay and the cable jointing procedure carried out in this controlled environment.

Following the completion of jointing and duct sealing works in the joint bay, place and thoroughly compact cement-bound sand in approximately 200 mm layers to 100mm above the top of the cable joint base to provide vertical support. A cable protection strip will be installed at this depth and the joint bay backfilled with cement-bound sand and reinstated to match surrounding areas.

2.3.4.6 Underground Cabling Installation and Watercourse/Service Crossings

A total of 11 no. existing watercourse crossings will be traversed to cater for the Proposed Grid Connection to the existing Dunmanway 110kV substation. The locations of the watercourse crossings are shown on the detailed layout drawings in Appendix 4-1 of the EIAR. The watercourse crossing methodologies for the provision of the Proposed Grid Connection at these locations is set out in Ch.4 Description of the Proposed Project; Table 4-5 of the EIAR, with proposed crossing methodology illustrated on Figure 4-31 to Figure 4-34 of the EIAR. The most appropriate methodology has been selected for each crossing location. Instream works are not required at any watercourse crossing along the route of the Proposed Grid Connection.

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 Cork County Council prior to works commencing.

2.3.4.6.1 *Crossing Using Standard Trefoil Formation Over – Option A*

Watercourses will not be directly impacted upon since no instream works or bridge/culvert alterations are proposed. Where adequate cover exists above a bridge/culvert , the standard ESB approved trefoil arrangement will be used where the cable ducts pass over a culvert without any contact with the existing culvert, watercourse, or existing underground service. The cable trench will pass over the culvert in a standard trench.

Please see Ch. 4: Description of the Proposed Project; Figure 4-32 of the EIAR for further details.

2.3.4.6.2 *Flatbed Formation Under – Option B*

Where cable ducts are to be installed under an existing watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a trefoil arrangement, the ducts will be laid in a

deeper trench, the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material over it. The ducts will be laid in this trench in a flatbed formation under the existing watercourse/service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification.

Any addition of a new pavement will be tied back into the existing road pavement at grade. After the crossing under the culvert/service has been achieved, the ducts will resume to the trefoil arrangement within a standard trench.

Please see Ch. 4: Description of the Proposed Project; Figure 4-33 of the EIAR for further details.

2.3.4.6.3 *Flatbed Formation Over – Option C*

Where cable ducts are to be installed over an existing watercourse or service crossing where sufficient cover cannot be achieved by installing the ducts in a standard trefoil arrangement, the ducts will be laid in a much shallower trench, the depth of which will be determined by the location of the top of the obstacle or the depth of excavatable material. The ducts will be laid in this trench in a flatbed formation over the watercourse/service and will be encased in 6mm thick steel galvanized plate with a 35N concrete surround as per ESB Networks specification.

Where a bridge/culvert or service has insufficient cover depth to fully accommodate the required trench, the ducts can be laid in a flatbed formation partially within the existing road surface. Where this option is to be employed, the ducts will also be encased in steel with a concrete surround as per EirGrid and/or ESB Networks specifications. In order to achieve cover over these ducts and restore the carriageway of the road, it may be necessary to raise the pavement level locally to fully cover the ducts. The increased road level will be achieved by overlaying the existing pavement with a new wearing course as required. Any addition of a new pavement will be tied back into the existing road pavement at grade. After the crossing over the culvert has been achieved, the ducts will resume to the trefoil arrangement within a standard trench.

Please see Ch. 4: Description of the Proposed Project; Figure 4-34 of the EIAR for further details.

2.3.4.6.4 *Horizontal Directional Drilling – Option D*

The horizontal directional drilling method of duct installation is carried out using Vermeer D36 x 50 Directional Drill (approximately 22 tonnes), or similar plant. The launch and reception pits will be approximately 2.5mm wide, 2.5m long and 2.0m 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 will 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 will continue with the addition of 3.0m long drill rods, mechanically loaded and connected into position.

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 & reception pits will be conducted in accordance with the normal specification for backfilling excavated trenches. Sufficient controls and monitoring, as listed below, 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.

- The area around the Clear Bore™ batching, pumping and recycling plants shall be bunded using terram and sandbags in order to contain any spillages;
- One or more lines of silt fences shall be placed between the works area and adjacent rivers and streams on both banks;
- Accidental spillage of fluids shall be cleaned up immediately and transported off site for disposal at a licensed facility; and,
- Adequately sized skips will be used for temporary storage of drilling arisings during directional drilling works. This will ensure containment of drilling arisings and drilling flush.

Please see an illustration of the HDD methodology in Ch. 4: Description of the Proposed Project; Figure 4-31 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. Operations 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 4.7 of the EIAR in addition to the drainage design and management for the Proposed Project. The protection of groundwater and surface water within and surrounding the Proposed Project site, and downstream catchments that they feed has been of utmost importance in considering the most appropriate drainage proposals for the site of the Proposed Project. The drainage design for the Proposed Project has been planned with the intention of having no significant negative impact on the water quality of the Site and its associated rivers, and consequently no impact on downstream catchments and ecological ecosystems. The assessment of potential impacts on hydrology and hydrogeology due to the construction, operation and decommissioning of the Proposed Project is included in Chapter 9: Water. No routes of any natural drainage features will be altered as part of the Proposed Project. Turbine locations and associated new roadways were designed to avoid natural watercourses with existing roads to be used wherever possible. There will be no direct discharges to any natural watercourses or land drains, with all drainage waters being dispersed as overland flows. All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses and drains. Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project.

During the construction phase, the Proposed Grid Connection underground cabling route comprises a temporary narrow trench excavated and backfilled along existing roadways The scale and scope of the drainage measures imposed along the Proposed Grid Connection underground cabling route will be reduced in comparison to the Proposed Wind Farm site drainage. Nonetheless, the mitigation measures incorporated along the Proposed Grid Connection underground cabling route, such as silt fences and the covering of stockpiles during rainfall events, will ensure that there are no effects on downstream surface water quality as a result of the Proposed Grid Connection underground cabling route.

3.2.3 Legislation and 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;
- 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 (EPA, 2022);
- 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 Guidelines (DoEHLG, 2006)) and the Draft Revised Wind Energy Development Guidelines (the Draft Guidelines (DoEHLG, 2019);
- 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);
- 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 Plan 2018-2021 (DAFM, 2018).
- Water Action Plan 2024: A River Basin Management Plan for Ireland 2022–2027 (DAFM, 2024)
- Standards for Felling and Reforestation (DAFM, 2019)

3.2.4 Site Drainage Design and Management

The proposed site drainage features for this Site are outlined in Section 4.7 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/recharge to ground.
- Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line treatment and discharge to ground via infiltration drains and infiltration areas.
- There is no direct hydraulic connectivity from proposed construction areas to natural watercourses or drains connecting to downstream watercourses.
- Maintain the existing hydrology/hydrogeology of the Site.
- Re-routing existing local drainage pathways as required.
- Daily inspection and recording of surface water management system by on-site 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 4-4 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 4.7 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 site 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 for this Site is that an existing network of forestry, bog, field and roadside drains already exists, 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.

There are 11 no. identified watercourse crossings along the Proposed Grid Connection. All 11 no. watercourse crossings are referenced on EPA/OSI mapping. An additional watercourse crossing of an EPA mapped watercourse is required within the Proposed Wind Farm site along the R585 to facilitate the 33kV internal wind farm cabling. The construction methodology for the 11 no. EPA/OSI mapped crossings has been designed to eliminate the requirement for in-stream works at these locations. The various crossing methodologies to be employed along the Proposed Grid Connection include the following:

- Type A: Crossing using standard trefoil formation (Figure 4- 32)
- Type B: Flatbed formation under (Figure 4-33)
- Type C: Flatbed Formation over (Figure 4- 34)
- Type D: Horizontal Directional Drilling (Figure 4-31)

A general description of the construction methods employed at watercourse crossings are described in Chapter 4 in Section 4.9.2.6.

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 Environmental 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 2.3.3.2 and Section 2.3.3.4 above and in Section 4.7 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. 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 site it may be more practical to transport excess excavated material to a nearby licenced facility.

On steeper slopes, silt fences, as detailed in Section 4.7.4.12 if 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 Kealkill, Co. Cork.

https://www.yr.no/en/forecast/daily-table/51.749,%20-9.386

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 on-site 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:

- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Where possible, off-site refuelling will occur at a controlled fuelling station;
- On-site re-fuelling will be undertaken using a refuelling truck with spill kits kept 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. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area;
- Fuels stored on-site will be minimised. All storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. 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 transformer within the proposed 110kV onsite substation 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 is outlined in Section 6.1.4 below.

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. A pH range of $\geq 6 \leq 9$ is set in S.I. No. 293 of 1988 Quality of Salmonid Water Regulations, with artificial variations not in excess of ± 0.5 of a pH unit. Entry of cement-based products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to the aquatic environment. Peat ecosystems are dependent on low pH hydrochemistry. They are extremely sensitive to introduction of high pH alkaline waters into the system. Batching of wet concrete on site and washing out of transport and placement machinery are the activities most likely to generate a risk of cement-based pollution.

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

- 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 concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined cement washout ponds;
- Weather forecasting will be used to plan dry days for pouring concrete;
- The pour site will be kept free of standing water and plastic covers will be ready in case of a 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, or a Siltbuster-type concrete wash unit or equivalent. This type of Siltbuster (or similar) unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. 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. An example is shown in Plate 3-1 below.

Plate 3-1 Typical concrete wash out areas

3.2.7 Tree Felling Drainage Measures

As discussed in Section 2.3.3.5 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. A Harvest Management Plan is included as Appendix 4-5.

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

Before the commencement of any felling works, an Environmental 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 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.
- Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance;
- Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works;
- Ditches which drain from the proposed area to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and will avoid being placed at right angles to the contour;
- Sediment traps will be sited in drains downstream of felling areas. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be

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

- All drainage channels will taper out before entering the 50 metre buffer zone. This ensures that discharged water gently fans out over the buffer zone before entering the aquatic zone, with sediment filtered out from the flow by ground vegetation within the zone. On erodible soils, silt traps will be installed at the end of the drainage channels, to the outside of the buffer zone;
- Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled;
- Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall;
- Timber will be stacked in dry areas, and outside a local 50 metre watercourse buffer. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites;
- Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water run-off;
- Checking and maintenance of roads and culverts will be on-going through the felling operation;
- Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required;
- A permit to refuel system will be adopted;
- Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors;
- Crossing of streams will not be permitted;
- Trees will be cut manually from along streams and using machinery to extract whole tree; and,
- Travel only perpendicular to and away from stream.

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 or along the proposed footprint of the Proposed Project.

Six National Monuments are located within 10km of the Proposed Wind Farm site. The closest is a Stone Circle and Boulder burials (AH160; NM No. 450), which is also subject to a Preservation Order, situated c. 2.4km to the west of the Proposed Wind Farm site. Another Stone Circle of five stones and a standing stone (AH174; NM No. 600) is located c. 2.8km to the southwest of the Proposed Wind Farm site; a stone row is located c. 4.4km to the northwest of the Proposed Wind Farm site (AH142; NM No. unnumbered); a Tower House (AH224; NM No. 656) is located c. 5.9km southeast of the Proposed Wind Farm site; a standing stone pair is located c. 7.6km to the southeast of the Proposed Wind Farm site (AH225; NM No. 536) and a stone row is located c. 9.4km to the northeast of the Proposed Wind Farm site (AH227; NM No. 374).There are 11 no. recorded archaeological sites, or groups of sites, within the Proposed Wind Farm site. There are a further 210 no. archaeological sites, or groups of sites, within the 5km study area, 14 no. of which include redundant records.

There are six recorded structures of architectural merit within the 5km study area of the Proposed Project (details provided in Chapter 14 of the EIAR), including two protected structures. Additionally, 51 no. previously unrecorded sites of cultural heritage significance have been identified within the 2km study area as part of this assessment.

Four archaeological sites are located within 50m of the Proposed Grid Connection, along with five built heritage sites and five previously unidentified sites of cultural heritage significance.

Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at greenfield locations of the Proposed Wind Farm site, including the location of the proposed turbine hardstands, proposed temporary construction compounds, proposed borrows pit and along the proposed access roads. These works will include targeted test trenching of CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DoHLGH.

A large portion of the Proposed Wind Farm site is dominated by forestry, which is not suitable for archaeological test trenching. Archaeological monitoring of topsoil stripping will be carried out at these locations. Additionally, the section of Proposed Grid Connection that passes through the Zone of Notification of AH36 and AH222/BH01 will be subject to archaeological monitoring, as will all works at the locations of AH58 and CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. If archaeological remains are identified during the course of these works further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DoHLGH.

A pre-construction survey of CH07, CH08, CH13 and CH55 will be carried out, resulting in the compilation of a detailed photographic and written record. This will be carried out by a suitably qualified archaeologist. A record is not required for CH18, the former butter road.
Five townland boundaries pass through the Proposed Wind Farm site. One of the townland boundaries is wholly or partially defined by the Owngar River (TB03) and two are defined by ditches and a stone wall (TB02 and TB04). The remaining townland boundaries comprise field boundaries which have been removed. The Proposed Grid Connection crosses several townland boundaries along its route, however, these have been already removed due to the construction of the existing roads the Proposed Grid Connection follows.

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

It is proposed that large wind turbine components will be delivered to the Proposed Wind Farm site from Ringaskiddy Port. For the purposes of assessment, the turbine components and other abnormal loads will be transported from Ringaskiddy Port. The proposed Turbine Delivery Route (TDR) leaves Ringaskiddy on Ringaskiddy Rd (N28), following the N28 right onto Carr's Hill, merging onto the Cork south Ring Rd (N40), continuing on the N22 until turning southwest onto the R585 Regional Road. The TDR continues on the R585 before reaching the site in the townland of Maughanaclea where it will turn left up the existing commercial forestry track to reach the southern cluster, or turn right up the new proposed site entrance to reach the northern cluster.

The existing commercial forestry entrance will be upgraded to facilitate the delivery of the construction materials and oversized loads. Both site entrances were subject to an Autotrack assessment to identify the areas required to access the site. The proposed junctions are shown below in Ch. 4: Description of the Proposed Project; Figure 4-23, and further detailed in Section 15.1.10 of Chapter 15: Material Assets.

It is also envisaged that general construction traffic (including materials and staff) will travel to the Site via the public road network. All construction vehicles entering the Proposed Wind Farm site will do so via the proposed site entrances as indicated on Figure 4-23. The construction traffic that will be generated during the construction phase of the Proposed Project is outlined as part of the traffic and transport assessment in Ch. 15: Material Assets of this EIAR.

All deliveries of turbine components and other construction materials to the Site will only be via the proposed transport (haul) routes outlined in Chapter 15: Material Assets (please refer to Figure 15-1A). The TDR is shown on Figure 4-24 of the EIAR. No other public road routes will be used as part of the construction phase of the Proposed Wind Farm site for the transport of materials. There are no significant turbine delivery route accommodation works required to facilitate the delivery of components to the Site.

3.4.1.2 Proposed Grid Connection

It is proposed to connect the proposed 110 kV onsite substation within the Proposed Wind Farm site to the existing Dunmanway 110kV substation near Dunmanway, Co Cork via 110 kV underground electrical cabling, as illustrated in in Ch. 4: Description of the Proposed Project; Figure 4-3. The Proposed Grid Connection is approximately 20.5km in length and is located primarily within the public road corridor, with a short section of the route (approximately 800m^2) located within an access road in the southern turbine cluster of the Proposed Wind Farm site.

The Proposed Grid Connection underground electrical cabling route will originate at the proposed 110kV onsite substation, and from there will run southeast for approximately 130m through an existing conifer plantation within the Proposed Wind Farm site. The Proposed Grid Connection will then travel east for approximately 810m through an existing access road within the Proposed Wind Farm site, towards the R585. The Proposed Grid Connection then exists the Proposed Wind Farm's southern turbine cluster site entrance to the east, and travels along the R585 for approximately 7km. The Proposed Grid Connection then turns right and follows the L4909 and L4609 for approximately 3km in a generally southeast direction. The Proposed Grid Connection then turns left and is routed along the L4615 in an easterly direction for approximately 5.7km. The underground cabling route then turns right onto the R587 and runs south towards Dunmanway for approximately 3km, before turning left and travelling east on the R586. After 825m the Proposed Grid Connection exits the R586 to the south and enters the existing Dunmanway 110kV substation in the townland of Ballyhalwick.

The cross section of the 110kV underground cabling trench is shown in Figure 4-20 in Ch. 4: Description of the Proposed Project.

Deliveries of materials for the construction of the Proposed Grid Connection 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.

With respect to the traffic volumes that will be generated during the construction of the Proposed Grid Connection, it is estimated that there will be approximately 14 daily return trips made by a truck transporting materials, and 8 return trips made by a car to transport construction staff, to and from the Site.

The construction methodology of providing a Proposed Grid Connection underground cabling 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.

The underground cabling will be laid beneath the surface of the Proposed Wind Farm and the public road using the following methodology:

- Before works commence, updated surveying will take place along the proposed cable route, with all existing culverts identified. All relevant bodies i.e. ESB, Cork County Council, etc. will be contacted and all up to date drawings for all existing services sought.
- When the cable 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.
- A tracked 360-degree excavator will then proceed to dig out the proposed trench, typically to a depth of c.1300mm, within which the ducts will be laid.
- The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts.
- Trench supports will be installed, or the trench sides will be benched or battered back where appropriate and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse.
- Once the trench has been excavated, a base-layer will be laid and compacted, comprising Clause 804, or 15 Newton CBM4 concrete as required.
- The ducting will be installed as per specification, with couplers fitted and capped to prevent any dirt etc. entering the duct. In poor ground conditions, the ends of the ducts will be shimmed up off of the bed of the trench, to prevent any possible ingress of water dirt. The shims will be removed again once the next length has been connected. Extreme care will be taken to ensure that all duct collars (both ends) are clean and in good condition prior to ducts being joined.
- As the works progress, the as-built location of the ducting will be recorded using a total station or GPS.
- As per the associated base-layer (Clause 804 material or 15 Newton CBM4 concrete) will be installed and compacted as per approved detail, with care not to displace the ducting.
- Spacers will be used to ensure that the correct cover is achieved at both sides of the ducting.
- The remainder of the trench will be backfilled in two compacted layers with approved engineer's specified material.
- Yellow marker warning tape will be installed across the width of the trench, at 300mm depth,

- The finished surface is to be reinstated, as per original specification. Off-road cabling may be finished with granular fill to facilitate access to the trench for any potential maintenance that is required during the operational phase of the Proposed Project.
- Marker posts will then be placed at regular intervals (generally at joint bays and any change in direction) to denote the location of the underground power cables.

3.4.2 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)** will be provided specifying details relating to traffic management and included in the CEMP prior to the commencement of the construction phase of the Proposed Project. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing onsite. 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 Cork County Council in advance of deliveries of turbine components to the Site. 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 Site.
- **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. temporary lane/road closures (where required) or 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 can 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.
- **Diversion routes during grid construction –** The identification and agreement with suitable diversion routes during the construction of the Proposed Grid Connection.
- **Liaison with the relevant local authority** - Liaison with Cork 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 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. In addition, in order to minimise the impact

on the existing environment during turbine component deliveries the option of blade adaptor trailers will also be used where deemed practicable.

- **Identification of delivery routes** – These routes will be agreed with Cork 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.
- **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

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 required within the Proposed Wind Farm site, along haul roads, public road corridors, proposed new roads on private agricultural land, and proposed upgrades to existing private tracks associated with the Proposed Grid Connection underground cable route, to prevent dust from becoming a nuisance. If necessary, water will be taken from stilling/settlement ponds in the Proposed Wind Farm site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and temporary construction compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and 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 to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff.
- 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 will be minimised by coordinating excavation, spreading and compaction.
- Turbines and construction traffic will be transported to the Site on specified haul routes only.
- The agreed haul route road adjacent to the Site will be regularly inspected for cleanliness and cleaned as necessary.
- The roads adjacent to the Site entrances will be checked weekly for damage/potholes and repaired as necessary.

- The transportation of materials from the borrow pit around the Site will be covered by tarpaulin or similar covered vehicles where necessary.
- The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection to the Site will be covered by tarpaulin where necessary.
- If necessary, excavated material will be dampened prior to transport to the spoil management areas.
- Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by 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 level of emissions associated with vehicle movement.
- Groundworks (i.e., works with potential to create dust) associated with proposed turbines T04 and T14 will be fully supervised by an ECoW. The ECoW will regularly monitor adjacent Annex I habitat for signs of dust deposition or any other habitat degradation.

