# Construction and Environmental Management Plan

## Cahermurphy West Wind Farm, Co. Clare

Appendix 4-5

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# 1. INTRODUCTION

This Construction and Environmental Management Plan (CEMP) has been developed by MKO on behalf of Cahermurphy Renewables Designated Activity Company (DAC) who intend to apply to An Coimisiún Pleanála (ACP) for planning permission under sections 37E and 182A of the Planning and Development Act 2000 (as amended) to construct a renewable energy development that will comprise of 8 no. wind turbines and associated infrastructure in the townland of Cahermurphy and adjacent townlands, in Co. Clare, and a 110kV on-site substation and associated works, including underground 110kV cabling to connect to the national grid at Moneypoint 110kV substation, in the townland of Carrowdotia South, Co. Clare.

The construction and operation of the Proposed Wind Farm is dependent on the Proposed Grid Connection, as such, both the Proposed Wind Farm and Proposed Grid Connection will be developed simultaneously, therefore the environmental management during the construction of both is considered together in this CEMP as the 'Proposed Project'.

The CEMP has been prepared in conjunction with the Environmental Impact Assessment Report (EIAR) and the Natura Impact Statement (NIS) which will accompany the planning application for the Proposed Project to be submitted 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 will be read in conjunction with the EIAR and planning application 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 updates to the CEMP will comprise:

- When there is a perceived need by the Applicant 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 References to the Proposed Project

For the purposes of this CEMP, the various project components are described and assessed using the following references: 'Proposed Project, 'the Site', 'Proposed Wind Farm' and 'Proposed Grid Connection', the definitions of which are provided within Section 1.1.1 of the EIAR.

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

## 1.2 Scope of the Construction and Environmental Management Plan

This CEMP is presented as a guidance document for the construction of the proposed Cahermurphy West Wind Farm, which will comprise 8 no. wind turbines, and associated infrastructure in the townland of Cahermurphy and adjacent townlands, a 110kV on-site substation and associated works, including underground 110kV electrical cabling to connect to the national grid at Moneypoint 110kV substation, in the townland of Carrowdotia South. The entirety of the Proposed Project is located in Co. Clare.

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 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 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.

**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; and 2) construction-phase measures

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

## 1.3 Targets and Objectives

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

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

The key site objectives are as follows:

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

# 2. SITE AND PROJECT DESCRIPTION

## 2.1 Site Location

The Proposed Wind Farm site is located approximately 4.3km northwest of the village of Kilmihil, 4.3km southeast of the village of Mullagh, and 4.7km northeast of the village Creegh, Co. Clare. The Grid Reference co-ordinates for the approximate centre of the site are E508533 N668982. The Wind Farm Site is accessed via local roads from the R483 Regional Road, which travels north-south of the Wind Farm Site, the R484 Regional Road which travels east-west between Kilmihil and Creegh and the L-2048 local road, which travels in a northeast-southwest direction between Kilmaley and Creegh. The Site itself is served by a number of existing forestry tracks. Current land-use on the Wind Farm Site comprises coniferous forestry and third party lands currently being used for agriculture and forestry. Current land-use along the Grid Connection comprises of public road corridor, agricultural pasture, one-off housing and coniferous forestry. Land-use in the wider landscape comprises a mix of agriculture, low density residential and commercial forestry.

The Proposed Grid Connection includes for underground 110kV electrical cabling from the proposed onsite 110kV electrical substation within the Proposed Wind Farm site to the Moneypoint 110kV electrical substation in the townlands of Carrowdotia South and Carrowdotia North, Co. Clare. The underground cable route measures approximately 25km in length, located within existing access tracks, the public road corridor and within private lands in some instances.

*Table 2-1 Townlands within which the Proposed Project is Located*

| Development Works | Townland |
|---|---|
| **Wind Farm Site** | |
| Wind Turbines and Associated Foundations and Hardstanding Areas, 110kV Electrical Substation, Permanent Meteorological Mast, Junction Accommodation Works, Access Roads, Upgrade of existing access, Underground Electrical Cabling, Temporary Construction Compounds, Borrow Pits, Site Drainage, Tree Felling, Biodiversity Enhancement, Operational Stage Site Signage and all ancillary works and apparatus. | Cahermurphy, Carrowmagry South, Castlepark, Caheraghacullin, Doolough, Drummin, Kilmihil, Knockalough, Knocknahila More South |
| **Grid Connection** | |
| Underground Cabling Route connecting to the existing Moneypoint 110kV electrical substation, Site Drainage and all ancillary works and apparatus. | Cahermurphy, Cloonwhite South, Sheeaun, Leitrim, Cloonreddan, Kilmacduane East, Clooncullin, Lissanair, Teernagloghane, Brisla East, Brisla West, Gowerhass, Tullagower, Garraunnatooha, Knockerry West, Carrowfree, Derrylough, Dunneill, Doonnagurroge, Poulnadarree, Carrowfotia South, Carrowdotia North. |

## 2.2 Description of the Development

The development description for the current planning application for the Proposed Wind Farm appears in the public notices as follows:

The Proposed Project will consist of the provision of the following:

### An Coimisiún Pleanála – Planning Notice Project Description – Wind Farm Site

i. *Construction of 8 no. wind turbines with a blade tip height range from 180m to 185m inclusive, a hub height range from 98.5m to 110.5m inclusive and a rotor diameter range from 149m to 163m inclusive with associated foundations, hard-standing and assembly areas.*
ii. *Construction of 1 no. permanent 110 kV electrical substation including 2 no. control buildings lightening protection, welfare facilities, car parking, and all associated electrical plant and apparatus, security fencing, external lighting, underground cabling, wastewater holding tank and all associated infrastructure, apparatus and landscaping;*
iii. *Underground electrical cabling (33kV) and communications cabling connecting the wind turbines to the proposed on-site 110kV electrical substation and associated ancillary works;*
iv. *Erection of 1 no. Meteorological Mast of 100m metres above existing ground level for the measuring of meteorological conditions, including a lightning rod which will extend above the mast ;*
v. *Construction of new permanent access roads and upgrade of existing roads to provide access within the site and to connect the wind turbines and associated infrastructure;*
vi. *Upgrade of 1 no. new existing agricultural/forestry access to the site, off the L6254 local road, to serve as the sole entrance to the wind farm during its operational phase and to facilitate the delivery of the construction materials and turbine components to site during the construction and operational phases (including the installation of security fencing and gates);*
vii. *Development of 2 no. borrow pits;*
viii. *Construction of 2 no. temporary construction compounds and associated ancillary infrastructure including temporary site offices, staff facilities and car-parking areas, all to be removed at end of construction phase;*
ix. *Temporary works at 3 no. locations along the R465 regional road associated with the facilitation of turbine component and abnormal load delivery to site. These works will primarily include the trimming of vegetation and strengthening of road verges;*
x. *Permanent and temporary Site Drainage;*
xi. *Operational Stage Site Signage;*
xii. *Ancillary forestry felling to facilitate construction and operation of the Proposed Project;*
xiii. *Biodiversity enhancement measures including the permanent removal of commercial forestry (deforestation) over and area of 56.3ha and restoration of farmland habitat to good quality hen harrier foraging habitat through diversifying the range and extent of habitats over an area of 67.4ha, and;*
xiv. *All related site works and ancillary development including landscaping considered necessary to facilitate the Proposed Project.*

### An Coimisiún Pleanála – Planning Notice Project Description – Proposed Grid Connection

i. *The provision of c.25km of underground electrical cabling (110kV) from the proposed Cahermurphy West Wind Farm development to the existing Moneypoint 110kV electrical substation to facilitate the connection to the national grid;*
ii. *Provision of 36 no. joint bays, communication chambers and earth sheath links along the proposed underground electrical cabling route;*

iii. *Permanent and temporary Site Drainage;*
iv. *Reinstatement of land, road and track surface above the proposed cabling trench;*
v. *All related site works and ancillary development considered necessary to facilitate the Proposed Project.*

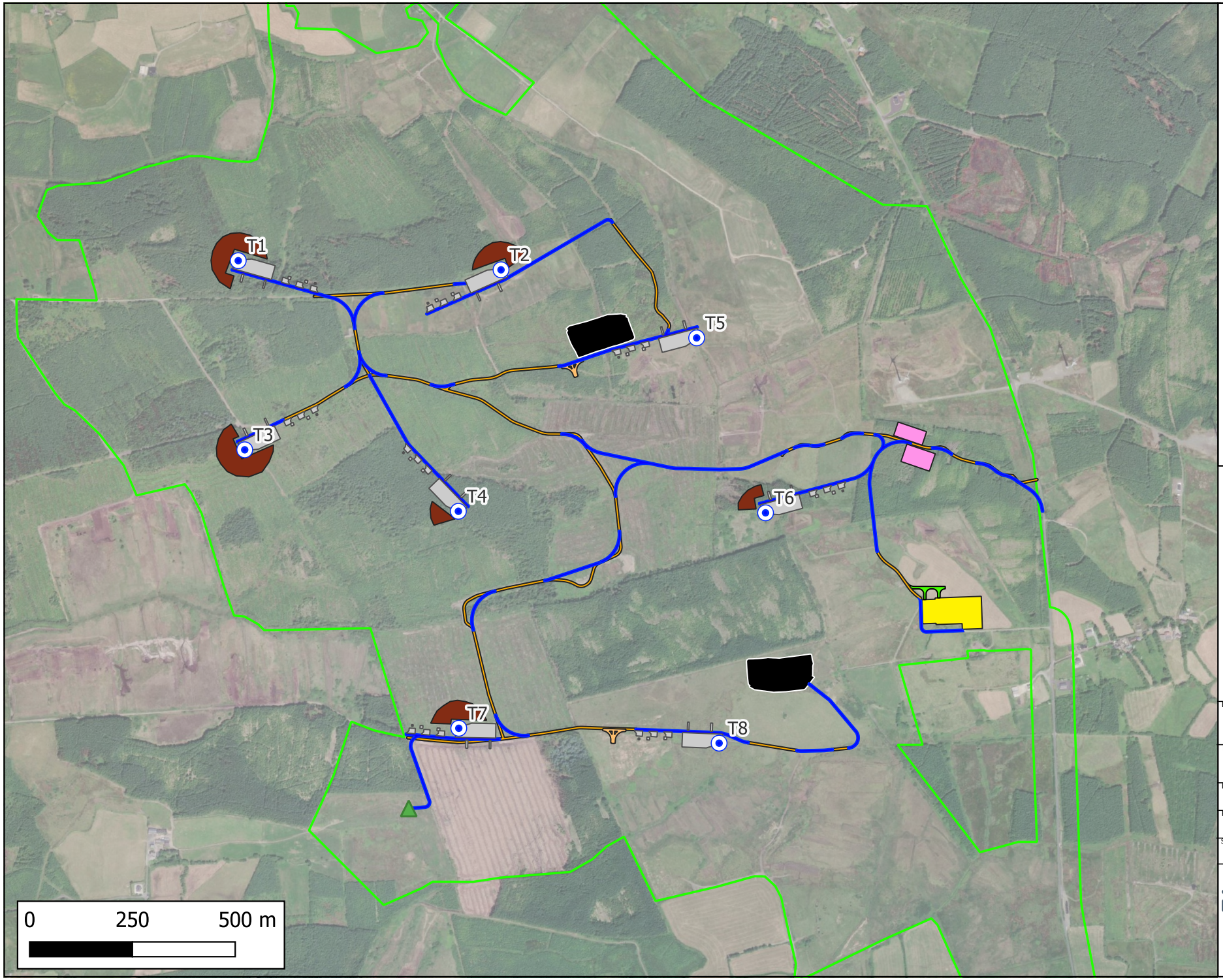
This application seeks a 10-year planning permission and a 35-year operational life from the date of commissioning of the entire wind farm.