It is not anticipated that vehicle or wheel washing facilities will be required as part of the construction phase of the Proposed Project because site roads will be formed before road-going trucks begin to make regular or frequent deliveries to the Site (e.g. with steel or concrete). However, to ensure a wheel wash facility is available should this be required, 3 no. wheel wash facilities have been included at the site entrances to the Proposed Wind Farm: 1 no. in the southern turbine cluster off the R585, and 2 no. in the northern turbine cluster – 1 no. off the R585 1 no. off the L8777. The Proposed Wind Farm 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 mud or dirt may be picked up.

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 contract documents will specify that the Contractor undertaking the construction works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open sites – Noise*' and BS 5228-2:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open sites – Vibration'*.

The following best practice mitigation measures from these documents will be implemented as required for the duration of the construction and decommissioning phases:

- 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;
- Monitoring typical levels of noise and vibration during critical periods and at sensitive locations;
- Selection of plant with low inherent potential for generation of noise and/ or vibration where practical;
- Placing of noise generating / vibratory plant as far away from sensitive receptors as practical within the site constraints, and;
- The hours of construction activity will be limited to avoid unsociable hours where possible. Works operations shall generally be restricted to between 7:00hrs and 19:00hrs Monday to Saturday. However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e. concrete pours,

turbine component deliveries) it could occasionally be necessary to work out of these hours.

And more specifically:

- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- Any plant, such as generators or pumps, which is required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen as appropriate.

An assessment of the operational wind turbine noise levels has been undertaken in accordance with best practice guidelines and procedures as outlined in Section 12.6.3.1 of the EIAR. The findings of the assessment has confirmed that the predicted operational noise levels associated with the Proposed Wind Farm will be within best practice turbine noise criteria at all locations with no significant cumulative impacts or effects.

The findings of the assessment confirmed that the predicted operational noise levels from the Proposed Wind Farm will be within the relevant best practice noise criteria for the detailed potential turbine specification. Therefore, no specific mitigation measures are required.

In the unlikely event that an issue with low frequency noise is associated with the Proposed Project, it is recommended that an appropriate detailed investigation be undertaken. Due consideration should be given to guidance on conducting such an investigation which is outlined in Appendix VI of the EPA document entitled '*Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities'* (NG4) (EPA, 2016). This guidance is based on the threshold values outlined in the Salford University document '*Procedure for the assessment of low frequency noise complaints, Revision 1, December 2011'*.

3.7 Invasive Species Management

During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken within the Site. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015). As outlined in Chapter 6 of the EIAR, a third schedule invasive species was identified within the Site. Immature, individual stands of Rhododendron were recorded in the north and south of the Proposed Wind Farm, within Conifer plantation and open peatland habitat. During field surveys undertaken, Japanese Knotweed was not recorded within the Site. It was recorded at one location along the bank of an unmapped watercourse (51.79429269270019, -9.054759697626793). This area is adjacent to the existing road along the TDR but outside of any proposed works areas.

In the absence of mitigation there is potential for spread of invasive species to other habitats within the Proposed Wind Farm site and outside of the Site. This could occur via dispersal of seeds locally, or inappropriate disposal of the plant material whereby seeds or propagatable material are spread to another area. Vector material may also be spread to other sites as a result of entrainment within machinery or staff clothing. The following measures will be in place to avoid impacts to biosecurity as a result of construction of the Proposed Project:

Rhododendron regrows vigorously when cut. As a result, some method of stump killing or removal is always necessary. Any untreated cut stump will regrow and in most cases flower within 3-4 years. The following measures will be in place:

- A pre-commencement survey for invasive species within the footprint of the Proposed Wind Farm site will be carried out by a suitably qualified ecologist to ensure there is no new growth of Third Schedule invasive species in these areas.
- If additional invasive species are recorded within the construction areas, an Invasive Species Management Plan will be prepared in advance of construction which will incorporate the measures necessary to prevent spread additional to the measures laid out below.
- A Toolbox Talk will be given by the Environmental Clerk of Works (EnCoW) or ECoW in relation to the management of invasive species within construction areas.
- The infested area will be demarcated and works in the vicinity of the infestation will only be carried out under supervision by a suitably qualified ECoW or EnCoW.
- In advance of construction works in the vicinity of the infested area, it will be necessary to completely remove the infestation outside of the flowering period (May to July) and dig the roots completely out. The effectiveness of this technique is increased by removing all viable roots. To avoid regrowth, stumps will be turned upside down and soil will be brushed off roots. The roots are relatively shallow, seldom being deeper than 45cm.
- Any machinery working in close proximity to the infested areas will undergo washing in a designated biosecurity area before existing the Site.
- Once the supervising ecologist confirms that the material is dried out and non-viable, it will be chipped and composted on-site.
- It is envisaged that no contaminated soil is to be removed from the Proposed Project. Should potentially Third Schedule contaminated soil be required to be removed from the Site, it will be transported to a suitably licenced waste facility and will require a licence from the NPWS prior to its transportation.

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

- Any construction material imported into the Site will come from a source confirmed to be free of invasive species.
- All plant and machinery will be thoroughly cleaned before entering and exiting the Site.

A detailed Invasive Species Management Plan for the Proposed Project is provided in Appendix 6-5 of the EIAR.

3.7.1 Site Management

Careful preparation and planning of the works is crucial to successful treatment of invasive species. The following list of guidelines, which is not exhaustive, shall be followed by all on-site personnel. Only those who have been inducted into biosecurity measures on-site may enter the contaminated zones within the works areas. Should any risk of contaminated material escaping be observed by the site supervisor, the management plan for the Site must be amended by an appropriately qualified person to mitigate against the risk.

3.7.2 Establish Good Site Hygiene

The following best practice measures are proposed to establish good site hygiene to ensure the control of any potential spread of invasive species during construction works:

- A risk assessment and method statement will be provided by the Contractor prior to commencing works.
- Fences will be erected around areas of infestation, as confirmed by test pits, and warning signs shall be erected.

- A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of with other contaminated material. This area will contain a washable membrane or hard surface.
- Stockpile areas will be chosen to minimise movement of contaminated soil.
- Stockpiles will be marked and isolated.
- Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore.
- The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material.
- An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans.

Plant and equipment which is operated within an area for the management of materials in contaminated areas will be decontaminated prior to relocating to a different works area. The decontamination procedures will take account of the following:

- Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it.
- Decontamination will only occur within designated wash-down areas.
- Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches.
- All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas.

3.8 Waste Management

This section of the CEMP provides a waste management plan (WMP) which outlines the best practice procedures during the excavation and construction phases of the Proposed Project. 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.

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 must 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 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 Department of the Environment provides a document entitled, *'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'* (2021). It is important to emphasise that no demolition will take place at this Site, however, this document was referred to throughout the process of completing this WMP.

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

The turbine and meteorological mast foundations will consist of stone from the licensed quarries 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 site roads and existing roads for upgrade will be constructed with rock sourced from local quarries. The onsite electrical 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 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
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.

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.

The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Proposed Wind Farm site. Therefore, all wastes streams generated on site will be deposited into a single waste skip. This waste material will be transferred to a 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 waste generated from the 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.

It is not envisaged that there will be any waste material arising from the materials used to construct the site roads as only the quantity of stone necessary will be sourced from local quarries and brought on site on an 'as needed' basis.

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 Waste Arising from Decommissioning

The design life of the proposed renewable energy development is 35 years after which time a decision will be made to determine whether or not the turbines will be replaced by new turbines or if decommissioning will occur. The lengthy time frame between the completion of the construction phase and decommissioning will result in the only materials remaining on site at that time will be infrastructural material such as the turbine foundations, turbines and the granular material used to construct roads. When the Proposed Wind Farm site is decommissioned, cranes will disassemble each turbine tower and all equipment. The associated components will be removed from site for re-use, recycling or waste disposal. Any structural elements that are not suitable for recycling will be disposed of in an appropriate manner. All lubrication fluids will be drained down and put aside for appropriate collection, storage, transport and disposal. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor.

The waste types arising from the decommissioning of the development are outlined in Table 3-3 below.

Table 3-3 Expected Waste types arising during the Decommissioning Phase

Material Type	Example	EWC Code
Cables	Electrical wiring	17 04 11
Metals	Copper, aluminium, lead, iron and rebar	17 04 07
Inert materials	Crushed stone, concrete	17 01 07
Lubricating Oils/Fluids	Oils used within wind turbines	13 02 04

3.8.3.5 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.

3.8.3.6 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.

3.8.3.7 Implementation

3.8.3.7.1 *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.

3.8.3.7.2 *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.

3.8.3.7.3 *Record Keeping*

The WMP 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 WMP 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

3.8.3.8 Waste Management Plan Conclusion

The WMP 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 WMP has been prepared to outline the main objectives that are to be adhered to for the preparation of a more detailed WMP 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 Environmental 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, 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.

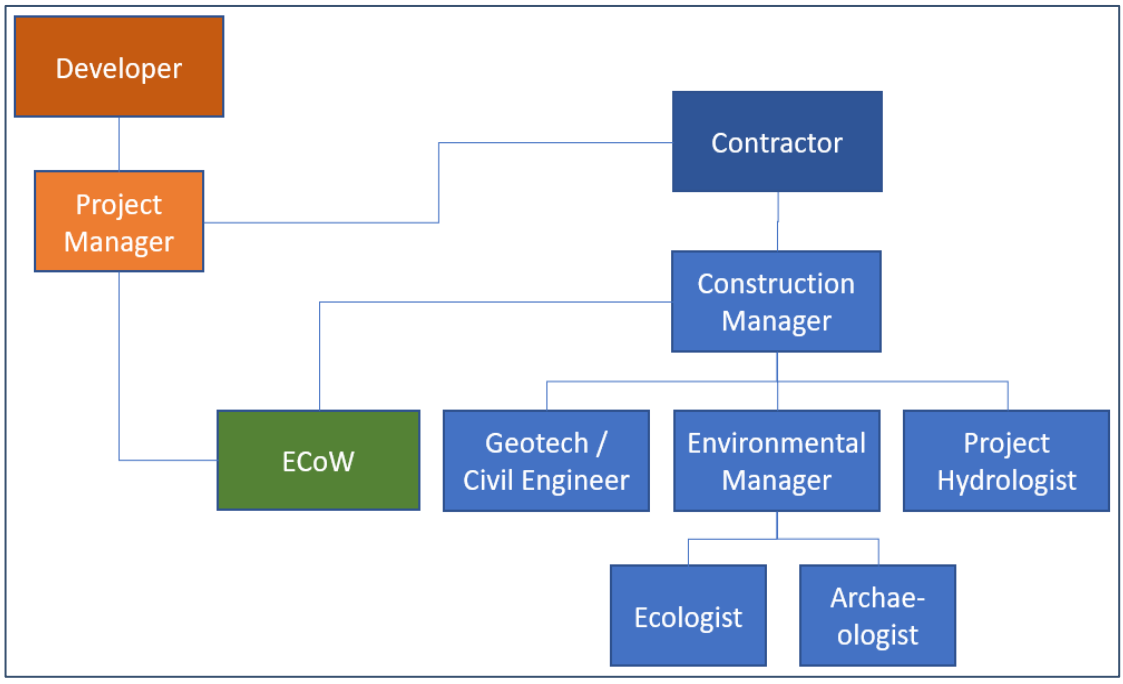

Figure 4-1 Proposed Project Organogram

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 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 Environmental Clerk of Works

The Project Developer will be required to engage a qualified Environmental Engineer, Environmental Scientist, or equivalent, with experience in wind farm construction to fulfil the role of Environmental Clerk of Works (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.

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

Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the Site.

Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken at designated locations within the Site.

Baseline sampling will be completed on at least two occasions, and these should ideally 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.

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 EQSs should be undertaken for each primary watercourse along the Proposed Grid Connection and within the Proposed Wind Farm site, 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 shall be undertaken as per water monitoring programme for the Proposed Project. This will not be restricted to just these locations around the proposed renewable energy development 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 shall be undertaken for each primary watercourse along the Proposed Grid Connection and within the Proposed Wind Farm site, 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. These analyses will be carried out by either the ECoW or the Project Hydrologist. 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 will 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 shall 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 shall 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 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'*. This will encompass the use of all necessary Personal Protective Equipment and adherence to 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 construction 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. This will have a short-term potential significant negative impact on health and safety.

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).

The following measures below are also detailed in Chapter 18 Schedule of Mitigation and outlined in Table 7-1 and 8-1 below.

- 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
- 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 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.

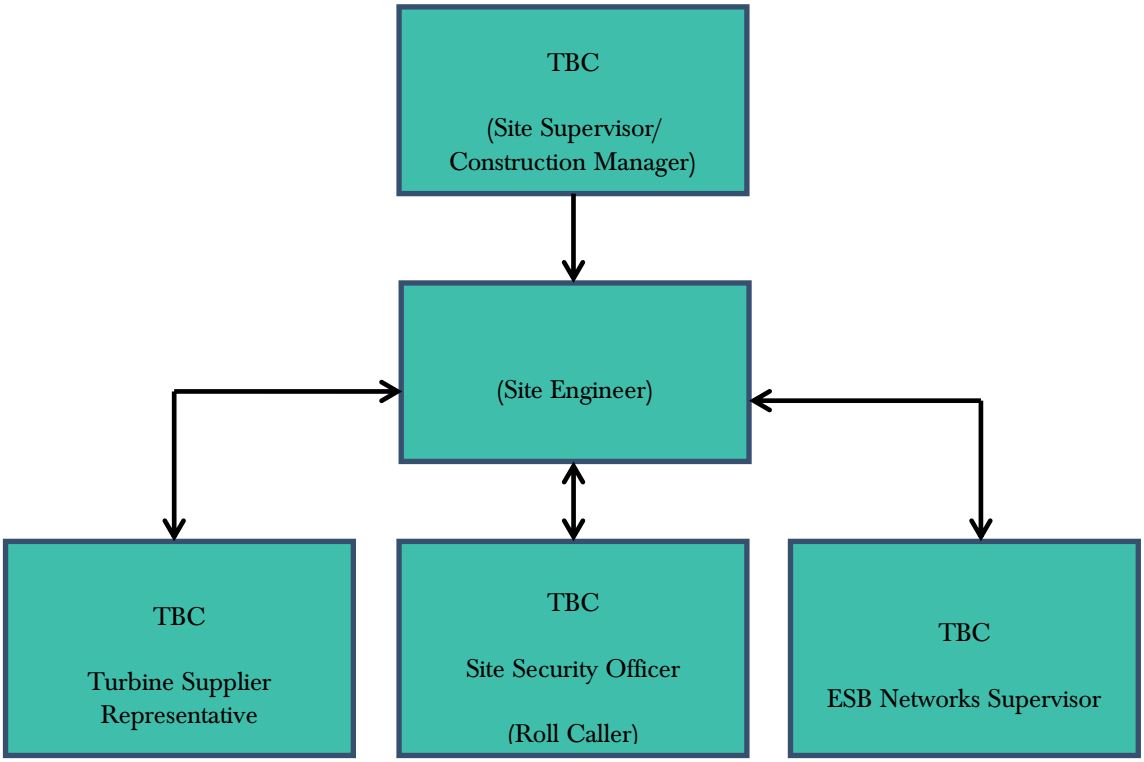

Figure 6-1 Emergency Response Procedure Chain of Command

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.
Peat Instability	Excessive movement of peat on site; onset of peat slide.
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 and operational 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 Cork 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 Cork 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.

6.1.5 Contingency Measures – Peat Slide

The below measures, as detailed in the Peat and Spoil Management Plan included as Appendix 4-2 of the EIAR, outline the contingency/emergency response measures to be implemented in the unlikely event of a peat slide occurring at the Proposed Wind Farm site.

6.1.5.1 Excessive Movement

Where there is excessive movement or continuing peat movement recorded at a monitoring location or identified at any location within the Site but no apparent signs of distress to the peat (e.g. cracking, surface rippling), then the following will be carried out:

- All activities (if any) will cease within the affected area.
- Increased monitoring at the location will be carried out. The area will be monitored until such time as movements have ceased.
- Re-commencement of activities will only start following a cessation of movement and agreement with all parties (Contractor/Engineer/Designer)

6.1.5.2 Onset of Peat Slide

In the unlikely event where there is the onset or actual detachment of peat (e.g. cracking, surface rippling) then the following will be carried out:

- On alert of a peat slide incident, all activities (if any) in the area will cease and all available resources will be diverted to assist in the required mitigation procedures.
- Action will be taken to prevent a peat slide reaching any watercourse. This will take the form of the construction of check barrages on land. Due to the terrain and the inability to predict locations it may not be possible to implement any on-land prevention measures, in this case a watercourse check barrage will be implemented.
- All relevant authorities will be notified if a peat slide event occurs on the Site.

- For localised peat slides that do not represent a risk to a watercourse and have essentially come to rest the area will be stabilised initially by rock infill, if required. The failed area and surrounding area will then be assessed by the engineering staff and stabilisation procedures implemented. The area will be monitored, as appropriate, until such time as movements have ceased.

6.1.5.3 Check Barrages

Whilst it is not anticipated based on the analysis undertaken that a peat slide will occur on the Proposed Wind Farm site, as a contingency a check barrage procedure is included below.

The check barrage procedure deals with preventing a peat slide from moving downstream within a watercourse.

The most effective method of preventing excessive peat slide debris from travelling downstream in a watercourse is the use of a check barrage. A check barrage comprises the placement of rock fill across a watercourse. The check barrage is a highly permeable construction that will allow the passage of water but will prevent peat debris from passing through. Rock fill will comprise well-graded coarse rock pieces from about 300mm up to typically 1000mm.

The rock fill for the check barrage will be sourced from the borrow pits on Site.

The size of the barrage will vary depending on the scale of the peat debris to be contained and the geometry of the watercourse at the barrage location. In general, due to the low speed of a peat slide there is generally little impact force and most of the lateral load is due to fluid pressure on the upslope face of the barrage.

The check barrage will fill the entire channel width of the watercourse up to a height of 3 to 4m with a crest width of typically 2m and side slopes of about 45 degrees depending on the geometry of the barrage location.

The check barrage procedure is as follows:

- Access to the check barrage location will be along the existing access roads on the Proposed Wind Farm site and/or along public roads, where possible. When it is necessary to form the barrage then rock fill will be placed across the watercourse to effectively block the passage of peat debris.
- Operatives employed to carry out the construction of the check barrage will be inducted by means of a briefing by on-site supervisors as to the proposed location of the check barrage.
- The check barrage provides containment for peat debris in the highly unlikely event of a major peat slide. Further remedial measures, should they be required, will be assessed by the Contractor and the Project Geotechnical Engineer, and carried out as soon as physically possible when the location and extent of the failure is established.
- Where a barrage was constructed as a precaution and no peat debris reached the watercourse then the barrage will be removed as soon as any measures to prevent further peat sliding is agreed with all parties (Contractor/Engineer/Designer).

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 – Bantry Bay Medical Centre	02 720 022
Hospital – Cork University Hospital – Cork City	02 1492 2000
ESB Emergency Services	1800 372 999
Gas Networks Ireland Emergency	1800 20 50 50
Gardaí – Kealkill Garda Station	02 766 002

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: Gannow Ltd.	021 733 6034

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, construction and operational 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 Cork County Council.

This section of the CEMP groups together all of the mitigation measures presented in the above sections. The Mitigation Measures are presented in the following pages and are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures. Decommissioning Phase mitigation measures are not included in the table below, however, can be viewed in Appendix 4-6 (Decommissioning Plan) of the EIAR.

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 Plan	Chapter 4	› All proposed activities on the site of the Proposed Project will be provided for in an environmental management plan. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Project. › 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	Waste Management Plan	Chapter 4	› The CEMP provides a waste management plan (WMP) which outlines the best practice procedures during the construction phases of the project. › 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. The WMP 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) . › The WMP has been prepared to outline the main objectives that are to be adhered to for the preparation of a more detailed WMP to be completed prior to the construction phase of the Proposed Project. The WMP will be in place throughout the construction and decommissioning phase of the Proposed Project and will be in line with all relevant legislation		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The WMP 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 WMP can then be adapted with changes that are seen through record keeping.		
MM3	Construction Waste Manager	Chapter 4	› 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.		
MM4	Drainage Design	Chapter 4	› The drainage design for the Proposed Project has been planned with the intention of having no significant negative impact on the water quality of the Site and its associated rivers, and consequently no impact on downstream catchments and ecological ecosystems. › The assessment of potential impacts on hydrology and hydrogeology due to the construction, operation and decommissioning of the Proposed Project. › No routes of any natural drainage features will be altered as part of the Proposed Project. Turbine locations and associated new roadways were designed to avoid natural watercourses with existing roads to be used wherever possible. › There will be no direct discharges to any natural watercourses or land drains, with all drainage waters being dispersed as overland flows. › All discharges from the proposed works areas will be made over vegetation filters at an appropriate distance from natural watercourses and drains. › Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project. › The general design approach to wind farm layouts is to utilise and integrate with the existing drainage infrastructure where possible whether it be existing access roads or the existing forestry / peat / agricultural drainage network.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM5	Drainage Design Principles	Chapter 4	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/recharge to ground. › Collect potentially silt-laden runoff from works areas via downgradient collector drains and manage via series of avoidance, source, in-line treatment and discharge to ground via infilration drains and infiltration areas. › There is no direct hydraulic connectivity from proposed construction areas to natural watercourses or drains connecting to downstream watercourses. › Maintain the existing hydrology/hydrogeology of the Site. › Re-routing existing local drainage pathways as required. › Daily inspection and recording of surface water management system by on-site 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.		
MM6	Drainage Swales	Chapter 4	› Drainage swales will be installed in advance of any main construction works commencing. The material excavated to make the swale will be compacted on the downslope edge of the drain to form a diversion dike. › Drainage swales will be installed downgradient of any works areas to collect surface flow runoff where it might have come into contact with exposed surfaces and picked up 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.		
MM7	Tree Felling Drainage	Chapter 4	› Keyhole felling to facilitate construction works will take place prior to groundworks commencing. Prior to the commencement of tree felling for subsequent road construction the following key temporary drainage measures will be installed: › All existing dry forestry drains that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps; › Clean water diversion drains will be installed upgradient of the works areas;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Check dams/silt fence arrangements (silt traps) will be placed in all existing forestry drains that have surface water flows and also along existing forestry roadside drains; and, › A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone.		
MM8	Ecological Clerk of Works (ECoW)	Chapter 4	Before the commencement of any felling works, an Environmental 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 Tool Box Talk (TBT) to all relevant parties involved in site operations, prior to the commencement of the works. › 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. › Prepare and maintain a contingency plan. › Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW.		
MM9	Pre-Emptive Site Drainage Management	Chapter 4	› 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. › 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM10	Pre-Construction Drainage	CEMP, Section 3	› 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.		
MM11	Archaeological Test Trenching	CEMP, Section 3	› Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at greenfield locations of the Proposed Wind Farm site, including the location of the proposed turbine hardstands, proposed temporary construction compounds, proposed borrows pit and along the proposed access roads. These works will include targeted test trenching of CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DoHLGH.		
MM12	Pre-Construction Survey (Archaeological Management)	CEMP, Section 3	› A pre-construction survey of CH07, CH08, CH13 and CH55 will be carried out, resulting in the compilation of a detailed photographic and written record. This will be carried out by a suitably qualified archaeologist. A record is not required for CH18, the former butter road.		
MM13	Traffic Management Plan	CEMP, Section 3	A detailed Traffic Management Plan (TMP) will be provided specifying details relating to traffic management and included in the CEMP prior to the commencement of the construction phase of the Proposed Project. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing onsite. The detailed TMP will include the following:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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 Cork County Council in advance of deliveries of turbine components to the Site. 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 Site. › Information to locals – Locals in the area will be informed of any upcoming traffic related matters e.g. temporary lane/road closures (where required) or 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 can 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. › Diversion routes during grid construction – The identification and agreement with suitable diversion routes during the construction of the Proposed Grid Connection. › Liaison with the relevant local authority - Liaison with Cork 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 will be informed of the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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. In addition, in order to minimise the impact on the existing environment during turbine component deliveries the option of blade adaptor trailers will also be used where deemed practicable. › Identification of delivery routes – These routes will be agreed with Cork 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 4-3. › Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.		
MM14	Underground Cabling	CEMP, Section 2	› Before works commence, updated surveying will take place along the proposed cable route, with all existing culverts identified. All relevant bodies i.e. ESB, Cork County Council, etc. will be contacted and all up to date drawings for all existing services sought.		
MM15	Noise Control	CEMP, Section 3	› Selection of plant with low inherent potential for generation of noise and/ or vibration where practical;		
MM16	Invasive Species Management	CEMP, Section 3	During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken within the Site. As outlined in Chapter 6 of the EIAR, a third schedule invasive species was identified within the Site. Immature, individual stands of Rhododendron were recorded in the north and south of the Proposed Wind Farm, within Conifer plantation and		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
		Chapter 6 Appendix 6-6 (ISMP)	open peatland habitat. The following measures will be in place to avoid impacts to biosecurity as a result of construction of the Proposed Project: › A pre-commencement survey for invasive species within the footprint of the Proposed Wind Farm site will be carried out by a suitably qualified ecologist to ensure there is no new growth of Third Schedule invasive species in these areas. › If additional invasive species are recorded within the construction areas, an Invasive Species Management Plan will be prepared in advance of construction which will incorporate the measures necessary to prevent spread additional to the measures laid out below. › A Toolbox Talk will be given by the Environmental Clerk of Works (EnCoW) or ECoW in relation to the management of invasive species within construction areas. › The infested area will be demarcated and works in the vicinity of the infestation will only be carried out under supervision by a suitably qualified ECoW or EnCoW. › In advance of construction works in the vicinity of the infested area, it will be necessary to completely remove the infestation outside of the flowering period (May to July) and dig the roots completely out. The effectiveness of this technique is increased by removing all viable roots. To avoid regrowth, stumps will be turned upside down and soil will be brushed off roots. The roots are relatively shallow, seldom being deeper than 45cm. 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 site and to determine whether there have been any changes in the extent of the infestation since the undertaking of surveys in 2024 and 2025. › The locations and extent of Rhododendron within the Proposed Wind Farm site 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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 site, 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 (www.landscapedepot.ie) as to avoid spray drift and to minimise the potential for spraying of non-target species. The Ecoplug method is outlined below. › 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 site, 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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.		
MM17	Water Quality Baseline Monitoring	CEMP, Section 4	› Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the Site. › Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken at designated locations within the Site. › Baseline sampling will be completed on at least two occasions, and these should ideally 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.		
MM18	Health and Safety Plan	CEMP, Section 5	› 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.		
MM19	Auditing	CEMP, Section 10	› 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.		
MM20	Floating Roads over Peat	PSMP	› Where floating roads are proposed in this report, a proposed methodology is presented, however a detailed design will be carried out prior to construction commencing on Site. › A confirmatory stability analysis should be carried out by the designer where it is proposed to install floating access roads over the peat prior to any construction work commencing on Site.		
MM21	Excavation of materials with	PSMP	› Acrotelm (to about 0.3 to 0.4m of peat) will be required for landscaping and will be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping will be undertaken prior to main excavations.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	respect to control of peat stability:		› 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. › Acrotelm peat (peat below about 0.3 to 0.4 m depth) will be transported immediately on excavation to the designated placement areas or borrow pit areas.		
MM22	Engineering Construction Design	PSMP	› A detailed engineering construction design must be carried out by the appointed construction stage designer prior to any construction work commencing on the Site. This must take account of the consented project details and any conditions imposed by that consent. This must include a detailed peat stability assessment to account for any changes in the environment which may have occurred in the time leading up to the commencement of construction and a peat and spoil management plan to allow for the most appropriate geotechnical and environmental led solutions to be developed for the management of peat and spoil.		
Construction Phase					
MM23	Refuelling	Chapter 4,8,9 CEMP, Section 3	› 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 on-site 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. › Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Where possible, off-site refuelling will occur at a controlled fuelling station;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› On-site re-fuelling will be undertaken using a refuelling truck with spill kits kept 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. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area; › Fuels stored on-site will be minimised. All storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. 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 transformer within the proposed 110kV onsite substation 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;		
MM24	Concrete Deliveries	Chapter 4,9 CEMP, Section 3	› Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. › Before leaving the site, washing of the delivery truck will be minimised and restricted to designated wash out areas. Wash out will be restricted to the concrete lorry's chute only. Concrete lorries will be washed out fully at the off-site batching plant, where facilities are already in place. › 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, or a		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Siltbuster-type concrete wash unit or equivalent. This type of Siltbuster (or similar) unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. 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. › The areas are covered when not in use to prevent rainwater collecting. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents will be tankered off-site to an appropriately authorised facility as necessary. Any residual solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste, as noted above, by an appropriately authorised waste collector for disposal at an authorised waste facility. › Alternatively, a Siltbuster-type concrete wash unit or equivalent may be used. This type of Siltbuster unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site at an appropriate waste facility. › Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout. › Site roads 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 roads 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the Site. › Due to the volume of concrete required for each turbine foundation, and the requirement for the concrete pours to be continuous, deliveries may be carried out outside normal working hours to limit the traffic impact on other road users, particularly peak period school and work commuter traffic. The following mitigation measures are proposed to avoid release of cement leachate from the Site: › 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 concrete is delivered on site, only the chute will be cleaned, using the smallest volume of water practicable. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water will be undertaken at lined cement washout ponds; › Weather forecasting will be used to plan dry days for pouring concrete; › The pour site will be kept free of standing water and plastic covers will be ready in case of a 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.		
MM25	Concrete Pouring	Chapter 4,9 CEMP, Section 3	Specific procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution. These will include: › 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 while placing concrete. › Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Ensuring that covers are available 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, or a Siltbuster-type concrete wash unit (https://www.siltbuster.co.uk/sb_prod/siltbuster-roadside-concrete-washout-rcw/) or equivalent.		
MM26	Vehicle Washing	Chapter 4,9	› It is not anticipated that vehicle or wheel washing facilities will be required as part of the construction phase of the Proposed Project because site roads will be formed before road-going trucks begin to make regular or frequent deliveries to the Site (e.g. with steel or concrete). However, to ensure a wheel wash facility is available should this be required, a wheel wash has been included at both site entrances to the Proposed Wind Farm. › The Proposed Wind Farm 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 mud or dirt may be picked up. › A road sweeper will be available if any section of the public roads requires cleaning due to construction traffic associated with the Proposed Project.		
MM27	Interceptor Drains	Chapter 4,9	› 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 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 velocity of flow in the interceptor will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the channel is non-erosive. › On steeper sections where erosion risks are greater, a geotextile membrane will be added to the channel.		
MM28	Check Dams	Chapter 4,9	› 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Check dams will restrict flow velocity, minimise channel erosion and promote sedimentation behind the dam. The check dams will be installed as the interceptor drains are being excavated. Check dams may also be installed in some of the existing artificial drainage channels on the Site, downstream of where drainage swales connect in. › The proposed check dams will be made up of straw bales or stone, or a combination of both depending on the size of the drainage swale it is being installed in.		
MM29	Level Spreaders	Chapter 4,9	› A level spreader will be constructed at the end of each interceptor drain to convert concentrated flows in the drain, into diffuse sheet flow on areas of vegetated ground. The levels spreaders will be located downgradient of any proposed works areas in locations where they are not likely to contribute further to water ingress to construction areas of the Site. › The level spreaders will distribute clean drainage water onto vegetated areas where the water will not be reconcentrated into a flow channel immediately below the point of discharge. The discharge point will be on level or only very gently sloping ground rather than on a steep slope in order to prevent erosion. › The slope in the channel leading into the spreader will be less than or equal to 1%. The slope downgradient of the spreader onto which the water will dissipate will have a grade of less than 6%. The availability of slopes with a grade of 6% or less will determine the locations of level spreaders. If a slope grade of less than 6% is not available in the immediate area downgradient of a works area at the end of a diversion drain, a piped slope drain (see Section 4.7.4.5 below) will be used to transfer the water to a suitable location.		
MM30	Piped Slope Drains	Chapter 4,9	› Piped slope drains will be used to convey surface runoff from diversion drains safely down slopes to flat areas without causing erosion. Once the runoff reaches the flat areas it will be reconverted to diffuse sheet flow.		
MM31	Vegetation Filters	Chapter 4,9	› Vegetation filters will carry outflow from the level spreaders as overland sheet flow, removing any suspended solids and discharging to the groundwater system by diffuse infiltration.		
MM32	Stilling Ponds (Settlement Ponds)	Chapter 4,9	› Stilling ponds will be used to attenuate runoff from works areas of the Proposed Project 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The purpose of the stilling ponds is to intercept runoff potentially laden with sediment and to reduce the amount of sediment leaving the disturbed area by reducing runoff velocity. › Reducing runoff velocity will allow larger particles to settle out in the stilling ponds, before the run-off water is redistributed as diffuse sheet flow in filter strips downgradient of any works areas. › The stilling ponds will be sized according to the size of the area they will be receiving water from but will be sufficiently large to accommodate peak flows storm events. › The stilling ponds will be dimensioned so that the length to width ratio will be greater than 2:1, where the length is the distance between the inlet and the outlet. Where ground conditions allow, stilling ponds will be constructed in a wedge shape, with the inlet located at the narrow end of the wedge. Each stilling pond will be a minimum of 1-1.5 metres in depth. › Deeper ponds will be used to minimise the excavation area needed for the required volume. › The embankment that forms the sloped sides of the stilling ponds will be stabilised with vegetated turves, which will have been removed during the excavation of the stilling ponds area. All material excavated during pond construction will be used locally for landscaping and berm construction around these ponds. › 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.		
MM33	Siltbuster	Chapter 4,9	› A “siltbuster” or similar equivalent piece of equipment will be available to filter any water pumped out of excavation areas, if necessary, prior to its discharge to stilling ponds or swales. › 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;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; › Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; › Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, › Use of biodegradable chemical agents can be used at very sensitive sites (i.e. upstream of SACs).		
MM34	Silt Bags	Chapter 4,9	› Dewatering silt bags are an additional drainage measure that can be used downgradient of the stilling ponds at the end of the drainage swale channels and will be located, wherever it is deemed appropriate, throughout the Site.		
MM35	Sediment entrapment mats	Chapter 4,9	› 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.		
MM36	Culverts	Chapter 4,9	› All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse. › 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.		
MM37	Silt Fences	Chapter 4, 9	› Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50m buffer zone of a stream, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Proposed Project.		
MM38	Tree Felling Drainage	Chapter 4, 9	To protect watercourses, the following measures will be adhered to during all keyhole/tree felling activities:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing. › All roads and culverts will be inspected prior to any machinery being brought on Site to commence the felling operation. No tracking of vehicles through watercourses will occur. Vehicles will only use existing road infrastructure and established watercourse crossings. › Existing drains that drain an area to be felled towards surface watercourses will be blocked, and temporary silt traps 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. No direct discharge of such drains to watercourses will occur from within felling areas. › 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 silt traps will be sited outside of buffer zones and have no direct outflow into the aquatic zone. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of away from all aquatic zones. › All new collector drains will taper out before entering the aquatic buffer zone to ensures the discharging water gently fans out over the buffer zone before entering the aquatic zone. › Machine combinations, such as mechanical harvesters or chainsaw felling will be chosen which are most suitable for ground conditions at the time of felling, and which will minimise soils disturbance. › Mechanised operations will be suspended during and immediately after heavy rainfall. › Where brash is required to form brash mats, it is to be laid out at harvesting stage to prevent soil disturbance by machine movement. › Brash which has not been pushed into the soil may be moved within the Site to facilitate the creation of mats in more demanding locations. › Felling of trees will be pointed directionally away from watercourses. › Felling will be planned to minimise the number of machine passes in any one area.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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 50m watercourse buffer zone. Straw bales and check dams to be emplaced on the down gradient side of timber storage sites. › 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 removing of natural debris deflectors will be avoided.		
MM39	Transverse Drains (Grips)	Chapter 4	› On sections of access road, transverse drains ('grips') are constructed within the surface layer to divert runoff into swales or roadside drains. These drains can run perpendicularly from edge to edge of the road and are most commonly used on steeper gradients to prevent surface water from flowing down the centreline, thereby reducing the risk of erosion and protecting the road structure.		
MM40	Cable Trench Drainage	Chapter 4	› 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.		
MM41	Reactive Site Drainage Management	Chapter 4	› 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. › 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM42	Turbine and Met Mast Foundations	Chapter 4	› A two-metre-wide working area will be required around each turbine base, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur.		
MM43	New Site Access Roads	Chapter 4 PSMP	› Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area. › Excavation of road will be to the level given in the design requirements. Excavation will take place to a competent stratum beneath the peat. › Road construction will be carried out in sections of approximately 20 m length i.e. no more than 20 m of access road will be excavated without replacement with stone fill. This length will be reduced to 5 m in areas identified within the peat stability risk assessments. › Once excavated, non-castellum 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 placement areas, or reused for landscaping purposes. All peat placement areas will be inspected by the Project Geotechnical Engineer before material is located in these. No material is to be sidecast on downslope side of the access road. › Excavation side slopes in peat will be not greater than 1 (V) : 3 (H). This slope inclination will be reviewed during construction, as appropriate. Should areas of weaker peat be encountered then slacker slopes will be required. Battering of the side slopes of the excavation will be carried out as the excavation progresses. › 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. › The excavated access road will be constructed with an average of 750 mm of selected granular fill. Granular fill to be placed and compacted in layers in accordance with the TII Specification for Road Works. › Access roads will be finished with a layer of capping across the full width of the road. › A layer of geogrid/geotextile may be required at the surface of the competent stratum, where this stratum is cohesive in nature. › Where slopes of greater than 5 degrees are encountered along with relatively deep peat (i.e. greater than 1.5 m), and where it is proposed to construct the access road		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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 of the peat and greatly reduces any risk of peat instability. › 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 road, 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 9.1) will also be installed downslope of the works area to allow for ongoing monitoring during the construction works. › A final surface layer will be placed over the excavated road and graded to accommodate wind turbine construction and delivery traffic. Mitigation measures for the construction of the proposed new floating roads: › 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 2 to 5 m wide pressure berm (typically 0.5 m in height) either side of the access road will reduce the likelihood of potential bearing failures beneath the access road. › The finished road width will be approximately 5 m, with wider sections on bends and corners. › 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. › 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 10 m length of constructed floating road. › Where it is not possible to end-tip over a 10 m length of constructed floating road then dumpers delivering stone to the floating road will carry a reduced stone load (not greater		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			than half full) until such time as end-tipping can be carried out over a 10 m length of constructed floating road. › 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. › A final surface layer will be placed over the full width of the floating road, as per design requirements, to provide a road profile and graded to accommodate wind turbine construction and delivery traffic. › No materials will be sidecast or stored on the peat on either side of the floating road during construction.		
MM44	Upgrading of Existing Access Roads (Wind Farm)	Chapter 4 PSMP	For upgrading of all existing access roads following guidelines apply: › Excavation of the access road will take place to a competent stratum beneath the peat, removing all peat and soft clay and backfilled with suitable granular fill. › Benching of the excavation will be required between the existing section of access road and the widened section of access road where the depth of excavation exceeds 500mm. › For a founded access road, the surface of the existing access road will be overlaid with up to 500mm of selected granular fill. › Access roads will be finished with a layer of capping across the full width of the road. › A layer of geogrid/geotextile may be required at the surface of the existing access road where the existing roads shows signs of rutting, etc. › For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability. › The finished road width will have a minimum running width of 5m, with wider sections on bends and corners › On side long sloping ground any road widening works required will be done on the upslope side of the existing access road, where possible		
MM45	Clear-Span Watercourse	Chapter 4	› The access road 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Crossing (Wind Farm)		› 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		
MM46	Temporary Construction Compounds	Chapter 4	› 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 perimeters of the temporary construction compounds; › The compound platforms will be established using a similar technique as the construction of the substation platform as discussed in Section 4.9.1.7 below; › A layer of geo-grid will be installed where deemed necessary by the designer 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 compounds will be constructed as site roads and used as vehicle hardstandings 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 compounds; › The compounds will be fenced and secured with locked gates if necessary;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM47	Proposed Underground Electrical (33kV) and Communication Cabling	Chapter 4	› The top layer of soil (or road surface) is removed and saved so that it is replaced on completion. › The cables ducting will be bedded with suitable material unless the ground conditions are such that no bedding is required.		
MM48	Proposed 110kV Onsite Substation and Control Buildings	Chapter 4	› Perimeter fencing will be erected.		
MM49	Borrow Pits	Chapter 4 PSMP	› Peat and overburden will be removed and temporarily stored in localised areas adjacent to the borrow pit locations before being placed in the permanent peat/spoil storage areas within the borrow pits. Data from the available ground investigation undertaken to date indicates that the rock in the area should be suitable, but testing will be undertaken to ensure the bedrock, although this would be a suitable method for removal of the rock. › It is proposed to construct the borrow pits so that the base of the borrow pit is below the level of the adjacent section of access road. An excavation progression into the back edge of the borrow pits, localised deepening of the borrow pit floors may be required depending on extraction operations. › 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. Exposed sections of the rock slopes will be left with irregular faces and declivities to promote re-vegetation and provide a naturalistic appearance. › Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/front face. The contractor executing the work will be required to develop the borrow pit in a way which will allow the excavated peat and spoil to be reinstated safely.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The height of the perimeter berm will be greater than the height of the stored peat and spoil to prevent any surface run-off. The crest of the stone berm will be a minimum of 0.5 m above the height of the placed peat and spoil. › The internal rock buttresses will be wide enough (up to 4 m at the crest) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The perimeter side slopes of the rock buttress will be constructed between 35° (based slope) to 60° (inside slope) degrees. › In order to prevent water retention occurring behind the buttresses, the buttresses will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of about 100 mm up to typically 500 mm in size. In addition, drains will be placed through the buttresses to allow surface water to drain from the surface of the placed peat. › The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required. › The surface of the placed peat and spoil will be shaped to allow efficient run-off of surface water from the placed arising towards the perimeter of the borrow pit. › As the internal buttresses are slightly higher than the retained peat, drains will be provided at regular intervals through the berms, at the same level as the top of the peat surface, to prevent ponding of water around the edges of the repositories. These drains will be 150 mm diameter flexible plastic drainage pipe or equivalent. › A layer of geogrid to strengthen the surface of the placed peat and spoil within the borrow pits will be required. › 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. › Temporary control of groundwater within the borrow pits will be required and measures will be determined as part of the ground investigation programme. A temporary pump and suitable outfall locations will be required during construction. › Settlement ponds have been designed at the lower side/outfall location of the borrow pits.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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. The following commitments for the placement of peat alongside the access roads, within turbine clearfell areas and as landscaping around turbines will be implemented during construction: › Excavated peat will be placed/spread on the upslope side of sections of access road. › 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. › 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. › It will be ensured that the surface of the placed peat is 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 placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability in 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. › On the downslope side of the storage areas at T08 a stone berm is shown to provide stability to the placed peat. The berm is 1.5m in height and will be constructed of free draining crushed rock. The berm will be founded on competent ground below the in-situ peat. › 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 within the placement areas.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The following mitigation measures will be put in put in place during excavations in peat for turbine bases, hardstanding's, and infrastructure foundations: › With respect to placement of arisings from excavations the commitments given above. › All excavations within peat will be adequately supported or peat slopes will be battered to a safe slope inclination typically of 1(v): 3(h). This slope inclination will be reviewed during construction, as appropriate. Where areas of weaker peat are encountered then slacker slopes will be required. › Excavations will be kept reasonably free from water at all times. Water will be prevented from being impounded within excavations by either using drainage channels cut into the excavation face or by pumping. › Where water is channelled or pumped from an excavation then this water will be fed into an established watercourse or drainage ditch following suitable treatment. The following mitigation measures will be put in put in place during excavations in peat for underground cables: › With respect to placement of arisings from excavations the guidelines above. › Similarly, all excavations within non-peat overburden for the cable trench will be adequately supported or battered to a safe slope inclination typically of 1(v): 1.5 or 2(h). This slope inclination will be reviewed during construction, as appropriate. › Excavations will be kept reasonably free from water at all times. › Any overburden excavated from the cable trench will be transported to the borrow pits for storage. › Any pavement materials containing tar will be transported to an authorised waste facility. To minimise the risk of construction activity causing potential peat instability the Construction Method Statements (CMS) for the project will also implement, but not be limited to, the general measures below together with the specific measures.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Uncontrolled concentrated water discharge onto peat slopes identified as being unsuitable for such discharge will be avoided. All water discharged from excavations during work will be piped over areas specifically assessed as being unsuitable and hence directly into suitable drainage lines. › All excavations will be suitably supported to prevent collapse and development of tension cracks. › Avoidance of placing fill and excavations in the vicinity of steeper peat slopes, that is at the crest or toe of the slope. In the unlikely event where there is the onset or actual detachment of peat (e.g. cracking, surface rippling) then the following will be carried out: › On alert of a peat slide incident, all activities (if any) in the area will cease and all available resources will be diverted to assist in the required mitigation procedures. › Action will be taken to prevent a peat slide reaching any watercourse. This will take the form of the construction of check barrages on land. Due to the terrain and the inability to predict locations it may not be possible to implement any on-land prevention measures, in this case a watercourse check barrage will be implemented. › All relevant authorities will be notified if a peat slide event occurs on the Site. › For localised peat slides that do not represent a risk to a watercourse and have essentially come to rest the area will be stabilised initially by rock infill, if required. The failed area and surrounding area will then be assessed by the engineering staff and stabilisation procedures implemented. The area will be monitored, as appropriate, until such time as movements have ceased. › The most effective method of preventing excessive peat slide debris from travelling downstream in a watercourse is the use of a check barrage. A check barrage comprises the placement of rock fill across a watercourse. The check barrage is a highly permeable construction that will allow the passage of water but will prevent peat debris from passing through. Rock fill will comprise well-graded coarse rock pieces from about 300mm up to typically 1000mm.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM50	Peat and Spoil Management Areas	Chapter 4 PSMP	The peat and spoil management areas within the Proposed Wind Farm site have been selected based on the depth of peat and the slope angle. The following recommendations and best practice guidelines for the placement of spoil in the identified peat and spoil management areas, alongside the site access roads, and as landscaping around turbines will be adhered to during the construction of the Proposed Project: › Excavated peat will be placed/spread on the upslope side of sections of access road. › Weak/liquified peat must be placed within the proposed borrow pits and not stored within these areas. › 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. › 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. › It will be ensured that the surface of the placed peat is 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 placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability in 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. › On the downslope side of the storage areas at T08 a stone berm is shown to provide stability to the placed peat. The berm is 1.5m in height and will be constructed of free draining crushed rock. The berm will be founded on competent ground below the in-situ peat. › 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 within the placement areas.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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 is required for the works. › 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. › A collector drain will be installed on the downslope side of the peat placement areas to capture any surface runoff from the storage areas. › All the above-mentioned commitments will be undertaken by the Contractor during construction.		