The Proposed Wind Farm makes use of the existing road network insofar as possible. It is proposed to upgrade approximately 4.5km of existing site roads and tracks and to construct approximately 5.4km of new roads to be built. The Proposed Grid Connection is approximately 25km in length, with approximately 24km located within the public road network.

As part of the Proposed Project, tree felling will be required within and around development footprint. Please see Section 4.2.11, Chapter 4 of the EIAR for details.

Figure 2-1 includes the layout of the Proposed Wind Farm infrastructure alone, the subject of this planning application. The Proposed Grid Connection infrastructure alone is illustrated on Figure 2-2.

Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 and Appendix 4-2 to this EIAR




## Map Legend

- EIAR Site Boundary
- Proposed Turbine Location
- Proposed Met Mast Location
- Proposed Hardstand
- Existing Roads to be Upgraded
- Proposed New Roads
- Temporary Transformer Delivery Road
- Proposed Turning Heads
- Proposed 110kV Substation
- Proposed Temporary Construction Compounds
- Peat Placement Areas
- Proposed Borrow Pit



Drawing Title

# Proposed Wind Farm

| | |
|---|---|
| Project Title: Cahermurphy West Wind Farm | |
| Drawn By: MC | Checked By: EMC |
| Project No.: 230843 | Drawing No.: Figure 2-1 |
| Scale: 1:12,000 | Date: 08.01.2026 |

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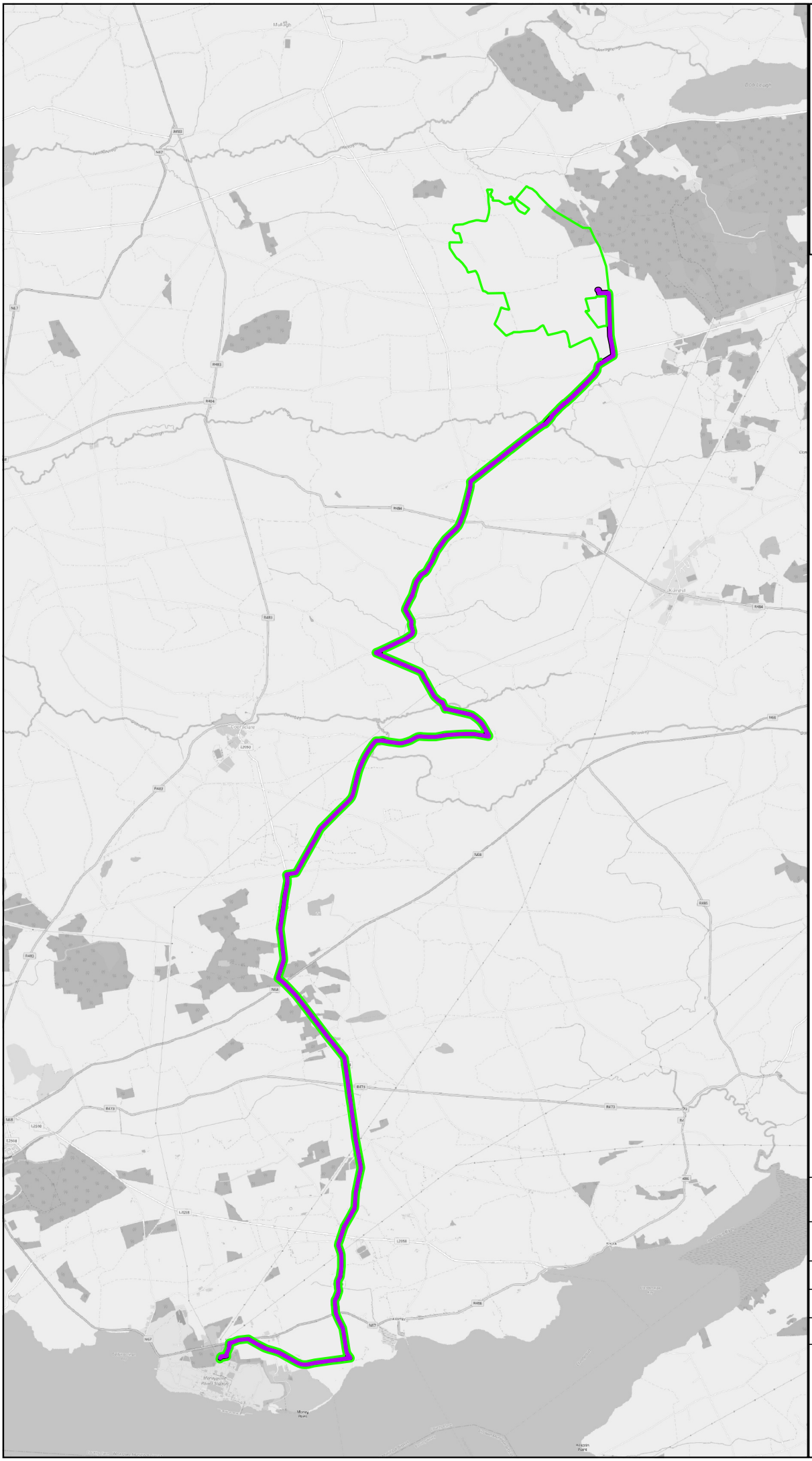

Map Legend

EIAR Site Boundary

Proposed Grid Connection



Drawing Title: Proposed Grid Connection

Project Title: Cahermurphy West Wind Farm

| Drawn By | Checked By |
|---|---|
| MC | EMC |
| Project No. | Drawing No. |
| 230843 | Figure 2-2 |
| Scale | Date |
| 1:80,000 | 12.12.2025 |

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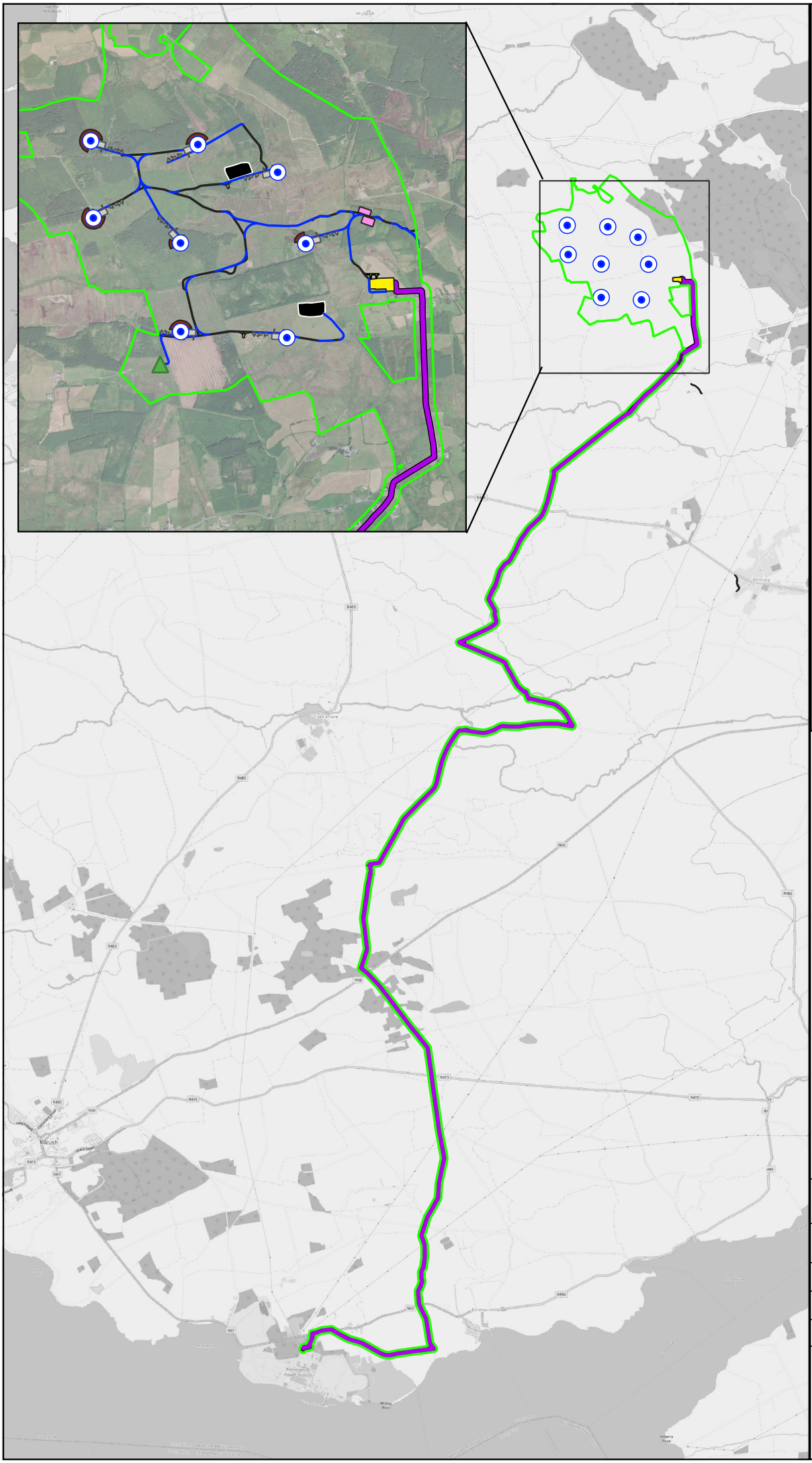
Map Legend
EIAR Site Boundary
Proposed Grid Connection
Proposed 110kV Substation
Proposed Turbine Location
Turbine Delivery Accommodation Road
Existing Roads to be Upgraded
Peat Placement Areas
Proposed Borrow Pits
Proposed Hardstands
Proposed Met Mast
Proposed New Roads
Proposed Temporary Construction Compounds
Proposed Turning Heads
Temporary Transformer Delivery Road
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Drawing Title
Proposed Project Layout
Project Title
Cahermurphy West Wind Farm
Drawn By
MC
Checked By
EMC
Project No.
230843
Drawing No.
Figure 2-3
Scale
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# 2.3 Construction Methodologies 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 Methodologies is provided below.

## 2.3.2 Overview of Proposed Construction Methodology

The EIAR includes construction methodologies for various elements of work to be undertaken as part of the Proposed Project. These construction methodologies are reproduced in the following sub-sections but will be superseded by an appointed contractor's construction method statements, which will form part of the CEMP.

### Proposed Wind Farm

- Site Drainage System;
- Site Roads and Hardstand Areas;
- Proposed Wind Farm Underground Cabling;
- Watercourse/Service Crossings;
- Borrow Pits;
- Peat Placement Areas;
- Temporary Construction Compounds;
- Tree Felling and Replanting;
- Temporary Turbine Haul Route Accommodating Works;
- Temporary Turbine Component Site Entrance;
- Turbine and Meteorological Mast Foundations;
- Onsite Electricity Substation and Control Buildings;
- Decommissioning;
- Proposed Grid Connection

## 2.3.3 Proposed Wind Farm

### 2.3.3.0 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. Similarly, a Surface Water Management Plan has been included as Appendix 4-7 of this EIAR. 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 below and Section 4.6 of the EIAR.

## 2.3.3.1 Site Roads and Hardstand Areas

### 2.3.3.1.1 *Upgrade of Existing Roads*

As discussed in Section 4.2.2 of Chapter 4, the Proposed Wind Farm makes use of the existing road network insofar as possible. It is proposed to upgrade approximately 4.5km of existing site roads and tracks. The road widening will be undertaken as follows:

- Access road construction will be to the line and level requirements as per design.
- For upgrading of existing excavated access roads (Type A) the following guidelines will be implemented in full:
    - Excavation of the widened section of access road will take place to a competent stratum beneath the peat (glacial deposits) and backfilled with suitable granular fill.
    - Benching of the excavation may be required between the existing section of access road and the widened section of access road where the depth of excavation required exceeds 500mm.
    - 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 track.
    - A layer of geogrid/geotextile may be required at the surface of the existing access road and at the base of the widened section of access road (to be confirmed by the designer).
    - For excavations in peat, side slopes will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction. Where areas of weaker peat are encountered then slacker slopes will be required to ensure stability.
- The finished road width will have a 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

#### 2.3.3.1.2 *New Site Access Roads and Turbine Hardstands*

- The construction methodology for the proposed new access roads and turbine hardstands is outlined as follows:
- 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.
- Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area.
- Excavation of roads will be to the line and level given in the design requirements. Excavation will take place to a competent stratum (glacial deposits) beneath the peat.
- The road sub-formation will be proof rolled following stripping of the peat. where soft spots are noted following the proof roll, these will be excavated and replaced with granular fill.
- Road construction will be carried out in sections of up to 50m lengths i.e., no more than 50m of access road will be excavated without replacement with stone fill.
- Once excavated, 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 or within the peat storage areas. All temporary peat placement areas will be upslope of founded roads/hardstands and will be inspected by the Project Geotechnical Engineer before material is stored in the area.
- Excavation of materials with respect to control of peat stability:
    - Where Acrotelm (to about 0.3 to 0.4m of peat) is required for landscaping, it will be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping will be undertaken prior to main excavations.
    - 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.
    - All catotelm peat (peat below about 0.3 to 0.4m depth) will be transported immediately on excavation to the designated placement areas.
- Excavation side slopes in peat will be not greater than 1 (v): 3 (h). This slope inclination will be reviewed during construction. If areas of weaker peat are encountered, then side slopes will be supported with granular fill. Battering of the side slopes of the excavations will be carried out as the excavation progresses

### 2.3.3.2 Proposed Wind Farm Underground Cabling

The transformer in each turbine is connected to the on-site substation through a network of buried electrical cables. 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 will be bedded with suitable material. The cables will be laid at a depth of approximately 1.2m below ground level; a suitable marking tape is installed between the cables and the surface (see Figure 2-4 below illustrating an example of a single cable trench). On completion, the ground will be reinstated as previously described above. The route of the cable ducts 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 located on either side of the road and/or within the road footprint

*Figure 2-4: Typical Trench Cable View*

### 2.3.3.3 Watercourses/Service Crossings

#### Clear-Span Watercourse Crossing

It is proposed to construct a new clear-span watercourse crossing at one location within the Site and upgrade one existing crossing, the locations of which are shown in Appendix 4-7 of the EIAR. 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 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 box culvert is installed in sections, the joints will be sealed to prevent granular material entering the watercourse,
- Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.
- Underground cabling ducting will be contained within the road make-up of the proposed crossing.

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

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

#### Culvert Crossing

In relation to the new proposed culverts and proposed culvert upgrades at forestry drain crossings, the culverts will be suitably sized (approx 900mm) for the expected peak flows in the relevant drain. All culverts will be installed with a minimum internal gradient of 1% (1 in 100). Smaller culverts will have a smooth internal surface. Larger culverts may have corrugated surfaces which will trap silt and contribute to the stream ecosystem. Depending on the management of water on the downstream side of the culvert, large stone may be used to interrupt the flow of water. This will help dissipate its energy and help prevent problems of erosion. Smaller water crossings will simply consist of an appropriately sized pipe buried in the sub-base of the road at the necessary invert level to ensure ponding or pooling does not occur above or below the culvert and water can continue to flow as necessary.

All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

### 2.3.3.4 Borrow Pit

The conservative estimated rock volume to be extracted from the borrow pit for the construction of the Proposed Wind Farm is 180,000 $m^3$. This figure presented is the estimated potential rock volume; however, the actual volumes to be removed from the borrow pit will be confirmed at the time of construction and following detailed pre-construction site investigation works.

The borrow pit will be excavated and backfilled as follows:

- The area to be used for the borrow pit will be marked out at the corners using ranging rods or timber posts. Drainage runs, and associated settlement ponds will be installed around the perimeter (See Appendix 4-7 of the EIAR);
- The initial borrow pit excavation will involve removal of soil to the top of bedrock. These materials will be stored temporarily in selected spoil management areas, see Appendix 4-3 for details;
- All drainage measures prescribed in the detailed drainage design for the Proposed Project will be implemented around the works area;
- The bedrock material will be extracted by breaking and blasting (discussed in Section 4.2.7.2 of the EIAR or Section 2.3.4.4.1 and 2.3.4.4.2 of this CEMP) from the borrow pit and stockpiled or used as required;
- The use of material won from the borrow pit will be sequential with new road construction or turbine foundation formations, the construction sequencing is expected to be as follows:
    - Phase 1: Construction of site access roads, drainage features, substation groundworks and temporary construction compounds
    - Phase 2: Excavation and construction of turbine 5 & 6 hardstands/foundation
    - Phase 3: Excavation and construction of turbine 1 & 2 hardstands/foundation
    - Phase 4: Excavation and construction of turbine 3 & 4 hardstands/foundation
    - Phase 5: Excavation and construction of turbine 7 & 8 hardstands/foundation

- Temporary stockpiling of aggregates will be required to accommodate the cut and fill operations within the borrow pit, and the progression of access roads and turbine excavations;
- As the borrow pit excavation progress and become deeper, surface water and groundwater ingress will be removed via pumping to settlement ponds, and re-distribution locally across natural vegetated areas as shown in Appendix 4-7. Where required, additional specialist water treatment measures will be employed to ensure no deterioration in downstream water quality occurs;
- When extraction ceases within the borrow pit, the borrow pit will be backfilled with excavated spoil and its associated drainage measures will be removed; and,
- The extraction area of the borrow pit will have to be permanently secured and a stock-proof fence will be erected around the borrow pit to prevent access to these areas as well as the installation of appropriate health and safety signage.

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

#### 2.3.3.4.1 *Rock Breaking*

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

A large rock breaking excavator progressively breaks out the solid rock from the ground in the borrow pit area. A smaller rock breaker, in the 30-40 tonne size range, then breaks the rocks down to a size that can then be fed into a crusher.

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

#### 2.3.3.4.2 *Rock Blasting*

Where blasting is used as an extraction method, a mobile drilling rig is used to drill vertical boreholes into the area of rock that is to be blasted. A drilling rig will drill the necessary number of boreholes required for a single blast in approximately 3 to 4 days. The locations, depth and number of boreholes are determined by the blast engineer. This is a specialist role fulfilled by the blasting contractor. Local residents within 2km of the relevant proposed borrow pits will be notified in advance of any blasting on-site.