MM51	Underground Cabling (110kV)	Chapter 4	› When the cable 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. › A tracked 360-degree excavator will then proceed to dig out the proposed trench, typically to a depth of c.1300mm, within which the ducts will be laid. › The cable ducts will be concrete surrounded where they pass under the public road and under drains or culverts. › Trench supports will be installed, or the trench sides will be benched or battered back where appropriate and any ingress of ground water will be removed from the trench using submersible pumps, fitted with appropriate silt filtration systems, to prevent contamination of any watercourse. › Once the trench has been excavated, a base-layer will be laid and compacted, comprising Clause 804, or 15 Newton CBM4 concrete as required. › The ducting will be installed as per specification, with couplers fitted and capped to prevent any dirt etc. entering the duct. In poor ground conditions, the ends of the ducts will be shimmed up off of the bed of the trench, to prevent any possible ingress of water dirt. The shims will be removed again once the next length has been connected. Extreme care will be taken to ensure that all duct collars (both ends) are clean and in good condition prior to ducts being joined.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› As the works progress, the as-built location of the ducting will be recorded using a total station or GPS. › As per the associated base-layer (Clause 804 material or 15 Newton CBM4 concrete) will be installed and compacted as per approved detail, with care not to displace the ducting. › Spacers will be used to ensure that the correct cover is achieved at both sides of the ducting. › The remainder of the trench will be backfilled in two compacted layers with approved engineer's specified material. › Yellow marker warning tape will be installed across the width of the trench, at 300mm depth, › The finished surface is to be reinstated, as per original specification. Off-road cabling may be finished with granular fill to facilitate access to the trench for any potential maintenance that is required during the operational phase of the Proposed Project. › Marker posts will then be placed at regular intervals (generally at joint bays and any change in direction) to denote the location of the underground power cables.		
MM52	Existing Underground Services (Grid Connection)	Chapter 4	› Any underground services encountered along the underground cabling 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 ducting and bottom of the service will be achieved. › In deeper excavations an additional layer of marker tape will be installed between the communications duct 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM53	Trenching and Ducting (Grid connection)	Chapter 4	› The proposed cable will be installed in a series of ducts in an excavated trench. Trenching will be achieved using a mechanical excavator. The top layer of soil or road surfacing will be removed and stockpiled separately for reuse. Material stockpiles shall be stored at least 15m back from drains and watercourses on level ground with a silt fence inserted at the base to prevent runoff. › The trench base will be graded and smoothed once the required depth and width is achieved. A layer of bedding material will be placed and compacted to the required specification on the trench floor prior to laying the ducts in trefoil formation. › The ducting surrounds will be carefully backfilled and compacted in accordance with the required specification. Cable protection strips will be placed on compacted material directly above the ducting. A secure cap will be placed at the end of each duct to prevent the ingress of dirt or water. › Ground water and surface water accumulating in the base of trenches will not be pumped directly to roadside drains or watercourses unless it is clean and free from solids. Contaminated water will be either treated onsite prior to discharge or tankered offsite to a suitably licensed disposal facility. › For concrete and asphalt/bitumen road sections, surfaces will be permanently reinstatement in accordance with the specification and to the approval of the local authority and/or private landowners, unless otherwise agreed with local authorities. All trench works carried out in public roadways will be carried out in accordance with 'Guidelines for Opening, Backfilling and Reinstatement of trenches in Public Roads' and any other conditions imposed by the relevant road authority. › For unsurfaced/grass sections, trenches will be backfilled 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. › Ducting will be cleaned and tested in accordance with the specification by pulling through a brush and mandrel. A draw rope will be installed in each duct in preparation for cable installation at a later date.		
MM54	Joint Bays (Grid Connection)	Chapter 4	› Where possible, joint bays will be located in areas where there is a natural widening/wide grass margin on the road in order to accommodate easier construction, cable installation and create less traffic congestion.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible. › During construction the joint bay locations will be completely fenced off once they have been constructed, they will be backfilled until cables are being installed. › Once the cabling is installed, the joint bays will be permanently backfilled with the existing surface re-instated and there will be no discernible evidence of the joint bay on the ground. › In association with Joint Bays, Communication Chambers are required at every joint bay location to facilitate communication links between the proposed 110kV onsite substation and the existing Dunmanway 110kV substation. › Earth Sheath Link Chambers are also required approximately every second joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground power cables, installed in a flat formation, so that the circulating currents and induced voltages are eliminated or reduced. Earth Sheath Link Chambers and Communication Chambers are located in close proximity to Joint Bays. Earth Sheath Link Chambers and Communication Chambers will be pre-cast concrete structures with an access cover at finished surface level.		
MM55	Dust Control	Chapter 10 CEMP	› In periods of extended dry weather, dust suppression may be required within the Proposed Wind Farm site, along haul roads, public road corridors, proposed new roads on private agricultural land, and proposed upgrades to existing private tracks associated with the Proposed Grid Connection underground cable route, to prevent dust from becoming a nuisance 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 to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff. › All plant and materials vehicles shall be stored in dedicated areas within the Site.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction. › Turbines and construction traffic will be transported to the Site on specified haul routes only. › The agreed haul route road adjacent to the Site will be regularly inspected for cleanliness and cleaned as necessary. › The roads adjacent to the Site entrances will be checked weekly for damage/potholes and repaired as necessary. › The transportation of materials from the borrow pit around the Site will be covered by tarpaulin or similar covered vehicles where necessary. › The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection to the Site will be covered by tarpaulin where necessary. › If necessary, excavated material will be dampened prior to transport to the spoil management areas. › Waste material will be transferred to a licensed/permitted Materials Recovery Facility (MRF) by 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 level of emissions associated with vehicle movement. › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-3). The CEMP includes dust suppression measures. › Groundworks (i.e., works with potential to create dust) associated with proposed turbines T04 and T14 will be fully supervised by an ECoW. The ECoW will regularly monitor adjacent Annex I habitat for signs of dust deposition or any other habitat degradation.		
MM56	Noise Control	CEMP, Section 3	The following best practice mitigation measures from these documents will be implemented as required for the duration of the construction and decommissioning phases: › 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;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › Selection of plant with low inherent potential for generation of noise and/ or vibration where practical; › Placing of noise generating / vibratory plant as far away from sensitive receptors as practical within the site constraints, and; › The hours of construction activity will be limited to avoid unsociable hours where possible. Works operations shall generally be restricted to between 7:00hrs and 19:00hrs Monday to Saturday. However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e. concrete pours, turbine component deliveries) it could occasionally be necessary to work out of these hours. And more specifically: › The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. › Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. › Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. › Any plant, such as generators or pumps, which is required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen as appropriate.		
MM57	Invasive Species Management (Construction Phase)	CEMP Section 3	› Any machinery working in close proximity to the infested areas will undergo washing in a designated biosecurity area before existing the Site. › Once the supervising ecologist confirms that the material is dried out and non-viable, it will be chipped and composted on-site. › It is envisaged that no contaminated soil is to be removed from the Proposed Project. Should potentially Third Schedule contaminated soil be required to be removed from the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Site, it will be transported to a suitably licenced waste facility and will require a licence from the NPWS prior to its transportation. › In order to avoid the potential for spread of invasive species into the Site: › Any construction material imported into the Site will come from a source confirmed to be free of invasive species. › All plant and machinery will be thoroughly cleaned before entering and exiting the Site.		
MM58	Site Hygiene	Chapter 6 CEMP, Section 3 Appendix 6-5: ISMP	› A designated wash-down area will be created, where power-washed material from machinery can be contained, collected and disposed of with other contaminated material. › This area will contain a washable membrane or hard surface. › Stockpile areas will be chosen to minimise movement of contaminated soil. › Stockpiles will be marked and isolated. › Contaminated areas which will not be excavated will be protected by a root barrier membrane if they are likely to be disturbed by machinery. Root barrier membranes will be protected by a layer of sand above and below and topped with a layer of hardcore. › The use of vehicles with caterpillar tracks within contaminated areas will be avoided to minimise the risk of spreading contaminated material. › An ECoW/suitably qualified ecologist will be on site to monitor and oversee the implementation of invasive species management plans. Plant and equipment which is operated within an area for the management of materials in contaminated areas will be decontaminated prior to relocating to a different works area. The decontamination procedures will take account of the following: › Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it. › Decontamination will only occur within designated wash-down areas. › Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g. wheel treads and arches. › All run-off will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM59	Waste Arising and Proposals for Minimisation, Refuse and Recycling of Construction Waste	CEMP Section 3	› Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging 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.		
MM60	Waste Arising from Construction Activities	CEMP, Section 3	› 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. › The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Proposed Wind Farm site. Therefore, all wastes streams generated on site will be deposited into a single waste skip. This waste material will be transferred to a 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 waste generated from the 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› It is not envisaged that there will be any waste material arising from the materials used to construct the site roads as only the quantity of stone necessary will be sourced from local quarries and brought on site on an 'as needed' basis. › 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.		
MM61	Toolbox Talks (Health & Safety)	CEMP, Section 4	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 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. 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'. › This will encompass the use of all necessary Personal Protective Equipment and adherence to Health and Safety Plan.		
MM62	Health and Safety	CEMP, Section 5	› 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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 › 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 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;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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.		
MM63	Site Evacuation (Health and Safety)	CEMP, Section 6	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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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.		
MM64	Spill Control	CEMP, Section 6	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.		
Operational Phase					
MM65	Wastewater Management	Chapter 4	› The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. › Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the proposed 110kV onsite substation underground storage tank.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM66	Proposed 110kV Onsite Substation and Control Buildings	Chapter 4	› Perimeter fencing will be erected.		
EIAR Chapter 5: Population and Human Health					
Pre-construction Phase					
MM74	Property Values	Chapter 5	› The Proposed Wind Farm has been designed in accordance with the parameters set out in the Guidelines (DoEHLG, 2006) and with cognisance of the Draft Guidelines (DoHPLG, 2019), adhering to the required setback distances from sensitive receptors set out in those documents.		
MM75	Major Accidents and Natural Disasters	Chapter 5	› 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 onsite 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 onsite, and mitigation of the same during operation.		
Construction Phase					
MM76	Land Use Activities and Patters	Chapter 5	› The construction of the Proposed Grid Connection underground cabling route through the R585, L-4909 L-4609, L-4615, R587, R586 will be undertaken in a rolling construction method with approximately 100m of cabling installed and backfilled each day, providing access in the evenings and night hours along the route.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Local access for residents living along the Proposed Grid Connection will not be closed for the construction phase, along the R585 Regional Road the road carriageway is wide enough to have access solutions in place, and there are also alternative access roads into the area. › The identified 44ha of commercial forestry that will be felled for the Proposed Wind Farm will be replaced or replanted through proposed enhancement measures or on a hectare for hectare basis as a condition of any felling licence that will be issued in respect of the Proposed Wind Farm felling (Section 4.4.1.10 of Chapter 4 of this EIAR).		
Operational Phase					
MM77	Health and Safety		The following mitigation measures will be implemented during the operation of the Proposed Project to ensure that the risks posed to staff and landowners remain imperceptible throughout the operational life of the Proposed Project. › Access to the turbines is through a door at the base of the structure, which will be locked at all times outside maintenance visits. The doors will only be unlocked as required for entry by authorised personnel and will be locked again following their exit. › Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, or are becoming hidden by vegetation or foliage, with prompt action taken as necessary. › Signs will also be erected at suitable locations across the Site as required for the ease and safety of operation of the wind farm. These signs include: › Buried cable route markers at 50m (maximum) intervals and change of cable route direction; › Directions to relevant turbines at junctions; › "No access to Unauthorised Personnel" at appropriate locations; › Speed limits signs at Site entrance and junctions; › "Warning these Premises are alarmed" at appropriate locations; › "Danger HV" at appropriate locations; › "Warning – Keep clear of structures during electrical storms, high winds or ice conditions" at Site entrance;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			◦ "No unauthorised vehicles beyond this point" at specific Site entrances; and ◦ Other operational signage required as per Site-specific hazards. › The proposed onsite 110kV substation, which will be operated by EirGrid, will be locked and fenced off from public access. The substation will be operational remotely and manually 24 hours per day, 7 days a week. Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link. › Periodic service and maintenance work which include some vehicle movement. › For operational and inspection purposes, substation access is required. › Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following: ◦ Six-month service – three-week visit ◦ Annual service – six-week visit ◦ Weekly visits as required. › An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the Site. Access for emergency services will be available at all times. › The components of a wind turbine are designed to last up to 35 years and are equipped with a number of safety devices to ensure safe operation during their lifetime		
MM78	Shadow Flicker		**Screening Measures** › In the event of an occurrence of shadow flicker exceeding guideline threshold values of 30 minutes per day at residential receptor locations, mitigation options will be discussed with the affected homeowner, including: ◦ Installation of appropriate window blinds in the affected rooms of the residence; ◦ Planting of screening vegetation; ◦ Other site-specific measures which might be agreeable to the affected party and may lead to the desired mitigation.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› If agreement can be reached with the homeowner, then it would be arranged for the required mitigation to be implemented in cooperation with the affected party as soon as practically possible and for the full costs to be borne by the wind farm operator. **Wind Turbine Control Measures** › If it is not possible to mitigate any identified shadow flicker limit exceedance locally using the measures detailed above, wind turbine control measures will be implemented. › Wind turbines can be fitted with shadow flicker control units to allow the turbines to be controlled to prevent the occurrence of shadow flicker at properties surrounding the wind farm. The shadow flicker control units will be added to any required turbines › All predicted incidents of shadow flicker can be pre-programmed into the wind farm's control software. The wind farm's SCADA control system can be programmed to shut down any particular turbine at any particular time on any given day to avoid excessive shadow flicker occurrences at properties which are not naturally screened or cannot be screened with measures outlined above. Where such wind turbine control measures are to be utilised, they need only be implemented when the specific combined circumstances occur that are necessary to give rise to the shadow flicker effect in the first instance. Therefore, if the sun is not shining on a particular day that shadow flicker was predicted to occur at a nearby property, there would be no need to shut down the relevant turbines that would have given rise to the shadow flicker at the property. Similarly, if the wind speed was below the cut-in speed that caused the turbine rotor to rotate and give rise to a shadow flicker effect at a nearby property, there would be no need to shut down the relevant turbines that otherwise would have caused shadow flicker.		
EIAR Chapter 6 Biodiversity					
Pre-construction					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM80	Potential Effects of Wet Heath & Upland Blanket Bog	Chapter 6 Appendix 6-4 BMEP	**Mitigation by Design** › The Proposed Wind Farm has been specifically designed to avoid Article 17 mapped and unmapped areas of blanket bog, wet heath and dry heath in good condition 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 Wind Farm layout was thereby altered through the iterative design process to avoid important peatland/ heath habitats.		
MM81	Potential Effects on Linear and Scrub Habitats	Chapter 6 Appendix 6-4 BMEP	› The loss of hedgerow and scrub for the Proposed Project will be offset through the planting of native woodland as part of the BMEP. › In total it is proposed to plant 0.6ha of native woodland. A section of immature managed native woodland is located to the east of the proposed onsite 110kV substation in the southern cluster. This section of immature native woodland is surrounded by conifer plantation. It is proposed to fell an area of the conifer plantation and replace this with native woodland. This native woodland area has been strategically chosen to link up with identified bat commuting corridors within the Proposed Wind Farm site and will provide enhanced habitat forging area relative to the commercial conifer stands. The proposed planting will comprise native tree species of various age structures and will be of greater biodiversity value than the habitats being lost. › The BMEP and associated planting proposals will be implemented within planting season during or in advance of phase 1 of construction works in order to minimise the interim time necessary for growth and establishment of new habitat.		
MM82	Potential Effects on Commuting or Foraging Habitat	Chapter 6 Appendix 6-4 BMEP	› The mitigation measures outlined in Section MM81 will be implemented to mitigate impacts on Wet Heath and Upland Bog.		
MM83	Potential Effects on Otters	Chapter 6	› The watercourse crossings within the Proposed Wind Farm site will comprise clear span watercourse crossings and will therefore avoid any loss of riverbed or riverbank habitat.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM84	Potential Effects on the Kerry Slug	Chapter 6 Appendix 6-4 BMEP	**Habitat Loss/Fragmentation** › Whilst no significant effects are anticipated on Kerry Slug as a result of habitat loss/fragmentation, the loss of 2.02ha of degraded Wet Heath habitat will be offset through the BMEP (Appendix 6-4). It is proposed to fell an area 5.4ha of young conifer plantation in the northern section of the Proposed Wind Farm site, in areas where Wet Heath (HH3) habitat previously existed. The restoration efforts will restore the formerly occurring Annex I habitat to these areas. A Monitoring Plan to ensure success of the proposed measures are also provided in the BMEP. Given the provisions of the BMEP, there will be an increase in supporting habitat for Kerry Slug within the Site **Habitat management and enhancement** › Tree stumps resulting from the felling of forestry in the felling buffers for Turbine T08, T09 and T10 will be left in situ to decay to provide suitable habitat for Kerry slug. › Where the felling areas overlap with Peat and Spoil Management areas (1.44ha of the 3.9ha of Kerry Slug enhancement area) peat will be spread to allow the tree stumps to protrude and larger boulders, if present, can be placed strategically to enhance the foraging area and shelter for Kerry Slug. › Rock outcrops, boulders and stonewalls will be retained where possible or, if removal can't be avoided, they will be replaced to enhance the value of the habitat surrounding the windfarm infrastructure. **The following measures will be implemented prior to the commencement of construction:** › Known locations of Kerry Slug identified from the pre-commencement survey efforts will be marked off by an appointed qualified/licenced ecologist. This will help avoid inadvertent encroachment of machinery into known Kerry Slug habitat. **Translocation**		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Prior to undertaking works in areas of suitable habitat, translocation of Kerry Slugs to suitable habitat in the surrounding area will be employed to avoid any direct negative impact on the species. Translocation will follow the methodology as set out below: › In advance of any works, areas of exposed rock, and suitable trees within and adjacent to the Proposed Project footprint will be selected by a qualified and licenced ecologist for the promotion and presence of moss and lichen growth and thus provide suitable feeding habitats for Kerry Slug. The selected rocks (if present) will be painted with a mix of yoghurt (to encourage lichen growth), inoculated with lichens, and some mosses found in the vicinity. These areas will be fenced off using post and rope fencing so that the areas will not be disturbed. These selected replacement habitat areas will be monitored (photos taken yearly for three years) during ongoing/all future surveys as part of post construction monitoring. Results will form part of yearly compliance reporting. › Search, trapping, and translocation will only occur during suitable weather conditions (wet/humid weather). › The identification of suitable receiving habitat is critical. Animals found on sandstone will be translocated to sandstone, those found on conifer trees will be located to conifer trees, etc. › There is sufficient evidence that such mitigation measures have been successful elsewhere (O'Hanlon et al. 2017) along with record returns (DER/KERRY SLUG – 2018 – 88).		
MM85	Biosecurity (Crayfish)	Chapter 6 Appendix 6-3	› Biosecurity measures which were implemented followed *IFI Biosecurity Protocol for Field Survey Work*, (IFI, 2010). › Due to increasingly prevalent spread of crayfish plague in Ireland and to prevent the spread of aquatic invasive species, all equipment was scrubbed and cleaned prior to and post works with Virkon Aquatic. › Additionally, all equipment was cleaned with Virkon Aquatic between survey sites to minimise the potential for the spread of invasives between watercourses/ survey sites. › Any instance of invasive species was recorded and conveyed to IFI via electrofishing data returns.		
Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM86	Effects of Wet Heath & Upland Blanket Bog	Chapter 5, 6, 10 Appendix 6-4 BMEP CEMP	**Specific Mitigation** › The loss of degraded wet heath habitat in the vicinity of T4 and T14 will be offset through the BMEP. It is proposed to fell an area 5.4ha of young conifer plantation in the northern section of the Proposed Wind Farm site, in areas where Wet Heath (HH3) habitat previously existed. The restoration efforts will restore the formerly occurring Annex I habitat to these areas. A Monitoring Plan to ensure success of the proposed measures are also provided in the BMEP. **Dust Mitigation** › The mitigation measures outlines in Section MM55 will be implemented to mitigate impacts on Wet Heath and Upland Bog.		
MM87	Lighting	Chapter 6	› With regard to any lighting required for construction of the Proposed Project, the Applicant commits to using lighting during construction only where necessary, in line with the updated Dark Sky Ireland Lighting Principles: › All lighting will be justified and used only when required. › Warm colour temperatures will be used to minimise impacts on wildlife and the night sky. › Glare and brightness will be minimised to protect visual comfort. › Luminaires will be angled downward with appropriate beam control to avoid over-lighting. › Lower mounting heights will be used where possible to better contain light. › Lighting will incorporate timers, dimmers, or PIR sensors to reduce energy use and emissions. › Natural areas such as trees, waterbodies, and nesting habitats will not be illuminated.		
MM88	Potential Effects on Bats	Appendix 6-2	**Noise Restrictions** › 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, as amended).		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› In relation to the Proposed Grid Connection, Horizontal Directional Drilling (HDD) and associated works will be temporary and set-back from bridge/culvert features. The short-term nature of these works, combined with their spatial separation from potential bat habitats, will ensure that potential noise and vibration disturbance is minimised. **Lighting Restrictions** › Where lighting is required, directional lighting will be used to prevent overspill on to woodland/forestry edges and linear features. Exterior lighting, during construction and post construction, shall be designed to minimize light spillage, reducing the effect on surrounding habitat features and bat activity. Lighting will be directed away from mature trees and treelines around the periphery of the site boundary to minimize disturbance to bats. › Directional accessories will be used to direct light appropriately, such as light shields (Stone, 2013). All luminaires will be of a type that prevents upward and lateral spillage. The proposed lighting will comply with ILP Guidance Note 08/23 – Bats and Artificial Lighting at Night (ILP, 2023). › The applicant also commits to the Dark Sky Ireland Lighting Recommendations, ensuring that: › Every light is justified; › Light is used only when necessary; › It is directed where needed; › Light intensity is minimised; › Spectra are adapted to the environment; › White light sources will have a “warm” colour temperature (less than 3000K). › With regard to the potential for lighting to increase collision risk, it is noted that there will be limited illumination of the turbines in the form of aviation lighting. **Bat Felling Buffers**		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› In accordance with NatureScot (2021) and NIEA (2021) guidance, a minimum 50 m buffer is applied between turbine blade tips and habitat features used by bats (e.g. hedgerows, treelines). Although increased buffers of 100–200m are recommended around woodland by Eurobats Publication No. 6 and NIEA, these recommendations are not currently supported by empirical evidence from the UK or Ireland and are not routinely applied in wind farm planning. › For the Proposed Wind Farm, a 50 m buffer between turbine blade tip and the nearest habitat feature has been implemented, based on a conservative worst-case turbine specification (blade length: 66.5 m; hub height: 102.5 m; total height: 169 m). Buffer distances were calculated using the Natural England formula (NatureScot, 2021) as illustrated in Plate 6-1 and have been incorporated into the turbine layout. › Removal of areas of conifer plantation will be required to provide the necessary bat buffers within the Proposed Wind Farm. These vegetation-free areas (i.e. less than 2m in height) will be maintained for the duration of the operational phase and form part of the overall collision-risk mitigation strategy for bats.		
MM89	Potential Effects on Kerry Slugs	Chapter 6 Appendix 6-4	The following mitigation measures will be implemented during construction: › The extent of the Proposed Wind Farm footprint will be clearly marked to prevent any inadvertent encroachment on Kerry Slug habitat where it is located adjacent to the works areas. › Where felling is required, tree stumps will be left in place where possible to provide suitable habitat for Kerry Slug. Turves and boulders/ exposed rock will be stored adjacent to the development footprint where practicable before reinstatement to maintain/create suitable habitat for the species in the vicinity of the works during construction. Details of the enhancement are described below. Should Kerry Slugs be found in the works areas during the construction phase they will be relocated by the appointed qualified/licenced ecologist to suitable habitat as described below. The proposed Kerry Slug enhancement measures, as indicated in Figure 3-1, include the following:		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Tree stumps resulting from the felling of forestry in the felling buffers for Turbine T08, T09 and T10 will be left in situ to decay to provide suitable habitat for Kerry slug. › Where the felling areas overlap with Peat and Spoil Management areas (1.44ha of the 3.9ha of Kerry Slug enhancement area) peat will be spread to allow the tree stumps to protrude and larger boulders, if present, can be placed strategically to enhance the foraging area and shelter for Kerry Slug. › Rock outcrops, boulders and stonewalls will be retained where possible or, if removal can't be avoided, they will be replaced to enhance the value of the habitat surrounding the windfarm infrastructure. › Monitoring programme › These measures are proposed within the bat felling buffers around the proposed turbines T08, T09 and T10. Within these buffers, a total of 3.9 ha of conifer plantation will be felled and managed as per above.		
MM90	Native Woodland Planting	Appendix 6-4: BEMP	The following measures will be followed when planting trees and have been informed by ACRES (2024) guidance: › All planting will be done by hand and will be undertaken by a suitably qualified arborist. › Planting will be undertaken in the dormant season, between November and March. › When planting trees, tree planting density should be kept sufficiently low to allow › establishment of ground story vegetation. Planting small groups of 10 trees with a maximum 2.5m spacing between the trees, and 10m spacing between the groups, is recommended. › Trees will be pit planted, in areas of clear vegetation. This involves using a spade to dig a hole with tree roots placed in the centre. Soil is then placed around the tree and firmed in, ensuring the tree is upright. › It is recommended that there are 2.5m spacings between trees. Shelterbelt planting may be applied by planting up to two lines of trees as a staggered row. › Trees should be planted within a vegetation-free area, at least 1m in diameter. › Mark out the area for planting so it is clear exactly where planting will be established. › Use thin stakes or sticks to mark the rows or areas of trees to be planted.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Rabbit, hare, and deer proof tree guards will be placed around each new tree.		
			Operational Phase		
MM91	Potential Effects on Bats	Chapter 6 Appendix 6-2	**Blade Feathering** › NIEA Guidelines also recommend that, in addition to buffers applied to habitat features, all wind turbines are subject to 'feathering' of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021). › In accordance with NIEA Guidelines, blade feathering will be implemented as a standard across all proposed turbines when wind speeds are below the cut-in speed of the turbine.		
MM92	Native Woodland Management	Appendix 6-4: BEMP	In order to facilitate the successful establishment of the new trees to be planted within the Proposed Wind Farm site, the following measures are proposed: › New tree planting will be kept weed and litter free until the new plants are established, particularly from ruderal weeds. Healthy growth will be maintained by allowing the plant to occupy as much of the planting areas as possible to allow them to achieve as close their natural form as possible. › During spring and autumn maintenance periods all trees and plants will be checked and adjusted/replaced as required, soil firmed, and any dead wood present removed back to healthy tissue and mulch added if required. Where tree guards are no longer required these will be removed to avoid damage to the tree. › During the first growing season, all standard trees/ semi-mature trees will be watered regularly during any prolonged dry periods during the growing season (i.e. in April, May, June, July and August). During the second growing season the trees will be kept well-watered as often as required, particularly during June, July and August. Replanted trees will be inspected following the main growing season (i.e. in September) for the first five years of growth, where the requirement for replacement planting will be assessed. If		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			any trees are dead or damaged these will be replaced using the same species within the next planting season. Recommendations for ongoing or remedial management required will be specified within the Monitoring Report		
MM93	Peatland Management	Appendix 6-4: BEMP	› In addition to the above, this area will be managed for invasives species, particularly Rhododendron and self-seeding conifer trees, for the operational life of the Proposed Project. › The level of grazing management required, to ensure bracken and purple moor grass do not become dominant, should not exceed 0.1 LU/ha/yr (Farm Advisory Service 2024). › The grazing unit should include the adjacent area of wet grassland to avoid overgrazing of the peatland area. › Grazing should be limited to drier months and in particular to May-July where management for purple moor grass is required (NatureScot 2022). › Grazing will be limited to cattle grazing should the cover of bracken remain unaffected by the grazing regime or increase.		
EIAR Chapter 7 Ornithology					
Pre-Construction Phase					
MM95	Design of Windfarm	Chapter 7	The project design has followed the basic principles outlined below to avoid the potential for significant effects on ornithological receptors: › Hard standing areas have been designed to the minimum size necessary to accommodate the turbine model that is selected. › The Proposed Grid Connection has been selected to utilise built infrastructure for the majority of its length (i.e. cables to be laid within public roads). Cabling will be installed underground to avoid effects on roadside hedgerows and disturbance to nesting birds.		
Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM96	CEMP	Chapter 7 CEMP Appendix 7-7: Bird Monitoring Programme	A CEMP has been prepared and will be in place prior to the start of the construction phase. Measures specific to birds are detailed below: › Works will commence outside the bird nesting season (1st of March to 31st of August inclusive). › 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. › 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 waterbodies. › A pre-construction bird survey at the Proposed Wind Farm site will be organised to ensure that any sensitive roost or nest sites in the works area are identified and disturbance to these are avoided. Further details are provided in Appendix 7-7. › If winter roosting or breeding activity of birds of high conservation concern is identified, no works shall be undertaken within a species-specific disturbance buffer of the roost/nest, in line with industry best practice (e.g., Goodship and Furness, 2022). No works shall be permitted within the buffer until it can be demonstrated that the roost/nest is no longer occupied.		
Operational Phase					
MM97	CEMP	Chapter 7 CEMP	› 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use.		
EIAR Chapter 8 Land, Soils & Geology					
Construction Phase					
MM99	Felling, Erosion of Exposed Peat, Soils and Subsoils During Tree Felling	Chapter 8	› All felling operations will be completed in line with the Forest Service's published policy and will be subject of a Limited Felling Licence (LFL). › The Forest Service policy requires replacement or replanting on a hectare for hectare basis for the footprint of the infrastructure developments. › Therefore, while the loss of coniferous forestry (44ha) will be a permanent change to the land at these locations, all forestry lost will be replaced elsewhere within Ireland as per the Forest Service felling policy. 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 site 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,		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The location of racks will be chosen to avoid wet and potentially sensitive areas.		