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

A properly designed blast should generate rock of a size that can be loaded directly into a mobile crusher, using the same wheeled loader outlined above. The same method is used for processing the rock generated from a blast, as would be used to process rock generated by rock breaking. Generally,

the drilling rig will recommence drilling blast holes for the next blast as soon as one blast is finished. The potential impacts and control measures associated with noise and vibration from this extraction method are assessed in Section 12.5.2.4 Chapter 12: Noise and Vibration. Any blasting will be carried out in accordance with the *Guidance on the Safe Use of Explosives in Quarries* (Safety and Health Commission for the Mining and Other Extractive Industries, 2002)[1] and the British Standard BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise*[2].

### 2.3.3.5 Peat Placement Areas

The following commitments for the placement of peat within permanent clearfell areas around 6 no. turbines will be implemented during construction. These areas have been selected based on a combination of the depth of peat, the recorded peat strength in the area and the slope angle. A check of peat stability in each area was also undertaken, allowing for the additional loading from 1m of stored peat, and these results are included on the Peat Stability Assessment Report (FT, 2026). The construction methodology, as detailed in the Peat and Spoil Management Plan (Appendix 4-3 of the EIAR), is as follows:

- Excavated peat will be placed/spread across the clearfell areas around 6 no. of the proposed turbines. These locations are shown in Figure 2-1.
- The peat placed within the areas shown in Figure 2-1 will be restricted to a maximum height of 1.0m. Any weak/liquified peat (if encountered) will be placed within the proposed borrow pits and not stored within these areas.
- The placement of peat and spoil within the placement areas will require the use of long reach excavators and low ground pressure machinery 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.
- The surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat.
- Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate.
- The acrotelm will be placed on the finished surface with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the placed peat and spoil within the placement areas.
- 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.
- 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 (see Appendix 4-7 for details).
- All the above mentioned general guidelines and requirements will be undertaken by the Contractor during construction

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

### 2.3.3.6 Temporary Construction Compounds

There are two proposed construction compounds on site; both being located in the east of the Proposed Wind Farm site and forms part of the Section 37E application (Proposed Wind Farm). Both compounds will be constructed in the same manner as follows:

- The area to be used as the compound will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter;
- The compound platform will be established using a similar technique as the construction of the substation platform as discussed below in Section 2.3.3.12;
- 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;
- A limited amount of fuel will have to be stored in appropriately bunded containers and a designated area for oil storage will be constructed within the compound.
- A waste storage area will be provided within the compound;
- The compound will be fenced and secured with locked gates if necessary; and,
- Upon completion of the Proposed Project, the temporary construction compounds will be decommissioned and allowed to vegetate naturally

### 2.3.3.7 Tree Felling and Replanting

Tree felling will be required within and around the wind farm infrastructure footprint to allow for the construction of the proposed turbine, access roads underground cabling, and the other ancillary infrastructure. Further details on tree felling required within and around development footprint is detailed in Chapters 4 and 6 of the EIAR.

Approximately 21.79 hectares of forestry will be felled to accommodate all site infrastructure, of which 0.79 hectares constitutes temporary felling. 56.3ha of coniferous forestry will also be felled as part of the Hen Harrier Enhancement Plan (See Appendix 7-8 of the EIAR for details).

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 Wind Farm.

### 2.3.3.8 Temporary Turbine Haul Route Accommodating Works

A swept path analysis was undertaken using Autotrack for the blade and tower transporter vehicles. One permanent and two temporary excavate and replace roads will be utilised to accommodate turbine delivery vehicles across agricultural fields. Street furniture and vegetation will require to be removed during the delivery of the large plant and temporary road widening is necessary at multiple locations. These works are discussed in Section 4.2.10.2 of this EIAR.

### 2.3.3.9 Temporary Turbine Component Site Entrance

It is proposed to access the Proposed Wind Farm site via an upgrading of the existing site junction (including the installation of security fencing and gates) off the L-6254 local road to the east of the site. This entrance will be upgraded and widened to facilitate the delivery of the construction materials and turbine components. The site entrance was subject to Autotrack assessment to identify the turning area required, as described in Section 15.1 of Chapter 15: Material Assets of this EIAR. Appropriate

sightlines will be established to the north and south of the proposed site entrance for the safe egress of traffic. The visibility splays at the main site entrance off the L-6254, as shown in Figure 15-14, will require to be provided and kept clear of obstruction during construction, operation and decommissioning phases. The proposed works will result in a permanent site access from the local road, which will also form the sole entrance to the Proposed Wind Farm site during the operational phase

### 2.3.3.10 Turbine and Meteorological Mast Foundations

Each of the turbines to be erected on the Site will have a reinforced concrete base that is installed below the finished ground level. The turbine foundation may be formed using piling methods or on competent strata (i.e., bedrock or subsoil of sufficient load bearing capacity). Where the ground conditions do not have a competent stratum of sufficient load bearing capacity, piling methods will be utilised. Overburden will be stripped off the foundation area to a suitable formation using a 360° excavator and will be stored locally for later reuse in backfilling around the turbine foundation. A two-metre-wide working area will be required around each turbine foundation, with the sides of the excavated areas sloped sufficiently to ensure that slippage does not occur. Material excavated to create the working area will be stored locally for later reuse in backfilling and/or landscaping the working area around the turbine foundation. The excavated material will be sealed using the back of the excavator bucket and surrounded by silt fences to ensure sediment-laden run-off does not occur.

The formation material will have to be approved by an engineer as meeting the turbine manufacturer's requirements. If the formation level is reached at a depth greater than the depth of the foundation, the ground level will have to be raised with clause 804 or similar hardcore material, compacted in 250 millimetres (mm) layers, with sufficient compacted effort (i.e., compacted with seven passes using 12 tonne roller). Drainage measures will be installed to protect the formation by forming an interceptor drain around the perimeter of the base which will outfall out at the lowest point level spreader or settlement pond.

An embankment approximately 600 mm high will be constructed around the perimeter of each turbine foundation base and a fence will be erected to prevent construction traffic from driving into the excavated hole and to demarcate the working area. All necessary health and safety signage will be erected to warn of deep excavations etc. Access to and from excavated bases will be formed by excavating a pedestrian walkway to 1:12 grade.

There will be a minimum of 100 mm of binding concrete laid on the formation material positioned using concrete skip and 360° excavator to protect ground formation and to give a safe working platform

The anchor cage is delivered to the site in 2 or more parts depending on the turbine type. A 360° excavator or crane with suitable approved lifting equipment will be used to unload sections of the anchor cage and reinforcing steel. The anchor cage is positioned in the middle of the turbine foundation base and is assembled accordingly. When the anchor cage is in final position it is checked and levelled by using an appropriate instrument. The anchor cage is positioned 250mm – 300mm from formation level by use of adjustable legs. Reinforcement bars are then placed around the anchor cage, first radial bars, then concentric bars, shear bars and finally the superior group of bars. Earthing material is attached during the steel foundation build up. The level of the anchor cage will be checked again prior to the concrete pour and during the concrete pour.

Formwork to concrete bases will be propped/supported sufficiently so as to prevent failure. Concrete for bases will be poured using a concrete pump. Each base will be poured in three stages. Stage 1 will see the concrete being poured and vibrated in the centre of the anchor cage to bring the concrete up to the required level inside the cage. Stage 2 will see the centre of the steel foundation being poured and vibrated to the required level. Stage 3 will see the remaining concrete being poured around the steel foundation to bring it up to the required finished level. After a period of time when the concrete has set sufficiently the top surface of the concrete surface is to be finished with a power float.

Once the base has sufficient curing time it will be backfilled with suitable fill up to existing ground level and finished with the original material that was excavated.

Appendix 4-1 provides detailed drawings of the above.

### 2.3.3.11 Onsite Electricity Substation and Control Buildings

Please see Appendix 4-1 and Appendix 4-4 for detailed drawings and construction methodology. It will be constructed by the following methodology:

- This new substation will be in a compound of circa 78.6m x 144.6m plan area secured by a 2.6m high palisade fence.
- The substation compound and drainage will be marked out by a qualified engineer.
- A drainage system will be excavated and installed around the compound area.
- Topsoil and subsoil will be removed from the footprint of the compound using an excavator. The excavated material will be temporarily stored in adjacent berms for later use during reinstatement works.
- A layer of geotextile material will be laid over the footprint of the compound.
- Using an excavator, a base layer of Clause 804 material will be laid followed by a 6F2 capping layer which will provide the finished surface.
- Each layer will be compacted using a vibrating roller.
- Earthing cable will be laid underground around the substation for connection to the various electrical components during the electrical fit out phase.
- The construction of a 10340m² substation compound comprising of approximately 450m² single story 110kV substation control building, 300m2 single story MV building and associated outdoor electrical equipment, including 1 no. 33/110kV transformer, associated internal access road, including 2.6m high station perimeter fencing will be built.
- Permanent access roads will be constructed to allow site vehicular activity in and out of construction area.
- Adequate lighting will be installed around the compound on the lighting masts within the compound.
- 110kV cable sealing ends and associated accessories will be required to incorporate the Cahermurphy West to Moneypoint 110kV UGC into the substation. The support structures will be located outdoors.
- Transformers will be installed in bunded enclosures within the substation compound

### 2.3.3.12 Decommissioning

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

Upon decommissioning of the Proposed Wind Farm, the wind turbines and the meteorological mast will be disassembled. All above ground turbine and mast components will be separated and removed off-site for recycling. Turbine and mast foundations will remain underground and will be covered with earth and allowed to revegetate. Leaving the foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground would result in significant temporary environment nuisances such as noise, dust and/or vibration. Site roadways will be used during the operational phase by forestry and farm machinery and will provide a useful means of extracting the commercial forestry crop which exists on at the Site and therefore will be retained post decommissioning to facilitate these activities.