MM100	Peat, Subsoil and Bedrock Excavation	Chapter 8	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 and trial pits. <u>Proposed Wind Farm site</u> › Placement of turbines and associated infrastructure in areas with suitable ground conditions where appropriate (based on detailed site investigation data – the areas of deeper peat 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/spread locally alongside the excavations or stored within the designated peat and spoil 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 and spoil management areas will be restricted to a maximum height of 1.5m. Weak/liquified peat will be stored in the centre of the peat and spoil management areas 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 and spoil management areas 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			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 peat and spoil 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 and spoil 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 and spoil management areas in these locations). <u>Proposed Grid Connection</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		
MM101	Contamination of Soil by Leakages and Spillages	Chapter 8	› The same mitigation measures outlined in MM23 above will be implemented to prevent contamination of soil by leakages and spillages		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM102	Peat Instability and Failure	Chapter 8	The following general control measures incorporated into the construction phase of the project will assist in the management of the risks for this site: › 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 Assessment 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.		
MM103	Biodiversity Management and Enhancement Plan (BMEP)	Chapter 8	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 Wind Farm site will be walked before a machine goes off-road; › Bog mats will be used where the excavator is required to travel over wet ground; and, › A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.		
Operational Phase					
MM104	Use of Oil in Transformers	Chapter 8	› All transformers will be bunded to 110% of the volume of oil used in each transformer; and, › An emergency plan for the operational phase to deal with accidental spillages will be contained in the CEMP		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM105	Potential Effects from Site Vehicle/Plant Use	Chapter 8	› Vehicles used during the operational phase will be refuelled off site before entering the site; › No fuels will be stored on-site during the operational phase; › Spill kits will be available in all site vehicles to deal with an accidental spillage and breakdowns; and, › An emergency plan for the operational phase to deal with accidental spillages and breakdowns will be contained in the CEMP (Appendix 4-3).		
MM106	Site Road Maintenance	Chapter 8	› Use of aggregate from authorised quarries for use in road and hardstand maintenance.		
EIAR Chapter 9 Hydrology and Hydrogeology					
Pre-Construction Phase					
MM108	Clear Felling of Coniferous Plantation and Potential Surface Water Quality Effects (Proposed Wind Farm)	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) › Environmental Requirements for Afforestation (Forest Service, 2016a) › 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) › Forestry and the Landscape Guidelines (Forest Service, 2000c) › Forestry and Archaeology Guidelines (Forest Service, 2000d) › Forest Biodiversity Guidelines (Forest Service, 2000e) › Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018) › Coillte Planting Guideline SOP		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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) › Code of Best Forest Practice (Forest Service, 2000) › Mitigation by Design:		
MM109	Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Waters (Proposed Project)	Chapter 9	**Mitigation by Avoidance:** The key mitigation measure during the construction phase of the Proposed Project is the avoidance of sensitive aquatic areas where possible all of the key areas of the Proposed Project infrastructure are actually significantly away from the 50m delineated buffer zones with the exception of existing road upgrades, new roads, proposed stream crossings and existing stream crossings requiring upgrading. Additional control measures, which are outlined further on in this section, will be undertaken at these locations. Proposed turbine locations T1 to T5, T7 to T11, T13 and T14 are actually setback more than 75m from a watercourse. The large setback distance from sensitive hydrological features by using the 50m buffer 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Mitigation by Design: › Source controls: ○ Interceptor drains, vee-drains, diversion drains, flume pipes, erosion and velocity control measures such as use of sand bags, oyster bags filled with gravel, filter fabrics, and other similar/equivalent or appropriate systems. ○ Small working areas, covering stockpiles, weathering off stockpiles, cessation of works in certain areas or other similar/equivalent or appropriate measures. › In-Line controls: ○ Interceptor drains, vee-drains, oversized swales, erosion and velocity control measures such as check dams, sand bags, oyster bags, straw bales, flow limiters, weirs, baffles, silt bags, silt fences, sedimats, filter fabrics, and collection sumps, temporary sumps/attenuation lagoons, sediment traps, pumping systems, settlement ponds, temporary pumping chambers, or other similar/equivalent or appropriate systems. › Treatment systems: ○ Temporary sumps and attenuation ponds, temporary storage lagoons, sediment traps, and settlement ponds, and proprietary settlement systems such as Siltbuster, and/or other similar/equivalent or appropriate systems. It should be noted for this Site is that an existing network of forestry, bog, field and roadside drains already exists, and these will be integrated and enhanced as required and used within the Proposed Project drainage system		
MM110	Effects on Downstream Freshwater Pearl Mussel Populations (Proposed Grid Connection)	Chapter 9	› 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 proposals were designed towards providing a “best in class” drainage management proposal for the development considering the significant catchment sensitivities		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Construction Phase		
MM111	Clear Felling of Coniferous Plantation and Potential Surface Water Quality Effects (Proposed Wind Farm)	Chapter 9	Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows: › Machine combinations (i.e., handheld or mechanical) will be chosen which are most suitable for ground conditions and which will minimise soils disturbance; › Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works; › Ditches which drain from the proposed area to be felled towards existing surface watercourses will be blocked, and temporary silt traps will be constructed. No direct discharge of such ditches to watercourses will occur. Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and will avoid being placed at right angles to the contour; › Sediment traps will be sited in drains downstream of felling areas. Machine access will be maintained to enable the accumulated sediment to be excavated. Sediment will be carefully disposed of in the peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground; › All drainage channels will taper out before entering the 50 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;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along all off-road routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall; › Timber will be stacked in dry areas, and outside a local 50 metre watercourse buffer. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites; › Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water run-off; › Checking and maintenance of roads and culverts will be on-going through the felling operation; › Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required; › A permit to refuel system will be adopted; › Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors; › Crossing of streams will not be permitted; › Trees will be cut manually from along streams and using machinery to extract whole tree; and, › Travel only perpendicular to and away from stream.		
MM112	Earthworks (Removal of Vegetation Cover, Excavations and Stock Piling) Resulting in Suspended Solids	Chapter 4,9 CEMP	› Measures applied to mitigate the effects of earthworks are outlined between the Sections MM27-39		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Entrainment in Surface Waters (Proposed Project)				
MM113	Potential Impacts on Groundwater Levels during Excavations (Proposed Project)	Chapter 4,9 CEMP	› Firstly, the borrow pit areas and turbines are located on the top of rocky local hills where the ground elevation is between approximately 200 - 380m OD and therefore are rock outcrops or subcrops as mapped by the GSI; › These elevations are above the elevations of the local valleys and streams; › The proposed borrow pits will be between approximately 8 – 10m below ground level which is notable and the turbine bases 4mbgl. However, in the context of the topographical/elevated setting, this depth range is relatively shallow; › The local bedrock comprises SILTSTONE/SANDSTONE and is known to be generally unproductive. This means that groundwater flows will be relatively minor; › 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; › No regional groundwater flow regime, i.e. large volumes of groundwater flow, will be encountered at these elevations; › Therefore, shallow groundwater inflows will largely be fed by recent rainfall, and possibly by limited groundwater seepage from localised shallow bedrock; › The sloping nature of the ground on the hills where the infrastructure is proposed along with the coverage of soil means groundwater recharge is going to 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, we consider that the management of surface water will form the largest proportion of water to be managed and treated.		
MM114	Excavation Dewatering and Potential Impacts on Surface Water	Chapter 4,9	› Appropriate interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place; › If required, pumping of excavation inflows will prevent build-up of water in the excavation;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Quality (Proposed Project)		› 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 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 will be made available at the borrow pit 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.		
MM115	Potential Release of Hydrocarbons during construction and storage	Chapter 4,9	› The mitigation measures outlined in MM23 will be outlined to prevent the potential release of hydrocarbons during construction and storage.		
MM116	Morphological and Hydrological Effects due to Watercourse Crossing Works	Chapter 9	› The proposed new stream crossings at the Proposed Wind Farm site will be clear span watercourse crossings, and the existing banks will remain undisturbed. No in-stream excavation works are proposed at these locations and therefore there will be no direct impact on the stream at the proposed crossing locations. Abutments will be constructed from precast units combined with in-situ foundations; › All guidance / mitigation measures required by the OPW and/or the Inland Fisheries Ireland (IFI) is incorporated into the design of the proposed crossings;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	(Proposed Wind Farm)		› All drainage measures will be installed in advance of the works; › Plant and equipment will not be permitted to track across the watercourse; › Once the foundations have been completed at both sides of the watercourse, the pre-cast concrete box culvert will be installed using a crane and there will be no contact with the watercourse; › Where the box culvert is installed in sections, the joint will be sealed to prevent granular material entering the watercourse; › As a further precaution, near stream construction work, will only be carried out during the period permitted by IFI for in-stream works according to the IFI (2016) guidance document "Guidelines on protection of fisheries during construction works in and adjacent to waters", i.e., July to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI); › Where works are necessary inside the 50m buffer double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase; › At the proposed culvert upgrade locations temporary damming and over pumping will be undertaken to manage flows in the watercourse; and, › All new river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.		
MM117	Groundwater and Surface Water Contamination from Wastewater Disposal (Proposed Project)	Chapter 9	› During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used at each of the site construction compounds (and along the Proposed Grid Connection as required), maintained by the providing contractor, and removed from site on completion of the construction works; › Water supply for the site office and other sanitation will be brought to Site and removed after use from the Site to be discharged at a suitable off-site treatment location; and, › No water or wastewater will be sourced on the Site, nor discharged to the Site.		
MM118	Potential Surface Water Quality	Chapter 4, 9	› 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		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Effects of the Proposed Grid Connection Earthworks Works and Watercourse Crossings		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); › The crossing works area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance; › There will be no storage of material / equipment or overnight parking of machinery inside the hydrological buffer zone; › Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channels; › Additional silt fencing or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards the watercourse; › Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered; › The area around the bentonite batching, pumping and recycling plant will be bunded using terram (as it will clog) and sandbags in order to contain any spillages; › Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area; › Spills of drilling fluid will be cleaned up immediately and contained in an adequately sized skip before been taken off-site; › If rainfall events occur during the works, there will be a requirement to collect and treat small volumes of surface water from areas of disturbed ground (i.e. soil and subsoil exposures created during site preparation works); › This will be completed using a shallow swale and sump down slope of the disturbed ground; and water will be pumped to a proposed settlement pond area at least 50m from the watercourse; › The discharge of water onto vegetated ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire percolation area will be enclosed by a perimeter of double silt fencing;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Any sediment laden water from the works area will not be discharged directly to a watercourse or drain; › Works shall not take place during periods of heavy rainfall and will be scaled back or suspended if heavy rain is forecasted; › If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the issue is resolved and the cause of the elevated source is remedied; › On completion of the works, the ground surface disturbed during the site preparation works and at the entry and exit pits will be carefully reinstated and re-seeded at the soonest opportunity to prevent soil erosion; › The silt fencing upslope of the river will be left in place and maintained until the disturbed ground has re-vegetated; › There will be no batching of cement along the Proposed Grid Connection; › There will be no refuelling allowed within 100m of the watercourse crossing; and, › All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing. **Fracture Blow-out (Frac-out) Prevention and Contingency Plan:** › The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e. Clear Bore Drilling Fluid or similar will be used); › The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage; › One or more lines of silt fencing will be placed between the works area and the adjacent river; › Spills of drilling fluid will be cleaned up immediately and transported off-site for disposal at a licensed facility; › Adequately sized skips will be used where temporary storage of arisings are required; › The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› 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.		
MM119	Potential Hydrological Effects on Designated Sites (Proposed Grid Connection)	Chapter 4,9	Drainage mitigation measures for surface water quality protection during the construction phase are summarised again below: (Relevant sections are shown for the full description of these measures and how they will be applied). › Avoidance of instream works at the proposed 11 no. EPA watercourse crossing locations › Pre-commencement temporary drainage works (Section MM108-127); › Management of spoil during earthworks along the cable route trenching works (Section MM50); and, › Best practice measures with regard use of oils, fuels (Section 9.6.2.5) and cement based compounds (MM23).		
MM120	Effects of Construction Works on the WFD Status of Downstream Waterbodies (Proposed Project)	Chapter 4,9	› Comprehensive surface water mitigation and drainage controls are outlined in Section MM108-127. These will ensure the protection of surface water quality and flows in all downstream receiving watercourses		
	Use of Siltbuster and Impacts on Downstream Surface Water	Chapter 4,9	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;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Quality (Proposed Project)		› Continued monitoring and water analysis of pre and post treated water by means of an inhouse lab and dedicated staff, means the correct amount of chemical is added by the dosing system; › Dosing rates of chemical to initiate settlement is small, being in the order of 2-10 mg/L and the vast majority of the chemical is removed in the deposited sediment; › Final effluent not meeting the discharge criteria is recycled and retreated, which has a secondary positive effect of reducing carryover; and, › Use of biodegradable chemical agents can be used at very sensitive sites (i.e. upstream of SACs).		
MM121	Potential Hydrological/Water Quality Effects on River Waterbody Drinking Water Supply Abstractions (Proposed Project)	Chapter 4,9	› The Proposed Project design team were at all times aware that public water supply abstractions 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 Proposed Project considering the significant catchment sensitivities, particularly in relation to Kealkill PWS which is located immediately downstream of the Proposed Wind Farm and a short section of the Proposed Grid Connection.		
MM122	Potential Effects on Local Groundwater Well Supplies from Excavations (Proposed Project)	Chapter 4,9	› We are satisfied that the Proposed Project will not impact in any significant way on any potential down-gradient private wells for the following reasons: › The large set back distances between proposed turbine and borrow pit locations and downstream potential well locations (>580m); › The short groundwater flowpath distances (30 – 300m); › The Proposed Project will involve relatively shallow excavations (3.5m -8mbgl) which are typically located on elevated ground where thereby lessens the true depth of the excavation; › The moderate - low permeability of the glacial deposits in which the turbine gravity base foundations will be constructed; › The low permeability and low recharge characteristics of the underlying SILTSTONE/SANDSTONE aquifer that underlies the Proposed Wind Farm site;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Localised groundwater flow patterns in the glacial deposits which is towards local streams that flow through the Proposed Wind Farm site; › Groundwater flow patterns are expected towards the internal watercourses that drain the Proposed Wind Farm site; and, › The shallow excavation depths required for Proposed Grid Connection cable.		
MM123	Effects on Downstream Freshwater Pearl Mussel Populations (Proposed Grid Connection)	Chapter 9	› Avoidance of instream works at the proposed 11 no. EPA watercourse crossing locations › Pre-commencement temporary drainage works; › Management of spoil during earthworks along the cable route trenching works › Best practice measures with regard use of oils, fuels and cement based compounds.		
MM124	Biodiversity Management and Enhancement Plan (BMEP) and Potential Hydrological/Water Quality Effects	Chapter 9 BMEP	› 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 Wind Farm site will be walked before a machine goes off-road; › Bog mats will be used where the excavator is required to travel over wet ground; and, › A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils.		
Operational Phase					
MM125	Removal of Vegetation Cover and Progressive Replacement of Natural Surface with Low Permeability	Chapter 4, 9	› Interceptor drains will be maintained up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It will then be directed to areas where it will be re-distributed over the ground by means of a level spreader; › Swales/road side drains will be used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channel it to settlement ponds for sediment settling;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Surfaces (Proposed Wind Farm)		› On steep sections of access road transverse drains ('grips') will be constructed in the surface layer of the road to divert any runoff off the road into swales/road side drains; › Check dams will be used along sections of access road drains to intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock; › Settlement ponds, emplaced downstream of road swale sections and at turbine locations, will buffer volumes of runoff discharging from the drainage system during periods of high rainfall, by retaining water until the storm hydrograph has receded, thus reducing the hydraulic loading to watercourses; and, › Settlement ponds will be designed in consideration of the greenfield runoff rate.		
MM126	Runoff Resulting in Suspended Solids Entrainment in Surface Waters	Chapter 4, 9	› The mitigation measures outlined in MM125 and MM109 will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstand and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, checks dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment. › It is proposed that bedrock won from the on-site borrow pit (i.e. sandstone) will be used to construct the sub-base layer of proposed upgraded and new access roads, hardstand areas and turbine base areas. Once installed the subbase layer will be overlain by a clean capping layer of high-grade stone material which will be sourced from the borrow pit or local quarries.		
MM127	Potential Hydrological/Water Quality Effects on River Waterbody Drinking Water Supply Abstractions (Proposed Project)	Chapter 4, 9	› Mitigation for the protection of surface water during the operational phase of the Proposed Project will ensure the qualitative status of the receiving SWBs will not be altered by the Proposed Project. › The mitigation measures outlined in Sections MM103-MM127 will ensure all surface water runoff from upgraded roads and new road surfaces (including hardstand and turbine base areas) will be captured and treated prior to discharge/release. Settlement ponds, checks dams and buffered outfalls will prevent roads acting as preferential flowpaths by providing attenuation and water quality treatment.		
EIAR Chapter 10 Air Quality					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			Construction Phase		
MM129	Exhaust Emissions (Construction of Proposed Project Infrastructure, Transport to and from the Site)	Chapter 10	› 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. › The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the Site. Therefore, all wastes streams generated onsite will be deposited into a single waste skip which will be covered. 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 sorted into individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Site to reduce the emissions associated with vehicle movements. › Aggregate materials for the construction of the Proposed Wind Farm infrastructure will be predominantly sourced onsite.		
MM130	Dust Emissions (Construction of Proposed Project Infrastructure, Transport to and from the Site)	Chapter 10 CEMP	› Relevant mitigation measures outlined in Section MM55.		
			Operational Phase		
MM131	Exhaust Emissions (Construction of Proposed Project	Chapter 10	› Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise. › When stationary, delivery and onsite vehicles will be required to turn off engines.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
	Infrastructure, Transport to and from the Site)		› 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 Site to reduce the emissions associated with vehicle movements.		
MM132	Dust Emissions: Proposed Project Infrastructure	Chapter 10	› Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any dust emissions that arise. › 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 site to reduce the emissions associated with vehicle movements.		
EIAR Chapter 11 Climate					
Construction Phase					
MM134	Greenhouse Gas Emissions	Chapter 11	› 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 Material Assets for details. › It is intended to obtain the materials for the construction of the Proposed Wind Farm site from local licenced quarries. › 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-X) will be in place throughout the construction phase.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The CEMP (Appendix 4-X) includes a Waste Management Plant (WMP) 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 4.4.6 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. › Aggregate materials for the construction of the Proposed Project will be obtained from local appropriately authorised quarries, for the purposes of this assessment 6 no. existing, authorised quarries, located within 20km of the Proposed Wind Farm site have been selected. This will reduce journey distances of the delivery vehicles accessing the site, thereby reducing the amount of emissions associated with vehicle movements. › Where applicable, low carbon intensive construction materials will be sourced and utilised onsite		
Operational Phase					
MM135	Greenhouse Gas Emissions	Chapter 11	› Ensure that all maintenance and monitoring vehicles will be maintained in good operational order while onsite, and, when stationary, be required to turn off engines thereby minimising any emissions that arise.		
EIAR Chapter 12 Noise & Vibration					
Construction Phase					
MM137	Construction Phase Noise	Chapter 12	The contract documents will specify that the Contractor undertaking the construction works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			open sites – Noise' and BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Vibration'. The following best practice mitigation measures from these documents will be implemented as required for the duration of the construction and decommissioning phases: › 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; › Monitoring typical levels of noise and vibration during critical periods and at sensitive locations; › Selection of plant with low inherent potential for generation of noise and/ or vibration where practical; › Placing of noise generating / vibratory plant as far away from sensitive receptors as practical within the site constraints, and; › The hours of construction activity will be limited to avoid unsociable hours where possible. Works operations shall generally be restricted to between 7:00hrs and 19:00hrs Monday to Saturday. However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e. concrete pours, turbine component deliveries) it could occasionally be necessary to work out of these hours. And more specifically: › The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. › Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. › Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Any plant, such as generators or pumps, which is required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen as appropriate. Air overpressure from a blast is difficult to control, however, because of its variability much can be done to reduce the effect. A reduction in the amount of primer cord used, together with the adequate burial of any that is above the ground, can give dramatic reduction to air overpressure intensities especially in the audible frequency range. Most complaints are likely to be received from an area downwind of the blast site, and therefore, if air blast complaints are a continual problem, it would be advisable to postpone blasting during unfavourable weather conditions if possible. As air blast intensity is a function of total charge weight, then a reduction in the total amount of explosives used can also reduce the air overpressure value. Further guidance will be obtained from the recommendations contained within BS 5228: Part 1 and the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1988 in relation to blasting operations. The methods used to minimise impacts will consist of the following: › Restriction of hours within which blasting can be conducted (e.g. 09:00 – 18:00hrs). › The firing of blasts at similar times to reduce the 'startle' effect. › On-going circulars informing people of the progress of the works. › The implementation of an onsite documented complaints procedure. › The use of independent monitoring for verification of results. › Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence.		
MM138	Construction Phase Vibration	Chapter 12	› Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage, these limits may need to be reduced by up to 50%.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM139	Noise Compliance Monitoring Plan	Chapter 12	› Prior to the commissioning of the wind farm, the developer will submit a Noise Compliance Monitoring Plan (NCMP) to the planning authority for written agreement. The NCMP will include a detailed methodology for the noise measurements, procedures for recording results and locations at which noise is to be monitored.		
			Operational Phase		
MM140	Wind Turbine Noise	Chapter 12	› In the unlikely event that an issue with low frequency noise is associated with the Proposed Project, it is recommended that an appropriate detailed investigation be undertaken. › Due consideration should be given to guidance on conducting such an investigation which is outlined in Appendix VI of the EPA document entitled 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities ' (NG4) (EPA, 2016). › This guidance is based on the threshold values outlined in the Salford University document 'Procedure for the assessment of low frequency noise complaints, Revision 1, December 2011'.		
MM141	Amplitude Modulation and Tonality	Chapter 12	› In the event that a complaint which indicates potential excessive amplitude modulation (AM) associated with the proposed project, the operator will fully investigate the complaint in collaboration with the turbine manufacturer, through review of the meteorological periods and conditions during which the reported AM occurs. If an ongoing issue with excessive AM is identified, a mitigation strategy to reduce the level of AM will be implemented through engineering methods and/or curtailment of specific turbines. The operator may appoint a qualified acoustic consultant to objectively assess the level of AM in accordance with the methods outlined in the IOA AMWG or subsequent revisions. › The measurement method outlined in the IOA AMWG document, known as the 'Reference Method', will provide a robust and reliable indicator of AM and yield important objective information on the frequency and duration of occurrence, which can be used to evaluate different operational conditions including methods to mitigate any excessive AM. These mitigation measures, if required, will consist of the implementation of operational controls for the relevant turbine type, which will include turbine curtailment under specific operational conditions and may in very unlikely circumstance require		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			turning specific turbine off under certain conditions. To minimise adverse impacts from excessive AM associated with the proposed project. › If the complaints suggest the potential occurrence of clearly audible tonality in the wind turbine noise, the audibility of the tones will be investigated from measured data with a robust, objective method such as that included in ISO 1996-2:2017 with modifications in IEC 61400-11-2. If the rated level of the wind farm is above the limit, then the operator would liaise with the turbine manufacturer to investigate and implement measures to reduce the rated level to below the limit. This may involve engineering methods, operational changes and/or (in very unlikely circumstance) curtailment of specific turbines. › The commitment outlined to control amplitude modulation (AM) from wind turbines are considered best practice. The proposed approach will ensure that any adverse impacts from excessive amplitude modulation (AM) associated with the operation of the proposed project are effectively managed by the operator		
MM142	Fixed Plant	Chapter 12	› the selection and location of mechanical and electrical plant will be undertaken in order to ensure the noise emission limits set out above are not exceeded. › all mechanical plant items e.g. fans, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised. › any new or replacement mechanical plant items, including plant located inside, shall be designed so that all noise emissions from site do not exceed the noise limits. › there are no tonal or impulsive characteristics from the plant operation audible at any NSL during night time periods		
EIAR Chapter 13 Landscape & Visual					
Pre-Commencement, Construction, Operation and Decommissioning					
MM144	Landscape & Visual Effects	Chapter 13	› In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. › 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			The following measures have been included in the Proposed Wind Farm design in order to avoid or reduce direct effects on landscape receptors (individual landscape features and the landscape character of the Proposed Wind Farm site as a whole) on the Proposed Wind Farm site: › The internal site road layout makes use of the existing roads wherever possible, to minimise the requirement for new tracks within the Proposed Wind Farm site. › To minimise cut and fill activities required to construct the Proposed Wind Farm, the proposed access roads, and other infrastructure such as hardstands have been designed to align with the existing terrain within the landscape of the Proposed Wind Farm site. › In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible. › During initial vegetation stripping, all topsoil material will be temporarily stored on the Proposed Wind Farm site and used for 'landscaping' the edges of the development infrastructure during reinstatement/regrading, including that of the peat and spoil management areas and proposed borrow pits. This will be particularly important in areas of cut and fill. The stripped topsoil will contain a natural seed source of local provenance and result in the re-establishment of baseline vegetation. › The layout and design of the Proposed Wind Farm has been designed to ensure minimal loss of valuable landscape receptors and biodiversity corridors such as woodland and hedgerows along field boundaries. › A *Biodiversity Management and Enhancement Plan* (BMEP) has been prepared as part of this EIAR and is included as *Appendix 6-4* to this EIAR. Enhancemnet measures included in the BMEP will have a dual effect of providing ecological enhancement to the area as well as screening of some Proposed Wind Farm site infrastructure, thereby providing a mitigating effect on landscape. The following measures proposed in the BMEP that will also have a mitigating effect on landscape areas are as follows: ○ Planting of 0.54ha of native broadleaf trees to establish new a biodiversity area that will connect to an existing area of native woodland, with ongoing management and monitoring;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			○ Restoration of 5.3h of peatland which will result in the enhancement of wet heath habitat on the Proposed Wind Farm site; ○ Management of peatland restoration area for invasives species, particularly Rhododendron and self-seeding conifer trees, for the operational life of the Proposed Project; and, ○ A grazing regime will be implemented to manage the purple moor grass (*Molinia caerulea)* and bracken *(Pteridium aquilinum)* density within the peatland restoration area.		
EIAR Chapter 14 Cultural Heritage					
Pre-Construction					
MM145	Construction Phase (Indirect and Direct)	EIAR Chapter 14 Section 14.4.3.	› Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at greenfield locations of the Proposed Wind Farm site, including the location of the proposed turbine hardstands, proposed temporary construction compounds, proposed borrows pit and along the proposed access roads. These works will include targeted test trenching of CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DoHLGH.		
MM146	Construction Phase (Indirect and Direct)	Chapter 14	› A pre-construction survey of CH07, CH08, CH13 and CH55 will be carried out, resulting in the compilation of a detailed photographic and written record. This will be carried out by a suitably qualified archaeologist. A record is not required for CH18, the former butter road.		
Construction Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM147	Construction Phase (Indirect and Direct)	EIAR Chapter 14 Section 14.4.3.	› Archaeological monitoring of topsoil stripping will be carried out at locations where test trenching is not possible (e.g. areas of forestry). Additionally, the sections of Proposed Grid Connection that passes through the Zones of Notification of AH36 and AH222/BH01 will be subject to archaeological monitoring, as will all works at the locations of AH58/TB02 and CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. If archaeological remains are identified during the course of these works further mitigation may be required, such as preservation by record or in-situ. Any further mitigation will require agreement from the DoHLGH.		
EIAR Chapter 15 Material Assets					
Material Assets - Traffic					
Pre-Construction, Construction and Operation					
MM148	Delivery of abnormal sized 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 112 abnormal sized loads will be delivered to the Site, comprising 38 convoys of 3 vehicles, undertaken over 38 separate nights. › These nights will be spread out over an approximate period of 8 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.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM149	Traffic Management Plan	Chapter 15	A detailed **Traffic Management Plan (TMP)** will be provided specifying details relating to traffic management and included in the CEMP prior to the commencement of the construction phase of the Proposed Project. The TMP will be agreed with the local authority and An Garda Síochána prior to construction works commencing onsite. 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 Cork County Council in advance of deliveries of turbine components to the Site. 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 Site. › **Information to locals** – Locals in the area will be informed of any upcoming traffic related matters e.g. temporary lane/road closures (where required) or 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 can 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. › **Diversion routes during grid construction –** The identification and agreement with suitable diversion routes during the construction of the Proposed Grid Connection.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› **Liaison with the relevant local authority** - Liaison with Cork 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 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. In addition, in order to minimise the impact on the existing environment during turbine component deliveries the option of blade adaptor trailers will also be used where deemed practicable. › **Identification of delivery routes** – These routes will be agreed with Cork 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 4-3. › **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers		
Material Assets - Other					
Pre-Constructions Phase					

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
MM151	Telecommunications	Chapter 15	› Consultation regarding the potential for electromagnetic interference from the Proposed Project was carried out with the relevant national and regional broadcasters, fixed line and mobile telephone operators and other operators, which confirmed that no turbines are proposed within the areas requested to be left clear of turbines. The Proposed Project will have an imperceptible effect on telecommunications.		
MM152	Aviation	Chapter 15	As no impacts were identified by IAA or DoD, no mitigation measures are required. However, the following IAA and DoD requests will be complied with should the Proposed Project be consented: **Irish Aviation Authority** › Agree an aeronautical obstacle warning light scheme for the wind farm development › Provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and › Notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection. **Department of Defence** › All turbines should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or, if LED or other types are used, of a type visible to Night Vision equipment. Obstacle lighting used must emit light at the near InfraRed (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.		
MM153	Existing and Built Services and Utilities	Chapter 15	› The Proposed Project has been designed to avoid identified services and utilities where insofar as possible. › Prior to commencement of construction detailed site investigations will be carried out to confirm design assumptions and undertake additional surveys to identify any new services and utilities and ensure they will not be impacted by the Proposed Project.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› The construction of the Proposed Grid Connection would also be subject to a Road Opening Licence (ROL). The timing of these works would therefore be controlled by the ROL process with the relevant Local Authority.		
			Construction Phase		
MM154	Telecommunications	Chapter 15	› In the event of interference occurring to telecommunications, the Guidelines (DoEHLG, 2006) acknowledge that 'electromagnetic interference can be overcome' through the use of divertor relay links out of line with the wind farm. › A signed protocol agreement between 2RN and the applicant can be found in Appendix 15-4. The protocol document ensures that in the event of any interference occurring to television or radio reception due to operation of the wind farm, the required measures, as set out in the document, will be carried out by the applicant to rectify this. The protocol document ensures that the appropriate mitigation is carried out in the event of unanticipated broadcast interference arising to television or radio reception as a result of the Proposed Wind Farm.		
			Operational Phase		
MM155	Existing and Built Services	Chapter 15	› 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 › 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. All staff will be trained to be aware 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 the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Prior to the delivery of turbines to the Proposed Wind Farm site, a dry run of the route using vehicles with similar dimensions will occur. Please see Section 15.1.8 above 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. › Prior to construction, the Applicant will engage with GNI via the 'Dial Before You Dig' procedure online. GNI will be contacted on 1800 42 77 47 before excavating near the identified high-pressure pipeline. Furthermore, the 'Safety advice for working in the		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			vicinity of natural gas pipelines' guidance document and the GNI 'Code of Practice' standards will be adhered to during all proposed works along the Proposed Grid Connection in vicinity of the high-pressure pipeline and the telecommunication lines. › The developer will also carry out further consultation in the pre-construction phase and construction phase with GNI to confirm the crossing methodology to be deployed and to ensure that no new service crossings have been implemented. Furthermore, site investigation will be undertaken post planning grant and results will be shared with GNI as part of the Design Review process prior to construction. › 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.		
Natura Impact Statement (NIS)					
Construction Phase					
MM157	Construction Phase	NIS	Mitigations to be applied for works throughout the Proposed Grid Connection Pre-commencement Temporary Drainage Works: › Prior to the commencement of substation, cable trenching, access road or end mast works the following key temporary drainage measures shall be installed: › All existing roadside drains (where present) that intercept the proposed works area shall be temporarily blocked down-gradient of the works using check dams/silt traps;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› Culverts, manholes and other drainage inlets (where present) shall also be temporarily blocked; › A double silt fence perimeter shall be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone. › The following mitigation measures are proposed for the underground cabling watercourse crossing works: › No stock-piling of construction materials shall take place along the grid route; › No refuelling of machinery or overnight parking of machinery shall be permitted in this area; › No concrete truck chute cleaning shall be permitted in this area; › Works shall not take place at periods of high rainfall, and shall be scaled back or suspended if heavy rain is forecast; › Local road drainage, culverts and manholes shall be temporarily blocked during the works; › Machinery deliveries shall be arranged using existing structures along the public road; › All machinery operations shall take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or shall occur; › Any excess construction material shall be immediately removed from the area and sent to a licenced waste facility; › No stockpiling of materials shall be permitted in the constraint zones; › Spill kits shall be available in each item of plant required to complete the stream crossing; and, › Silt fencing shall be erected on ground sloping towards watercourses at the stream crossings if required. Fracture Blow-out (Frac-out) Prevention and Contingency Plan: › The drilling fluid/bentonite shall be non-toxic and naturally biodegradable (i.e. Clear Bore Drilling Fluid or similar shall be used); › The area around the drilling fluid batching, pumping and recycling plants shall be bunded using terram and/or sandbags to contain any potential spillage;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› One or more lines of silt fencing shall be placed between the works area and the adjacent river; › Spills of drilling fluid shall be cleaned up immediately and transported off-site for disposal at a licensed facility; › Adequately sized skips shall be used where temporary storage of arisings are required; › The drilling process / pressure shall be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse; › This shall be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling shall be immediately stopped; › Any frac-out material shall be contained and removed off-site; › The drilling location shall 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 shall be sought at the crossing location.		
MM157	Construction Phase	NIS	Mitigations to be applied for works throughout the Proposed Grid Connection Pre-commencement Temporary Drainage Works: › Prior to the commencement of substation, cable trenching, access road or end mast works the following key temporary drainage measures shall be installed: › All existing roadside drains (where present) that intercept the proposed works area shall be temporarily blocked down-gradient of the works using check dams/silt traps; › Culverts, manholes and other drainage inlets (where present) shall also be temporarily blocked; › A double silt fence perimeter shall be placed along the road verge on the down-slope side of works areas that are located inside the watercourse 50m buffer zone. › The following mitigation measures are proposed for the underground cabling watercourse crossing works: › No stock-piling of construction materials shall take place along the grid route;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› No refuelling of machinery or overnight parking of machinery shall be permitted in this area; › No concrete truck chute cleaning shall be permitted in this area; › Works shall not take place at periods of high rainfall, and shall be scaled back or suspended if heavy rain is forecast; › Local road drainage, culverts and manholes shall be temporarily blocked during the works; › Machinery deliveries shall be arranged using existing structures along the public road; › All machinery operations shall take place away from the stream and ditch banks, apart from where crossings occur. Although no instream works are proposed or shall occur; › Any excess construction material shall be immediately removed from the area and sent to a licenced waste facility; › No stockpiling of materials shall be permitted in the constraint zones; › Spill kits shall be available in each item of plant required to complete the stream crossing; and, › Silt fencing shall be erected on ground sloping towards watercourses at the stream crossings if required. Fracture Blow-out (Frac-out) Prevention and Contingency Plan: › The drilling fluid/bentonite shall be non-toxic and naturally biodegradable (i.e. Clear Bore Drilling Fluid or similar shall be used); › The area around the drilling fluid batching, pumping and recycling plants shall be bunded using terram and/or sandbags to contain any potential spillage; › One or more lines of silt fencing shall be placed between the works area and the adjacent river; › Spills of drilling fluid shall be cleaned up immediately and transported off-site for disposal at a licensed facility; › Adequately sized skips shall be used where temporary storage of arisings are required; › The drilling process / pressure shall be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse;		