The underground electrical cabling connecting the turbines to the on-site substation will be removed from the cable ducts. The cabling will be pulled from the cable ducts using a mechanical winch which

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

The Grid Connection infrastructure will remain in place as it will be part of the Electricity Grid under the ownership and control of the ESB and EirGrid.

A Decommissioning Plan has been prepared (Appendix 4-6). The Decommissioning Plan will be updated prior to the end of the operational period in line with decommissioning methodologies that may exist at the time and will agree with the competent authority at that time. The potential for effects during the decommissioning phase of the Proposed Wind Farm has been fully assessed in the EIAR.

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

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

## 2.3.4 Proposed Grid Connection

### 2.3.4.0 Underground Electrical 110kV and Communication Cabling for Proposed Grid Connection

The underground 110kV grid connection ducting will consist of 1 No. trench, the trench will contain 3 No. 160mm diameter HDPE power ducts, 2 No. 125mm diameter HDPE communications ducts and 1 no. 125mm diameter earth continuity duct to be installed in an excavated trench, typically 825mm wide by 1315mm deep, with variations on this design to adapt to service crossings and watercourse crossings, etc. The communications duct will accommodate a fibre cable to allow communications between the Cahermurphy West 110kV substation and Moneypoint 110kV substation. The inclusion of 1 No. earth continuity conductor duct will also be required. The ducts will be installed, the trench reinstated in accordance with landowner/Clare County Council specification. Once all are satisfied, then the electrical cabling/fibre cable is pulled through the installed ducts in approximately 750/850m sections. Construction method statements and templates will be implemented to ensure that the underground HV ducting is installed in accordance with the correct requirements, materials, and specifications of ESBN and EirGrid.

#### 2.3.4.0.1 *Trenching Methodology*

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

- The Contractor, and their appointed Site Manager, will prepare a targeted Method Statement concisely outlining the construction methodology and incorporating all mitigation and control measures included within the planning application and accompanying reports and as required by planning conditions where relevant;
- All existing underground services shall be identified on site prior to the commencement of construction works;
- At watercourse crossings, the contractor will be required to adhere to the environmental control measures outlined within the planning application and accompanying reports, the construction contractor will prepare a detailed Construction Environmental Management Plan (CEMP) prior to the commencement

of construction, the CEMP will be used to clearly document for construction staff the proposed mitigation, as set out in the application, and any subsequent planning conditions that may be imposed. The CEMP document will be prepared in line with best practice construction methodologies including the following measures;

- Where the ducting routes intersect with culverts, the culvert will remain in place (where possible) and the ducting will be installed either above or below the culvert to provide minimum separation distances in accordance with ESB and Irish Water specifications;
- In the event that culverts require removal for ducting installation, it is proposed that a suitable method of damming the water source and pumping the water around the work area would be set out in a method statement and agreed with the relevant stakeholders. Once the ducts are installed the culvert will be reinstated to match existing levels and dimensions. If works of this nature are required, the contractor will liaise with Inland Fisheries Ireland in advance of works;
- Excavated material will be temporarily stockpiled onsite for re-use during reinstatement. Stockpiles will be restricted to less than 2m in height. Stockpiles will be located a minimum of 15m from surface water features and all stockpiling locations will be subject to approval by the Site Manager and Project Ecological Clerk of Works (ECoW);
- Excavated material shall be employed to backfill the trench where appropriate and any surplus material will be transported off site and disposed of at a fully authorised soil recovery site;
- The excavated trench will be dewatered if required, from a sump installed within the low section of the opened trench. Where dewatering is required, dirty water will be fully and appropriately attenuated, through silt bags ,before being appropriately discharged to vegetation or surface water drainage feature;
- Where required, grass will be reinstated by either seeding or by replacing with grass turves;
- No more than a 100m section of trench will be opened at any one time. The second 100m will only be excavated once the majority of reinstatement has been completed on the first;
- The excavation, installation and reinstatement process will take on average of 1 no. day to complete a 100m section;
- Where the ducting is being installed in a roadway, temporary reinstatement may be provided to allow larger sections of road to be permanently reinstated together.

#### 2.3.4.0.2 *Ducting Installation Methodology*

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

- Place red protection strip on top of compacted CBGM B over each set of ducts as shown on the drawings.
- Place and thoroughly compact CBGM B material or Clause 804 backfill or soil backfill as specified and place warning tape at the depth shown on the drawings.
- For concrete and asphalt/bitmac road sections, carry out immediate permanent reinstatement in accordance with the specification and to the approval of the local authority and/or private landowners, unless otherwise agreed with local authorities
- Clean and test the ducts in accordance with the specification by pulling through a brush and mandrel. Install12mm polypropylene draw rope in each duct and seal all ducts using robust duct end seals fitted with rope attachment eyes. All the works should be witnessed by ESBN Clerk of Works (CoW) as required

#### 2.3.4.1 Existing Underground Services

To facilitate the installation of the proposed UGC, it may be necessary to relocate existing underground services such as water mains, telecoms, 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 to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works.

If existing 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, and the underground cables will then be re-energised.

Uisce Eireann will be consulted and advised on details of the project proposals in the form of a completed Building-over or Near an Irish Water Asset Application Form and associated technical information largely comprising drawings and schedules with details of proposed crossings etc with as much available information as possible. Uisce Eireann will be involved in the early engagement on projects that may involve any infrastructure which may be located near their assets with the intention of identifying as early as possible, if bespoke design measures or diversions are necessary.

The water supply will be turned off by the utility so work can commence on diverting or crossing the service. The section of the 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.

#### 2.3.4.2 Joint Bays

Joints Bays are to be installed approximately every 650m-850m along the UGC route to facilitate the jointing of lengths of 110kVUGC. Joint Bays are typically 6m x 2.5m x 2.05m pre-cast concrete structures installed below finished ground level. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible.

In association with joint bays, Communication Chambers will be required at every joint slab location to facilitate communication links. Earth Sheath Link Chambers are also required at every joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground power cables, 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 typically be pre-cast concrete structures with an access cover at finished surface level.

. Marker posts will be used on non-roadway routes to delineate the duct route and joint bay positions.

The following steps outline the methodology for joint bay construction and reinstatement:

- The contractor will excavate a pit for joint bay construction, including for a sump in one corner.
- Grade and smooth floor; then lay a 50 mm depth thick sand on 200 mm thick Clause 804 granular material.
- Place pre-cast concrete sections on sand bedding.
- Where joint bays are located under the road surface the joint bay will be backfilled with compacted layers of Clause 804 and the road surface temporarily reinstated as specified by the local authority.
- Precast concrete covers may be used as temporary reinstatement of joint bays at off road locations. These covers are placed over the constructed joint bay and are then removed at the cable installation stage of the project.
- At a later date to facilitate cable installation and jointing, reinstate traffic management signage, secure individual sites, re-excavate three consecutive joint bays and store excavated material for reuse.

### 2.3.4.3 Watercourse Crossings on the Proposed Grid Connection Underground Cable Route

Along the Proposed Grid Connection cable route there are 24 no. watercourse crossings, which includes natural stream/rivers and drains. This includes 14 no. EPA mapped watercourse crossing locations which are distributed across the surface water catchments as follows; Creegh River (2 no.), Doonbeg River (5 no.), Wood River (4 no.) and Crompaun River (3 no.).

All 24 no. crossings are existing culverts and bridges where works are required to accommodate the underground Proposed Grid Connection cable. No in-stream works are proposed at any of the Proposed Grid Connection cable crossing locations. Crossing Methodologies are presented in Appendix 4-7 of the EIAR, and consist of 11 no instances of Horizontal Directional Drilling at watercourse crossings and at 12 no. crossing locations the cable will be placed either underneath or above the culvert by open trench method.

#### Horizontal Directional Drilling

Horizontal Direction Drilling (HDD) is a method of drilling under obstacles, such as bridges, railways, watercourses, etc., in order to install cable ducts under the obstacle. This method is employed where installing the ducts using standard installation methods is not possible. There are multiple crossings along the 110kV Proposed Grid Connection route which will be performed using HDD, so that this obstacle is traversed in the least intrusive manner possible.

The proposed drilling methodology is as follows:

- A works area of circa 20m$^2$ for the HDD entry side, and circa 40m2 on the HDD exit side, will be required for the HDD equipment and vehicles. These areas will be fenced off during the HDD implementation.
- The drilling rig and fluid handling units will be located on the designated entry side of the watercourse and will be appropriately bunded using sandbags, which will contain any fluid spills and stormwater run-off.
- Entry and exit pits (approximately 2m (width) x 3m (length) x 1m depth) will be excavated using an excavator. The excavated material will be temporarily stored within the works area and used for reinstatement or disposed of to a licensed facility.
- The HDD pilot bore will be undertaken using a wireline guidance system. Assembly will be set up by the drilling team and steering engineer.
- The pilot bore will be drilled to the pre-determined profile and alignment under the watercourse crossing.

- The steering engineer and drill team will monitor the drilling works to ensure that modelled stresses and pressures are not exceeded.
- The drilled cuttings will be flushed back by drilling fluid to the entry pit and treated for re-use.
- Once the first pilot hole has been completed, a hole-opener or back-reamer will be fitted in the exit side which will then be pulled back to the entry side as part of the pre-reaming/hole opening process to enlarge the hole to the needed size.
- When the pre-reaming/hole opening/hole cleaning has been completed, a reamer of slightly smaller diameter than the final cut will be installed on the drill string to which the ducts will be attached for installation.
- The drilling fluid will be disposed of to a licensed facility. The interior of the ducts will be cleaned, and the ducts will be proven to ascertain their suitability. Their installed location will be mapped.
- The entry and exit pit areas will be reinstated to the specification of the landowner and any requirements of Clare County Council.
- A joint bay/transition chamber/transition coupler will be installed on either side of the drill shot, following the horizontal directional drilling procedure, which will serve as interface between the HDD ducts and the standard ducts

# 3. ENVIRONMENTAL MANAGEMENT

## 3.1 Introduction

This CEMP includes all best practice measures required to construct the proposed renewable energy development. 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 (i.e. 1 no. new watercourse crossing and 1 no. upgrade of existing watercourse crossing) shall be avoided during or after prolonged rainfall or an intense rainfall event.