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Audit Result	Action Required
			› This shall be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur then drilling shall be immediately stopped; › Any frac-out material shall be contained and removed off-site; › The drilling location shall 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 shall be sought at the crossing location.		
Operational Phase					
MM158	Operational Phase	NIS	Should the need for works along the Proposed Grid Connection arise, any works will be undertaken in line with the mitigation outlined for the construction phase of the Proposed Grid Connection.		

8. MONITORING PROPOSALS

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

This section of the Construction and Environment Management Plan groups together all of the monitoring proposals presented in the EIAR. The monitoring proposals are presented in the following pages. The monitoring proposals are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures. Decommissioning Phase monitoring measures are not included in the table below, however, can be viewed in Appendix 4-6 (Decommissioning Plan) of this EIAR.

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	Water Quality and Monitoring	CEMP, Section 4	› Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the Site. › Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken at designated locations within the Site. › Baseline sampling will be completed on at least two occasions, and these should ideally 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. › An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works.	As required	As Necessary	ECoW
MX2	Potential Effects on Badgers	Chapter 6	› 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.	As required	As Necessary	Appropriately Qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› A confirmatory survey for badger will be carried out by an appropriately qualified ecologist no more than 10 months in advance of commencement of construction. The requirement for a confirmatory survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the baseline surveys. › 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			
MX3	Potential Effects on Otters	Chapter 6 Appendix 6-3	› A pre-commencement survey for otter will be undertaken within 150m upstream and downstream of the proposed new 5 no. new watercourse crossings, and 3.no existing watercourse crossings that require upgrading within the Proposed Wind Farm site in advance of commencement of works in order to confirm whether the baseline survey conditions remain the same. › 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. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of the survey will be to assess any changes in baseline conditions since the time of undertaking the baseline surveys. › Otter surveys were conducted as per TII (2008) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (PE-ENV-01113)).	As necessary	As required	Appropriately Qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› This involved a search for all Otter signs, e.g., spraint, scat, prints, slides, trails, couches and holts both upstream and downstream of proposed survey sites. › Within the Proposed Wind Farm study area, otter surveys were conducted 150m upstream and downstream of all survey points. › Due to the small-scale nature of works proposed to be undertaken along the Proposed Grid Connection, as well as high levels of disturbance from the existing road, Otter surveys were conducted in the vicinity of the Proposed Grid Connection survey sites. › In addition to the width of the rivers, a 10m riparian buffer (both banks) is considered to comprise part of the Otter habitat (NPWS 2009. Threat Response Plan: Otter (2009-2011).			
MX4	Electrofishing Surveys	Appendix 6-3	› A 5- or 10-minute timed electrofishing survey was undertaken at each of the survey sites, to determine the presence/absence of fish species within the Proposed Wind Farm study area while adhering to best practice methodology (Electric Fishing in Wadeable Reaches, Central Fisheries Board (CFB, 2008)), as well as European standards for electrofishing (CEN, 2003). Two suitably qualified ecologists conducted electro-fishing operations at the electro-fishing locations as per Fig 1-1, using an E-fish EF-500B-SYS Electric Fishing Backpack System.	As necessary	As required	Suitably Qualified Ecologist
MX5	Macroinvertebrate Surveys	Appendix 6-3	› A two-minute kick-sample and stone-wash, as well as a 1 min hand search of larger substrata or organic material (e.g., submerged tree limbs/vegetation) was performed at each of the survey sites, as per methodology used by the Environmental Protection Agency (EPA) as part of the Water Framework	As necessary	As required	Suitably Qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Directive (WFD) River Monitoring Programme (Toner et al., 2005).			
MX6	Potential Effects on Pine Marten and Red Squirrel	Chapter 6	Prior to the commencement of construction works, the following measures will be undertaken for the avoidance of disturbance and to ensure no dreys or dens have been established since the original surveys undertaken. The following measures are in line with Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (TII 2009): › From a precautionary basis, a pre-commencement survey will be undertaken by a qualified ecologist in accordance with standard best practice guidance prior to the commencement of site works to ensure that no red squirrel dreys or pine marten dens are present within or in close proximity to Proposed Project infrastructure footprint. › In the event that a red squirrel drey or pine marten den is identified within the Proposed Project footprint during pre-commencement surveys, further surveys will be undertaken to ascertain whether the drey/den is in use. A Species Protection Plan as agreed by the project ecologist will be put in place in advance of felling works.	As necessary	As required	Suitably Qualified Ecologist
MX7	Biosecurity Measures (Crayfish)	Chapter 6 Appendix 6-3	› Any instance of invasive species was recorded and conveyed to IFI via electrofishing data returns.	As necessary	As required	Suitably qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX8	eDNA Surveys	Appendix 6-3	› eDNA sampling for both freshwater pearl mussel (FPM) and white-clawed crayfish (WcC) were undertaken in select watercourses within the Proposed Wind Farm and Proposed Grid Connection study areas in June 2024, with eDNA sampling conducted at 12 no. Proposed Wind Farm survey sites and 9 no. Proposed Grid Connection route survey sites. › To detect populations FPM and WcC, or the presence of Crayfish Plague within the Proposed Wind Farm study area or Proposed Grid Connection study area, a composite water sample was collected from the watercourse at each of the selected eDNA survey sites in July 2024 and analysed for FPM, WcC and Crayfish Plague. eDNA survey sites were strategically chosen to maximise longitudinal (instream) coverage within the catchment, facilitating the likelihood of species detection. › Each composite (500ml) water sample was collected from each watercourse, with 20 x 25ml samples taken along the watercourse, for a representative geographic spread at the survey site. The composite sample was filtered and fixed on site using a sterile proprietary eDNA sampling kit. The sample was stored at room temperature and sent to the laboratory for analysis following return from the survey sites. › Given the high sensitivity of eDNA analysis, a single positive qPCR replicate is considered as proof of the species' presence. Whilst an eDNA approach is not currently quantitative, the detection of the target species' DNA indicates the presence of the species at and or upstream of the sampling point.	As necessary	As required	Suitably qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX9	Potential Effects on the Kerry Slug	Appendix 6-4	› Known locations of Kerry Slug identified from the pre-commencement survey efforts will be marked off by an appointed qualified/licenced ecologist. This will help avoid inadvertent encroachment of machinery into known Kerry Slug habitat.	As necessary	As required	Suitably qualified Ecologist
MX10	Bird Monitoring Programme	Appendix 7-7	› Pre-commencement confirmatory surveys will be undertaken prior to the initiation of works at the Site. 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 core 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 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 (Forestry Commission Scotland, 2006; Goodship and Furness 2022).	Monthly	Monthly	Suitably Qualified Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› No works shall be permitted within the buffer until it can be demonstrated that the roost or nest is no longer occupied. Special attention should be given to the areas of chough activity, particularly in the region between the turbine clusters where there will be road construction works.			
MX11	Effects on Cultural Heritage	Chapter 14	› Prior to the commencement of construction, a programme of archaeological test trenching will be carried out at greenfield locations of the Proposed Wind Farm site, including the location of the proposed turbine hardstands, proposed temporary construction compounds, proposed borrows pit and along the proposed access roads. These works will include targeted test trenching of CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. › Dependent on the results of the testing assessment, further mitigation may be required, such as preservation by record or in-situ and/or archaeological monitoring. Any further mitigation will require agreement from the DoHLGH. › A large portion of the Proposed Wind Farm site is dominated by forestry, which is not suitable for archaeological test trenching. Archaeological monitoring of topsoil stripping will be carried out at these locations. Additionally, the sections of Proposed Grid Connection that passes through the Zones of Notification of AH36 and AH222/BH01 will be subject to archaeological monitoring, as will all works at the locations of AH58/TB02 and CH55. This work will be carried out under licence to the National Monuments Service of the DoHLGH. If archaeological remains are identified during the course of these works further mitigation may be required, such as preservation by record or in-	As necessary	As required	Suitably Qualified Archaeologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			situ. Any further mitigation will require agreement from the DoHLGH.			
			Construction Phase			
MX12	Tree Felling Drainage Monitoring	Chapter 4 CEMP, Section 3	› 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. › 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;	Daily and Weekly	Weekly	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Checking and maintenance of roads and culverts will be on-going through the felling operation;			
MX13	Underground Cabling Watercourse Crossing Works	Chapter 9	› Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter is discharged to the watercourse;	Daily	Daily	ECoW
MX14	Potential Hydrological/Water Quality Effects on River Waterbody Drinking Water Supply Abstractions (Proposed Project)	Chapter 9	› 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 ECoW to make on the spot checks. Corrective measures will be carried out as appropriate (i.e. silt build-up removal or replacement/upgrade works) in the event treatment is ineffective.	Daily	Daily	ECoW
MX15	Clear Felling of Coniferous Plantation and Potential Surface Water Quality Effects	Chapter 9	The following items shall be carried out during pre-felling inspections and after: › Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines; › Inspection of all areas reported as having unusual ground conditions; › Inspection of main drainage ditches and outfalls. During pre-felling inspections the main drainage ditches shall be identified.	Monthly	Monthly	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Ideally the pre-felling inspection shall be carried out during rainfall; › Following tree felling all main drains shall be inspected to ensure that they are functioning; › Extraction tracks nears drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground; › Culverts on drains exiting the site will be unblocked; and, › All accumulated silt will be removed from drains and culverts, and silt traps, and this removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall.			
MX16	Water Quality and Monitoring (Daily Visual Inspections)	CEMP, Section 4	› 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. › During the construction phase, field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs shall be undertaken for each primary watercourse along the Proposed Grid Connection and within the Proposed Wind Farm site, 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.	Daily	Weekly	Project Hydrologist & ECoW as required

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› 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;			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› 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.			
MX17	Water Quality and Monitoring (Continuous Turbidity Monitoring)	CEMP, Section 4	› 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.	On going	As required	ECoW
MX18	Water Quality and Monitoring (Laboratory Analysis)	CEMP, Section 4	› Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs shall be undertaken as per water monitoring programme for the Proposed Project. This will not be restricted to just these locations around the proposed renewable energy development 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 shall be undertaken for each primary watercourse along the Proposed Grid Connection and within the Proposed Wind Farm site, and specifically following heavy rainfall events (i.e. weekly, monthly and event based).	As necessary	As required	ECoW
MX19	Water Quality and Monitoring (Field Monitoring)	CEMP, Section 4	› Field chemistry measurements of unstable parameters, (pH, conductivity, temperature) will be taken at the surface water monitoring locations, as per water monitoring programme for	As necessary	As required	Project Hydrologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			the Proposed Project and each primary watercourse along the Proposed Grid Connection underground cabling route. › These analyses will be carried out by either the ECoW or the Project Hydrologist. › 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.			
MX20	Construction Phase Drainage Inspections & Maintenance	CEMP, Section 4	› Regular inspections of all existing and installed drainage measures shall 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 shall 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 shall 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.	Weekly	Weekly	Project Contractor

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› 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.			
MX21	Surface Water Monitoring Reporting	CEMP, Section 4	› Visual inspection and laboratory analysis results of 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.	As necessary	As required	ECoW
MX22	Peat and Spoil Management (Construction and Reinstatement of Borrow Pits)	PSMP	› 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.	As necessary	As required	Project Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› In order to maximise the storage capacity, a perimeter berm will be required along the lower edge of the borrow pits. The berm will be constructed of rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for the perimeter berm will be intact bedrock and will be inspected and approved by the Project Geotechnical Engineer. › It will be necessary to construct internal rock buttresses founded on in-situ rock within borrow pits 3 and 4 to create individual cells (either 1 or 2 no.). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of rock fill from the borrow pit excavation, placed and compacted in layers. The founding stratum for each rock buttress will be intact bedrock and will be inspected and approved by the Project Geotechnical Engineer. › Supervision by the Project Geotechnical Engineer is required for the development of the borrow pits.			
MX23	Peat and Spoil Management (Designated Peat and Spoil Management Areas alongside Access Roads/Clearfell Areas)	PSMP	› 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 is required for the works.	As necessary	As required	Project Geotechnical Engineer
MX24	Peat and Spoil Management (General	PSMP	› Installation and regular monitoring of geotechnical instrumentation during construction in areas of possible poor ground, such as deeper peat deposits	Monthly	Monthly	Project Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
	Commitments for Good Construction Practice)		› Site reporting procedures will be implemented to ensure that working practices are suitable for the encountered ground conditions. Ground conditions to be assessed by suitably experienced geotechnical engineer. › Regular briefing of all site staff (e.g. toolbox talks) to provide feedback on construction and ground performance and to promote reporting of any observed change in ground conditions. › Routine inspection of the Proposed Wind Farm by the Contractor and Project Geotechnical Engineer will be undertaken and will include an assessment of ground stability conditions (e.g. cracking, excessive floating road settlement, disrupted surface, closed-up drains) and drainage conditions (e.g. blocked drains, absence of water in previously flowing drains, springs, etc).			
MX25	Movement Monitoring Posts	PSMP	To monitor possible peat movements, it is proposed to install sighting posts upslope and downslope of the access roads and turbine hardstands at staggered intervals at locations where the peat depth is greater than 1.5m.Additional monitoring locations will be required at infrastructure locations with deeper peat deposits, as determined by the Designer or Project Geotechnical Engineer. Details of sighting posts are given below: › A line of sighting posts will comprise: › A line of wooden stakes (typically 1 to 1.5m long) placed vertically into the peat to form a straight line. › The sighting line will comprise 6 no. posts at 5m centres that is a line some 25m long.	Daily	Daily	Project Geotechnical Engineer

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			○ A string line will be attached to the first and last posts and all intervening posts will be adjusted so they are just touching the string line. › Lines of sighting posts will be placed across the existing slope about 5m away from the area to be › worked. The posts will be located along the road at 10m intervals in areas of deep peat (say greater than 2.0m). Where there are relatively steeper slopes or softer ground a sighting line will be placed down the slope, or at any location where monitoring is deemed necessary by the Designer or the Project Geotechnical Engineer. › Each line of sighting posts will be uniquely referenced with each post in the line given a reference. › The post reference will be marked on each post (e.g. reference 1-1, 1-2, 1-3, 1-4, 1-5, 1-6 for posts in line 1). › The sighting lines will be monitored at the beginning of each working day, and during the day where considered appropriate (e.g. when working activity is concentrated at a specific location) or following heavy/prolonged rainfall. › Monitoring of the posts will comprise sighting along the line and recording any relative movement of posts from the string line. › Where increased movements are recorded the frequency of monitoring will be increased, or works in the area restricted until movement ceases. › A monitoring record will be kept of the date, time and relative movement of each post, if any. This record will be updated and stored as a spreadsheet. Where there is excessive movement or continuing peat movement recorded at a monitoring location or identified at any location within			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			the Site but no apparent signs of distress to the peat (e.g. cracking, surface rippling) then the following will be carried out: › All activities (if any) will cease within the affected area. › Increased monitoring at the location will be carried out. The area will be monitored until such time as movements have ceased. › Re-commencement of activities will only start following a cessation of movement and agreement with all parties (Contractor/Engineer/Designer).			
MX26	Kerry Slug Monitoring Programme	Chapter 6 Appendix 6-4 BMEP	› The Kerry Slug population on the Site will be monitored to assess the success of the above enhancement measures and provide data on Kerry Slug in the area. Monitoring of Kerry Slug in the areas adjacent to the site works will be undertaken to provide a before and after impact assessment. This will ensure that populations remain stable post-construction. These surveys will be carried out during optimal weather conditions (mild, damp, overcast and not excessively windy) by suitably qualified professionals. They will follow McDonnell & Gormally (2011) and involve both hand searching and metric refuge trapping and will be carried out within the same locations as the search and translocation areas. › An EU Returns Form and a derogation report will be completed by the Applicant and returned to Wildlife Licencing Unit of the NPWS, detailing the results of the monitoring efforts, and search and translocation works, and address any corrective measures that might have been employed in the unlikely event of unforeseen circumstances.	As necessary	As required	Suitably qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX27	Spill Control	CEMP, Section 6	› 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 Cork 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	As required	As necessary	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX28	Dust Emissions (Construction of Proposed Project Infrastructure, Transport to and from the Site)	Chapter 10 CEMP	› The agreed haul route roads adjacent to the Site will be regularly inspected for cleanliness and cleaned as necessary. › The roads adjacent to the Proposed Wind Farn site entrance will be checked weekly for damage/potholes and repaired as necessary.	Weekly	As required	Site Supervisor/Construction Manager
MX29	Exhaust Emissions	Chapter 10	› 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 produce and follow a site inspection and machinery checklist which will be followed and updated if/when required.	As necessary	As required	Site Supervisor/Construction Manager
	Greenhouse Gas Emissions	Chapter 11	› 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.			
MX30	Construction Phase Noise	Chapter 12	› Monitoring typical levels of noise and vibration during critical periods and at sensitive locations;	As necessary	As required	ECoW
Operational Phase						
MX31	Wastewater management	Chapter 4	› The wastewater storage tank alarm will be part of a continuous stream of data from the Proposed Wind Farm turbines, wind	Continuous	Daily	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			measurement devices and proposed 110kV onsite substation that will be monitored remotely 24 hours a day, 7 days per week			
MX32	Shadow Flicker	Chapter 5	› Where daily or annual shadow flicker exceedances are predicted at any inhabitable or third-party dwelling of the identified 31 no. sensitive receptors, a site visit will be undertaken firstly to determine the presence of existing screening and window orientation at each potentially affected property. This will determine if the receptor has an actual line of sight to any turbine and actual potential for shadow flicker to occur. › In order to ensure that the model and SCADA system is accurate and working well a site visit will be carried out to verify the system	As necessary	As required	ECoW
MX33	Bats	Chapter 6 Appendix 6-2	**Lighting** › Post-construction monitoring will assess any potential for lighting-related impacts on bats. Significant effects as a result of lighting are not anticipated; however, if in the course of this monitoring, any potential for significant effects on bats is identified, the site-specific mitigation measures will be reviewed and any changes necessary will be implemented to avoid any such impacts. **Operational Monitoring** › To assess the effects of the Proposed Project on bat activity, at least 3 years of post-construction monitoring is proposed. Post-construction monitoring will include static detector surveys,	As necessary	As required	Suitably Qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			walked survey transects and corpse searching to record any bat fatalities resulting from collision. › The results of post-construction monitoring shall be utilised to assess any potential changes in bat activity patterns and to monitor the implementation of the mitigation strategy. If the monitoring identifies a curtailment requirement (i.e. significant bat fatalities encountered), a curtailment programme, in line with relevant guidelines, will be devised around key activity periods and weather parameters, as well as a potential increase in buffers. › At the end of each year, the efficacy of the mitigation and monitoring plan will be reviewed, and any identified efficiencies incorporated into the programme. This approach allows for an evidence-based review of the potential for bat fatalities at the Proposed Wind Farm, post construction, to ensure that the necessary measures, based on a new baseline post-construction, are implemented for the protection of bat species locally. The effectiveness of any mitigation or curtailment needs to be monitored in order to determine (a) whether it is working effectively (i.e. the level of bat mortality is incidental), and (b) whether the curtailment regime can be refined such that turbine down-time can be minimised whilst ensuring that it remains effective at preventing casualties. › The below subsections provide additional detail on the proposed survey effort, timing, and mitigation. **Monitoring Year 1** **Bat activity surveys**			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility

			› The post-construction surveys will be carried out as per the pre-construction survey effort. Static monitoring will take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). Full spectrum recording detectors will be utilised for the same duration as during pre-application surveys and at the same density (NatureScot, 2021). As described in Section 3.5 above, the assessment of bat activity levels will include the use of 'Ecobat' (or similar alternative), a web-based interface, allowing uploaded activity data to be contrasted with a comparable reference range, allowing objective and robust interpretation. Walked survey transects will also be conducted.
			› Key weather parameters and other factors that are known to influence collision risk will be monitored and shall include:
			  › Windspeed in m/s (measured at nacelle height)
			  › Temperature (ºC)
			  › Precipitation (mm/hr)
			
			Carcass searches
			
			› Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with NatureScot/NIEA Guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be applied in relation to determining an accurate estimate of collision mortality. Surveys should cover all activity seasons and the use of a trained dog detection team will be carried out to ensure maximum efficiency.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			Monitoring Years 2 & 3 › Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s). The performance of the curtailment programme in terms of its ability to respond to the changes in bat abundance based on temperature and wind speed shall be analysed to confirm it is neither significantly over- nor under- curtailing during different periods of bat activity. › At the end of each year, the efficacy of the mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. The requirement for continued post-construction monitoring will also be considered. Should no bat fatalities be recorded in Year 1, curtailment (where applicable) in Year 2 and Year 3 could be reduced/re-evaluated or removed with monitoring continuing to inform this strategy.			
MX34	Invasive Species Management (Rhododendron)	Chapter 6 Appendix 6-5: ISMP	› Ongoing monitoring will be required, with suitable follow-up management in order to control new growth or re-establishment of this species within the infested areas. › Following the initial treatment and completion of the Proposed Wind Farm site, 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.	Annually	Annually	ECoW, Suitably Qualified Ecologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› To confirm that the proposed Invasive Species Management has been successful, these habitats will be monitored by a qualified ecologist upon completion and at the following intervals: › Annually, until no invasive growth was recorded for two consecutive years › Surveys will be undertaken by a qualified ecologist › If invasive plants are found to be re-establishing, they shall be treated as per the measures outlined in this report.			
MX35	Native Woodland Management	Appendix 6-4: BEMP	› Replanted trees will be inspected following the main growing season (i.e. in September) for the first five years of growth, where the requirement for replacement planting will be assessed. If any trees are dead or damaged these will be replaced using the same species within the next planting season. Recommendations for ongoing or remedial management required will be specified within the Monitoring Report To confirm that the proposed habitat creation has been successful, these habitats will be monitored by a qualified ecologist upon completion and at the following intervals: › 1 Year, › 2 Years. › 3 Years, › 5 Years › 10 Years › 15 Years, › 20 Years › 30 Years	Annually, As required	Annually	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Three 10x10m permanent monitoring plots will be established within the enhancement target area post construction. Each year detailed botanical assessments (relevés) will be undertaken in these plots to assess the enhancement success. › Recommendations for ongoing or remedial management required will be specified within the Post-Construction Management Report.			
MX36	Potential Effects on the Kerry Slug	Appendix 6-4: BEMP	To confirm that the proposed habitat creation and Kerry Slug translocation have been successful, these habitats will be monitored by a qualified ecologist upon completion and at the following intervals: › 1 Year, › 2 Years. › 3 Years, Surveys will be carried in the enhancement areas by suitably qualified professionals, under licence. They will follow Mc Donnell & Gormally (2011) and involve both hand searching and metric refuge trapping and will be carried out in the same locations and roughly around the same time every year to allow a comparison between years. If monitoring demonstrates that the enhancement measures are unsuccessful, the measures will be reviewed, and additional methods will be explored.	Annually	Annually	Suitably Qualified Ecologist
MX37	Peatland Restoration	Appendix 6-4: BEMP	To confirm that the proposed habitat restoration and grazing prescription have been successful, these habitats will be monitored by a qualified ecologist upon completion and at the following intervals: › 1 Year, › 2 Years. › 3 Years, › 5 Years	Annually, As required	Annually	ECoW

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› 10 Years › 15 Years, › 20 Years › 30 Years › Five 2x2m permanent monitoring plots will be established within the enhancement target area post construction. Each monitoring year detailed botanical assessments (relevés) will be undertaken in these plots to assess the enhancement success. › Recommendations for ongoing or remedial management required will be specified within the Post-Construction Monitoring Report.			
MX38	Bird Monitoring Programme	Appendix 7-7	Operational monitoring will be undertaken in Years 1, 2, 3, 5, 10 and 15 of the lifetime of the Proposed Wind Farm, following SNH (2009) guidance. The surveys that will be undertaken are: › Vantage Point Surveys › Breeding Raptor and Chough Surveys › Breeding Red Grouse **Vantage Point Surveys** › Vantage point surveys will be undertaken to monitor flight activity within a 500m radius of the proposed turbines. The objective of the surveys is to provide information on bird use of the area and interactions with turbines after construction of the wind farm that can be compared to pre-planning data.	Annually, As required	Annually	Suitably Qualified Ornithologist

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Vantage point surveys will be conducted from seven fixed locations that were used during pre-planning surveys (VP2, VP3, VP4, VP5, VP7, VP8, and VP9) in order to provide complete coverage of all turbines. Should vantage point locations need to be moved, a viewshed analysis will be conducted to ensure there is still comprehensive coverage of the 500m radius of turbines at the new locations. Surveys will be conducted monthly. › Survey methodology should follow NatureScot (2025) and any revisions to the same. The surveyor should collect data on bird observations and flight activity from the scanning arc of 180° to a 2km radius at the fixed vantage point locations for two 3-hour watches separated by a minimum 30-minute break (i.e., 6 hours total) per month. Surveys should be spread over the full daylight period, including dawn and dusk watches to coincide with the highest periods of bird activity. Dusk surveys should end one hour after sunset and dawn surveys should begin one hour before sunrise. › Flight activity of target species will be mapped and recorded as per three defined flight bands chosen in relation to the dimensions of the turbines as built: below rotor swept height, at the rotor swept height and above rotor swept height. When a target species is detected, the location of the bird will be recorded on a map and the surveyor will provide the following details: time, species, number of birds, activity/behaviour, the primary habitat used (and secondary and tertiary habitat if applicable) and any other notes of interest. **Breeding Raptor and Chough Surveys**			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Breeding raptor and chough surveys will be undertaken to establish whether a breeding attempt was initiated and subsequently, whether it was successful. The objective of the surveys is to provide information on raptor and chough use of the area for breeding after construction of the wind farm that can be compared to their breeding activity in pre-planning data. › Pre-planning survey results should be used to inform the locations of these surveys and which species to target (suggested target species are chough, hen harrier, peregrine, kestrel, buzzard and sparrowhawk). A minimum of three survey locations is recommended, focused on the area within 500m of the turbine envelope. Three areas were identified as having breeding activity by chough and/or raptor species within this envelope during pre-planning surveys: one in the northern cluster of turbines, on in the southern cluster and one in the middle of the clusters. › Survey methods should follow Hardey et al. (2013), Gray et al. (2003) and Keribiou et al. (2009) or any revisions to the same or updated guidance. Up to four visits are necessary: (1) to establish breeding raptor or chough occupancy, (2), to establish if an active nest is present, (3) to check if young have hatched and (4) to check if young have fledged. During any visit, when a raptor or chough is detected, the location of the bird will be recorded on a map and the following details will be recorded: time, species, number of birds, breeding activity/behaviour, the primary habitat used (secondary and tertiary habitat if applicable) and any other notes of interest (such as male or female). **Breeding Red Grouse Surveys**			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			› Breeding red grouse surveys will be undertaken to establish whether this species is breeding in the area. The objective of the surveys is to provide information on red grouse use of the area for breeding after construction of the wind farm that can be compared to their breeding activity in pre-planning data. › Pre-planning surveys should inform the locations of the breeding red grouse surveys. Methodology should follow the National Red Grouse Survey method (Cummins et al., 2010). The surveyor should walk transects 150m apart throughout suitable bog and heath habitat within 500m of the turbine envelope, where access allows. Along the transect, the surveyor should stop every 100m to broadcast the lure for a maximum of 30 seconds and listen and watch for a response. › If a response from a red grouse occurs after a broadcast, the surveyor should map the location of the red grouse on a map and the following details should be provided for each map reference: time, transect number, number of birds detected, breeding activity and behaviour (including which one of the four responses to the broadcast occurred) and habitat (and secondary and tertiary habitat if necessary). During the survey, the surveyor also should record any indicators of red grouse (e.g. feathers and droppings). Red grouse tape and lure surveys are conducted under a National Parks and Wildlife Service license. **Collision Monitoring** › Monitoring for bird casualties as a result of collision with turbines will follow survey methods broadly based on guidelines issued by the SNH (2009) and search methods adopted by Duffy and Steward (2008). The study area will be visited once per			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
			month during operational Years 1, 2, 3, 5, 10 and 15 of the lifetime of the wind farm. During each visit, the base of each operating turbine will be searched for bird carcasses. The area to be searched will be based on the turbine size and surrounding landscape. A trained dog and handler should be used to locate carcasses. › If a bird carcass is found, the following details will be recorded: GPS location of each bird carcass, photographic record, carcass condition (intact - carcass that is completely intact or not badly composed; scavenged - evidence that the carcass was fed upon by a scavenger/predator; or feather spot - ten or more feathers indicating predation or scavenging or two or more primary feathers must be present to consider the carcass a casualty), distance from the turbine, date and time. › Carcass removal trials and searcher efficiency trials will be undertaken to account for the ability of the dog to find bird carcass and the likelihood of scavenging of carcass by animals. This is done to ensure a more accurate estimation of the total number of collision victims. During carcass removal trials, a carcass is placed in a study area periodically and is monitored for a set number of days or until scavengers remove the carcass. A determination on carcass removal is made when no body parts containing flesh or bone or >10 disarticulated feathers can be found. During searcher efficiency trials, a number of carcasses are placed in a study area by one worker, then searched for by the dog later. The result of these trials is a correction factor that can be applied to the results of the carcass searches.			

Ref. No.	Reference Heading	Reference Location	Mitigation Measure	Frequency	Reporting Period	Responsibility
MX39	Noise Compliance Monitoring Plan	Chapter 12	› Noise surveys will be undertaken to verify compliance with any noise conditions applied to the development. It is common practice to commence surveys within six months of a wind farm being commissioned. The guidance outlined in the IOA GPG and Supplementary Guidance Note 5: Post Completion Measurements (July 2014) will be implemented. › In the unlikely event that an exceedance of the noise criteria is identified as part of the commissioning assessment, relevant corrective actions will be taken. For example, implementation of noise reduced operational modes resulting in curtailment of turbine operation can be implemented for specific turbines in specific wind conditions to ensure turbine noise levels are within the relevant noise criterion or conditions turbine noise limits. Such curtailment can be applied using the wind farm SCADA system with a marginal reduction of the wind turbine performance. After the implementation of the mitigation measures, the noise survey will be repeated to confirm compliance with the planning conditions.	As necessary	Six months	ECoW

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 electrical system and export of electricity from site.

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.

Works during the construction phase of the development, including delivery of construction materials will generally take place between 7 a.m. and 7 p.m. daily Monday to Saturday with large concrete pours requiring an earlier start when deemed necessary. Delivery of abnormal loads such as turbine tower sections and blades will take place at night outside of peak traffic hours.

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	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Site Health and Safety								
2	Grid Connection								
3	Site Compounds								
4	Site Roads								
5	Substation and Electrical Works								
6	Turbine Hardstands								
7	Turbine Foundations								
8	Backfilling and Landscaping								
9	Turbine Delivery and Erection								
10	Substation Commissioning								
11	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 Cork County Council 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 Environmental Clerk of Works. 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.