### 3.2.2 Site Drainage Principles

The site drainage features have been outlined in the Surface Water Management Plan, submitted as Appendix 4-7 of the EIAR for the Proposed Project in addition to the drainage design and management for the Proposed Project. The protection of the watercourses within and surrounding the site, and downstream catchments that they feed is of utmost importance in considering the most appropriate drainage proposals for the site 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 originally selected to avoid natural watercourses, and existing roads are to be used wherever possible. The Proposed Project has where possible, been kept a minimum of 50 metres from natural watercourses. There will be no direct discharges to natural watercourses. All discharges from the proposed works areas or from interceptor drains will be made over vegetated ground at an appropriate distance from natural watercourse and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings (see Appendix 4-7).

Existing artificial drains in the vicinity of existing site 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, 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.

### 3.2.3 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:

- Institute of Geologists Ireland (2013): Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
- National Roads Authority (2008): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes;
- Department of Environment, Heritage and Local Government (2006): Wind Energy Development Guidelines for Planning Authorities;
- Forestry Commission (2011): Forests and Water UK Forestry Standard Guidelines, Fifth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte Forest (2013): Operations and Water Protection Guidelines;
- Forest Services (Draft) Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;
- Forest Service (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford;
- COFORD (2004): Forest Road Manual – Guidelines for the Design, Construction and Management of Forest Roads;
- Inland Fisheries (2016): Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters;
- Scottish Natural Heritage (2019): Good Practice During Wind Farm Construction;
- CIRIA (Construction Industry Research and Information Association) (2006): Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006);
- CIRIA 2006: Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors (CIRIA C532, 2006);
- DoHPLG (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;
- European Union (2017) Guidance on the preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU);
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

### 3.2.4 Project Site Drainage Design and Management

The proposed site drainage features for this site are outlined in Section 4.2.13 of the EIAR, as well as the accompanying Surface Water Management Plan (Appendix 4-7) in which the drainage design drawings are also contained. The following sections give a brief outline of drainage management arrangements in terms of pre-construction, construction, operational and decommissioning phases of the Proposed Project, however, the dedicated Surface Water Management Plan (Appendix 4-7) should be consulted for additional information on the proposed drainage design and management principles.

### 3.2.4.0 Pre-Construction Drainage

Prior to commencement of works in sub-catchments across the site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. Drainage and associated pollution control measures will be implemented onsite before the main construction works commence.

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. 1 no. new watercourse crossing and 1 no. upgrade to an existing crossing are proposed within the Proposed Wind Farm site, both of which can be seen in drawings D101 and D102 of Appendix 4-7. Culvert upgrades at forestry drain crossings are also proposed. There will be no direct discharges to natural watercourses

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 (see Appendix 4-7 for details). 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. Please see Appendix 4-7 for detailed drainage drawings. Existing artificial drains in the vicinity of existing site roads will be maintained in their present location where possible.

### 3.2.4.1 Construction Phase Draining

Runoff control and drainage management are key elements in terms of mitigation against effects on surface water bodies. Two distinct methods will be employed to manage drainage water within Site. The first method involves 'keeping clean water clean' by avoiding disturbance to natural 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 settlement ponds (or stilling ponds) prior to controlled diffuse release over vegetated surfaces. Please see Drawings D101-D103 of Appendix 4-7 for locations of these ponds.

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. The mechanisms for interaction between these are outlined within Section 4 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 Appendix 4-7 of the EIAR, and to ensure protection of all watercourses.

### 3.2.4.2 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 above and in Section 4.2.1 and 4.2.2 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) and fully agreed with the local authority prior to any decommissioning works.

#### 3.2.4.3 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.

#### 3.2.4.4 Pre-emptive Site Drainage Management

The works programme for the groundworks part of the construction phase of the Proposed Project will also take account of weather forecasts and predicted rainfall in particular. The site Construction Manager is responsible for making the decision to postpone or abandon works. Large excavations and 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.

#### 3.2.4.5 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 Cahermurphy, Co. Clare.

https://www.yr.no/en/forecast/daily-table/2-3308591/Ireland/Munster/Co%20Clare/Cahermurphy

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. The 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.

#### 3.2.4.6 Cable Trench Drainage

Cable trenches are typically developed in short 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 upgradient side of the trench. Should any rainfall cause runoff from the excavated material, the material is 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 Site, would be used for landscaping and

reinstatements of other areas elsewhere on site. The same control measures would apply during the excavation for cabling on the Proposed Wind Farm and the Proposed Grid Connection route.

On steeper slopes, silt fences, as detailed in Appendix 4-7 of the EIAR will be installed temporarily downgradient of the cable trench works area, or on the downhill slope below where excavated material is being temporarily stored to control run-off.

### 3.2.5 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 the temporary construction compounds. 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. 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.

A full list of mitigation measures relating to refuelling is provided in Appendix 4-7 of the EIAR.

### 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. For the sake of brevity, please see Section 3.2.7 of the SWMP (Appendix 4-7) for mitigation measures in relation to cement based products.

### 3.2.7 Tree Felling Drainage Measures

Tree felling will be required within the Site to allow for the construction of the turbine bases, access roads underground cabling, and the other ancillary infrastructure. The commercial forestry felling activities required as part of the Proposed Project will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017) and as per the Forest Service's policy on granting felling licenses for wind farm developments.

Mitigation measures will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses. These measures are derived from best practice guidance documents as outlined below and in Chapter 9 Hydrology and Hydrogeology of the EIAR. These mitigation measures are outlined within Section 3.2.8 of the SWMP (Appendix 4-7)

Tree felling to facilitate the Proposed Project will not be undertaken simultaneously with construction groundworks. Keyhole felling to facilitate construction works will take place prior to groundworks commencing. During tree felling there is a potential to generate silts and sediments in surface water runoff due to tracking of machinery and disturbance of the ground surface etc, which will be mitigated with the implementation of measures outlined in Section 3.2.8 of the SWMP (Appendix 4-7).

## 3.3 Archaeological Management

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

Two recorded monuments are present within the site, CL048-005 – a cashel ringfort, as well as CL048-005001, a hut site abutting the northern area of the ringfort. Both of these structures are located

approximately 850m south of the nearest proposed turbine (T8) and no infrastructure is proposed within 500m of either monument.

There are no National Monuments, Record of Protected Structures or recorded National inventory of Architectural Heritage assets within 50 metres of the Proposed Grid Infrastructure. The following measures will be implemented during the construction phase:

- All elements of the Proposed Project located within existing greenfield will be subject to archaeological monitoring of topsoil stripping. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation will be implemented as required, and will include preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH. Testing deemed necessary within forested areas may only be possible once clear-felling has taken place.
- A report on the testing will be compiled on completion of the work and submitted to the NMS and the Planning Authority.
- Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the testing.
- Archaeological monitoring of all groundworks during the construction stage of the Proposed Project by a licensed archaeologist.
- A report on the monitoring will be compiled on completion of the work and submitted to the NMS and the Planning Authority.
- Further mitigation such as preservation in situ (avoidance), preservation by record (excavation), buffer zones may be required depending on the results of the monitoring

## 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. Traffic management measures include the following:

- Identification of a delivery schedule,
- Details of the alterations required to the infrastructure identified in Section 15.1.9 of the EIAR, of this report and any other minor alteration identified,
- A dry run of the route using vehicles with similar dimensions.
- 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 64 abnormal sized loads will be delivered to the site, comprising 22 convoys of 3 (1 convoy will have one vehicle only), undertaken over 22 separate nights.
- These nights will be spread out over an approximate period of 5 weeks and will be agreed in advance with the relevant authorities.
- For each convoy there will be two police escort vehicles that will stop traffic at the front and rear of the convoy of 3 vehicles in addition to two escort vehicles provided by the haulage company.

A **Traffic Management Plan (TMP)** is provided specifying details relating to traffic management and is included as Appendix 15-2 this EIAR. Prior to the commencement of the construction phase of the Proposed Project a detailed Traffic Management Plan will be prepared by the Contractor for agreement

with the relevant local authorities and An Garda Síochána. In the event that An Coimisiúin Pleanála decides to grant consent for the Proposed Project the final TMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by the ACP. The TMP prescribes the following:

- **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the project 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 the relevant County Councils (Clare and Limerick) in advance of deliveries of turbine components to site. Liaison with the Local Authorities and Transport Infrastructure Ireland (TII) 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.
- **Temporary traffic management measures during construction of Wind Farm Site at access junctions during construction –** Temporary measures including signage at access junctions on the L6254.
- **Temporary traffic management measures during construction of Grid Connection –** Including signage and implementation of temporary traffic diversions.
- **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 Authorities, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. The timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the Local Authority Engineers.
- **Liaison with the relevant local authority** - Liaison with the County Councils 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 relevant Roads Sections will be informed of the 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 locations** – at locations highlighted in Section 15.1.9 of the EIAR.
- **Identification of delivery routes** – These routes will be agreed with the County Councils and adhered to by all contractors.
- **Delivery times of large turbine components** - The management plan 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 Contractor will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the site.
- **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

### 3.4.1 Turbine and Materials Transport Route

A traffic management plan has been provided as Appendix 15-2 of the EIAR. In the interest of brevity, the measures outlined within the TMP are briefly outlined below:

## 3.5 Dust Control

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

In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. If necessary, water will be taken from stilling/settlement ponds in the 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.
- All plant and materials vehicles will 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 entrance will be checked weekly for damage/potholes and repaired as necessary.
- The transportation of materials from the borrow pits and external quarries around the Site will be covered by tarpaulin or similar covered vehicles where necessary.
- If necessary, excavated material will be dampened prior to transport to the spoil management areas.

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

## 3.6 Noise Control

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

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

- Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- Establishing channels of communication between the contractor/developer, Local Authority and residents;
- 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 properties as practical within the site constraints, and;
- The hours of construction activity will be limited to avoid unsociable hours where possible. Construction 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.

Where rock breaking is employed in relation to the proposed borrow pit location or other locations across the Site, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities:

- Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency.
- Ensure all leaks in air lines are sealed.
- Use a dampened bit to eliminate ringing

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, blasting will be avoided during unfavourable weather conditions. 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. The methods used to minimise impacts will consist of the following:

- Restriction of hours within which blasting can be conducted (e.g. 09:00 – 19:00hrs).
- 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.

## 3.7 Invasive Species Management

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

(*Rhododendron ponticum)* and Japanese Knotweed (*Fallopia japonica*). An Invasive Species Management Plan has been prepared as can be found in Appendix 6-4 of this EIAR.

## 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 project. The WMP will outline the methods of waste prevention and minimisation by recycling, recovery, and reuse at each stage of construction of the Proposed Project. Disposal of waste will be seen as a last resort.

### 3.8.1 Legislation

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

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

The Department of the Environment provides a document entitled, *'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects'* (2006). 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

### Description of the Works

The construction of the Proposed Project will involve the construction of:

- Proposed Wind Farm: 8 no. turbines and associated foundations and hard-standing areas, meteorological mast, access roads, on site substation, temporary construction compounds, underground cabling, spoil management, site drainage, tree felling, temporary borrow pits and all ancillary works and apparatus.
- Proposed Grid Connection: Underground 110kV electrical cabling connecting to the existing Moneypoint ESB 110kV GIS substation.

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

The turbine and meteorological mast foundations will consist of stone from the onsite borrow pit 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 predominantly from the onsite borrow pit, with some material 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 (Grid Connection & 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 3-1: 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 Grid Connection underground connection cabling route | 17 03 02 |

Hazardous wastes that may occur on site during the construction phase of the development 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.

#### 3.8.3.1 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 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.

#### 3.8.3.2 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 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.

### 3.8.3.3 Waste Arising from Decommissioning

The design life of the proposed renewable energy development is 30 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 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 3-2 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 |

### 3.8.3.4 Reuse

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

- Concrete can be reused as aggregate for roads cable trench backfilling material.
- Plastic packaging etc. can be used to cover materials on site or reused for the delivery of other materials.
- Excavated peat can be reused for reinstatement of the areas around turbine foundations and adjacent to site roads.

### 3.8.3.5 Recycling

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

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

## 3.8.3.6 Implementation

### 3.8.3.6.1 *Roles and Responsibilities for Waste Management*

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

### 3.8.3.6.2 *Training*

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

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

### 3.8.3.6.3 *Record Keeping*

The 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

## 3.8.3.7 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.

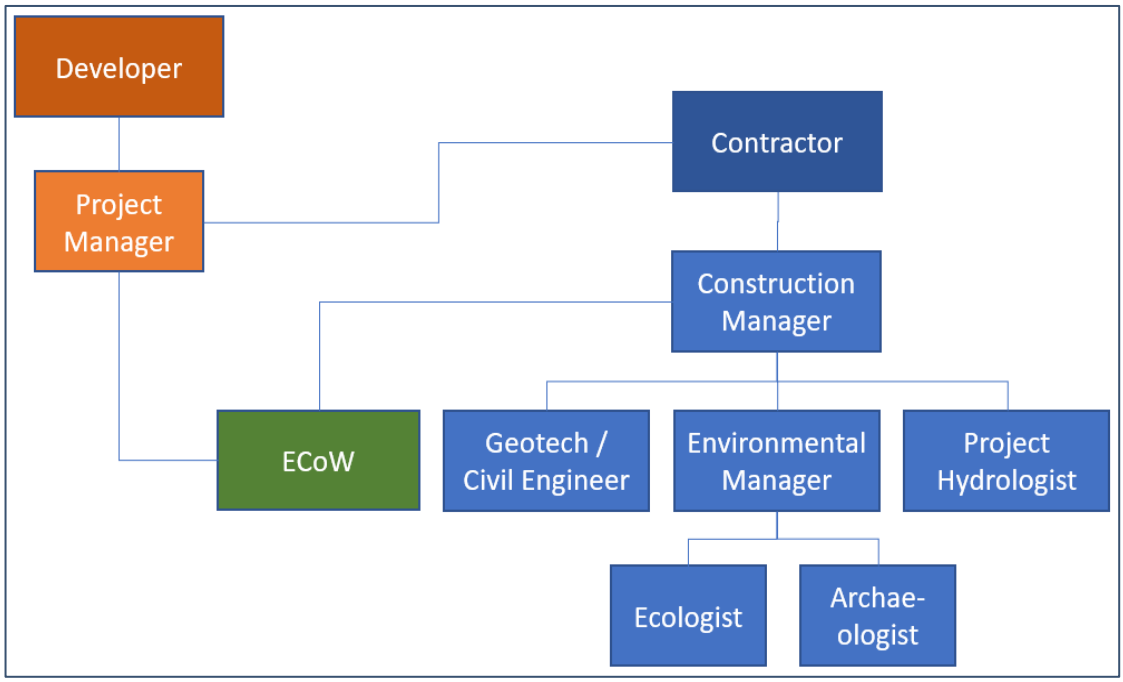


*Figure 4-1 Proposed Project Organogram*

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 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

The methodology for water quality monitoring before, during and after the construction phase of the Proposed Project is outlined in detail in Section 4 of the Surface Water Management Plan (SWMP) which is included as Appendix 4-7 of the EIAR.

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

## 4.3 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 the site Health and Safety Plan.

# 5. HEALTH AND SAFETY

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

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

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

- A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage.
- All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted.
- Goal posts will be established under any overhead line for the entirety of the construction phase of the Proposed Project.
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the 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.
- When activities must be carried out beneath overhead lines, e.g., component delivery or substation construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works. Overhead line proximity detection equipment will be fitted to machinery when such works are required.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site.

- The construction of the Grid Connection underground cabling will be in phases along the proposed grid route. Prior to commencing grid connection works in the agricultural fields in the townland of Strogue, goal posts will be established under the 110k overhead line for the remainder of the grid connection of the construction phase. The goal posts will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan.

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

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

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

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

# 6. EMERGENCY RESPONSE PLAN

## 6.1 Overview

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency. The site 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 project.

### 6.1.1 Roles and Responsibilities

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

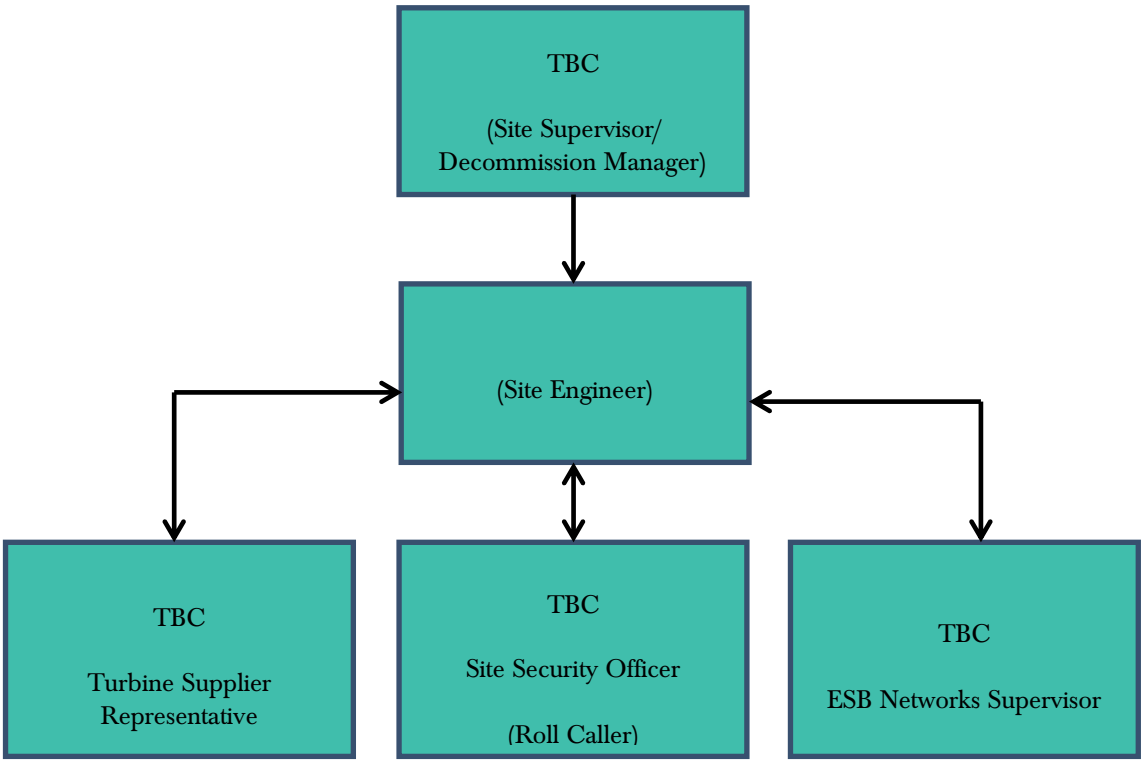


*Figure 6-1 Emergency Response Procedure Chain of Command*

### 6.1.2 Hazard Identification

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

*Table 6-1 Hazards associated with potential emergency situations*

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

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

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

- Contact the next of kin of any injured personnel where appropriate.

### 6.1.3 Site Evacuation/Fire Drill

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

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

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

### 6.1.4 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction 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 Tipperary 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 Tipperary 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 Main Contractor as appropriate.

## 6.2 Contacting the Emergency Services

### 6.2.1 Emergency Communications Procedure

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

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

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

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

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

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

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

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

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

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

## 6.3 Contact Details

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

*Table 6-2 Emergency Contacts*

| Contact | Telephone no. |
|---|---|
| Emergency Services – Ambulance, Fire, Gardaí | 999/112 |
| Doctor – Dr. Maura O'Meara | 065 707 9011 |
| Hospital – Ennis Hospital – Ennis | 065 682 4464 |
| ESB Emergency Services | 1850 372 999 |
| Gardaí – Ennis Garda Station | 065 684 8100 |
| Health and Safety Co-ordinator - Health & Safety Services | TBC |
| Health and Safety Authority | 1890 289 389 |
| Inland Fisheries Ireland (IFI) | 1890 347 424 |
| Project Supervisor Construction Stage (PSCS): TBC | TBC |
| Project Supervisor Design Stage (PSDS): TBC | TBC |
| Developer: Cahermurphy Renewables DAC | TBC |

## 6.4 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming in an emergency situation where serious injury has occurred and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

## 6.5 Induction Checklist

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

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

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

# 7. MITIGATION PROPOSALS

All mitigation measures relating to the pre-commencement, 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 An Coimisiúin Pleanála.

This section of the CEMP groups together all of the mitigation measures presented in the above documents. The Mitigation Measures are presented in the following pages and are also outlined within Chapter 18: Schedule of Mitigation and Monitoring Measures.

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.

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| **Ch. 4: Description of the Proposed Project – Description of the Proposed Project** | | | | | |
| **Pre-Construction Phase** | | | | | |
| MM1 | Environmental Management | Ch. 4: Description of the Proposed Project | › All proposed activities on the site of the Proposed Project will be provided for in an environmental management plan..<br>› The CEMP includes details sets out details of the environmental controls to be implemented on site, site drainage measures, peat stability monitoring measures and a waste management plan. The CEMP also outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection. 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 written approval | | |
| MM2 | Cement Based Deliveries | Ch. 4: Description of the Proposed Project<br><br>Appendix 4-7: Surface Water Management Plan | › The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site washout of trucks and discussing emergency procedures;<br>› Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used. | | |
| MM3 | Pre-Construction Drainage | Appendix 4-7: Surface Water Management Plan<br><br>CEMP Section 3 | › There are four main first order streams which emerge from the southern section of the Proposed Wind Farm and flow towards the Creegh River. Stream S1, which is an EPA mapped watercourse, flows through the main central catchment area of the Proposed Wind Farm. Two smaller streams (S2 and S3) rise from the southern section of the Site | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | and merge at the southwestern boundary prior to flowing towards the Creegh River. Stream S4 flows in a southerly direction towards the Creegh River. Stream S5 emerges from a forested area between turbine locations T1 and T2. Prior to commencement of works in sub-catchments across the site, main drain inspections will be completed to ensure ditches and streams are free from debris and blockages that may impede drainage. It is proposed to complete these inspections on a catchment-by-catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously.<br>› 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<br>› 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. 1 no. new watercourse crossing and 1 no. upgrade to an existing crossing are proposed within the Proposed Wind Farm site. Culvert upgrades at forestry drain crossings are also proposed. All watercourse crossings and culvert locations can be viewed in Drawings D101-D103.<br>› 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 natural watercourse and lakes. Buffer zones around the existing natural drainage features have informed the layout of the Proposed Project and are indicated on the drainage design drawings.<br>› Within the Proposed Wind Farm, there are numerous manmade drains that are in place predominately to drain the forestry plantations. The current internal forestry drainage pattern is influenced by the topography, peat subsoils, layout of the forest plantation and by the existing road network. The forest plantations are generally drained by a network of mound drains or plough ribbons which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › Existing artificial drains in the vicinity of existing site 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, 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.<br>› Along the Proposed Grid Connection cable route there are 24 no. watercourse crossings, which includes natural stream/rivers and drains. All 24 no. crossings are existing culverts and bridges where works are required to accommodate the underground Proposed Grid Connection cable. No in-stream works are proposed at any of the Proposed Grid Connection cable crossing locations. | | |
| MM4 | Watercourse Inspection | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 2 | › Confirmatory inspections of the proposed new no. 1 watercourse crossing and 1 no. existing watercourse crossing upgrade locations will be carried out by the Project Civil/Structural Engineer and the Project Hydrologist prior to the construction of the crossing. | | |
| MM5 | Drainage Maintenance | Ch. 9: Water<br><br>Appendix 4-7: Surface Water Management Plan | › 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. | | |
| MM6 | Earthworks | Appendix 4-7: Surface Water Management Plan<br><br>CEMP Section 3 | › 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. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| MM7 | Forestry Felling Drainage Measures | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water<br><br>CEMP Section 3 | › Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) will be appointed to oversee the felling and extraction works. The ECoW will have the following functions:<br>› Attend the site for the setup period when drainage protection works are being installed and be present on site during the remainder of the forestry felling works.<br>› Prior to the commencement of works, review and agree 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).<br>› 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.<br>› Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness.<br>› Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures.<br>› Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements:<br>› Surface water samples shall be collected upstream and downstream of the keyhole felling site at suitable sampling locations.<br>› Sampling shall be taken from the stream / river bank, with no in-stream access permitted.<br>› The following minimum analytical suite shall be used: pH, Electrical Conductivity, Total Suspended Solids, Biochemical Oxygen Demand, Total Phosphorus, Ortho-Phosphate, Total Nitrogen, and Ammonia.<br>› Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions.<br>› Prepare and maintain a contingency plan.<br>› 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.<br>› Prepare and maintain a Water Protection Measure Register. This document is to be updated weekly by the ECoW. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › All relevant measures set out in the most recent versions of the Forestry & Freshwater Pearl Mussel Requirements, Forestry & Water Quality Guidelines, Forest Harvesting & the Environment Guidelines and the Forest Protection Guidelines will apply. In particular, to protect watercourses, the following measures will be adhered to during all /tree felling activities.<br>› Works will be overseen by an ECoW as described above.<br>› The extent of all necessary tree felling will be identified and demarcated with markings on the ground in advance of any felling commencing.<br>› 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.<br>› 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.<br>› 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.<br>› 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.<br>› Where felling is required inside the buffers, silt fences will be installed around existing watercourses. Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading.<br>› All new collector drains will taper out before entering the aquatic buffer zone to ensure the discharging water gently fans out over the buffer zone before entering the aquatic zone. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › 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;<br>› Mechanised operations will be suspended during and immediately after heavy rainfall.<br>› Where brash is required to form brash mats, it will be laid out at harvesting stage to prevent soil disturbance by machine movement.<br>› Brash which has not been pushed into the soil will be moved within the site to facilitate the creation of mats in more demanding locations.<br>› Felling of trees will be pointed directionally away from watercourses.<br>› Felling will be planned to minimise the number of machine passes in any one area.<br>› Extraction routes, and hence brash mats, will be aligned parallel to the ground contours where possible.<br>› Harvested timber will be stacked in dry areas, and outside any 50-metre watercourse buffer zone. Straw bales and check dams will be emplaced on the down gradient side of timber storage sites.<br>› 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. | | |
| MM8 | Felling License | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 2 | › The tree felling activities required as part of the Proposed Project will be the subject of a Felling Licence application to the Forest Service, in accordance with the Forestry Act 2014, 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 wind farm be submitted with the felling licence applications; therefore, the felling licenses cannot be applied for until such time as planning permission is obtained for the Proposed Project. | | |
| MM9 | Traffic Management | Ch. 4: Description of the Proposed Project, 15 | › In the event planning permission is granted for the Proposed Project, the Traffic Management Plan will address the requirements of any relevant planning conditions, including any additional mitigation measures, should they be conditioned. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | CEMP Section 3 | Traffic management measures included the following:<br>› Identification of a delivery schedule,<br>› Details of the alterations required to the infrastructure and any other minor alteration identified,<br>› A dry run of the route using vehicles with similar dimensions.<br>› The deliveries of turbine components to the site will be made in convoys of five vehicles at a time, and at night when roads are quietest.<br>› Convoys will be accompanied by escorts at the front and rear operating a "stop and go" system. Although the turbine delivery vehicles are large, they will not prevent other road users or emergency vehicles passing, should the need arise.<br>› The delivery escort vehicles will ensure the turbine transport is carried out in a safe and efficient manner with minimal delay or inconvenience for other road users.<br>› It is not anticipated that any section of the public road network will be closed during transport of turbines, although there will be some delays to local traffic at pinch points. During these periods it may be necessary to operate local diversions for through traffic. All deliveries comprising abnormally large loads where required will be made outside the normal peak traffic periods, at night, to avoid disruption to work and school-related traffic.<br>› A full dry run of the transport operation along the proposed route will be completed using vehicles with attachments to simulate the dimensions of the wind turbine transportation vehicles. This dry run will inform the Traffic Management Plan submitted for agreement with Limerick and Clare County Councils.<br>› All turbine deliveries will be provided for in the Transport Management Plan which will be finalised in advance of the construction stage, when the exact transport arrangements are known, delivery dates confirmed and escort proposals in place. The finalised Transport Management Plan will be submitted to the Planning Authority for agreement in advance of any abnormal loads using the local roads, and will provide | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls. | | |
| MM10 | Peat & Spoil Management | Appendix 4-3: Peat and Spoil Management Plan | › An interceptor drain will also be installed upslope 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.<br>› Settlement ponds will be constructed at the lower side/outfall location of the borrow pits and are shown on the drainage drawings.<br>› 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 pits. 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. | | |
| MM11 | Proposed Grid Connection underground cabling works | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 2 | The Grid Connection route utilises public local road networks (24,068m), Wind Farm Site Roads (160m), and private lands (787m). The following methodology will be followed during the trenching works:<br><br>› 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 pits.<br>› The Contractor, and their appointed Site Manager, will prepare a targeted Method Statement concisely outlining the construction methodology and incorporating all mitigation and control measures included within the planning application and accompanying reports and as required by planning conditions where relevant;<br>› All existing underground services shall be identified on site prior to the commencement of construction works;<br>› At watercourse crossings, the contractor will be required to adhere to the environmental control measures detailed in the CEMP. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › Where the cable route intersects with culverts, the culvert will remain in place (where possible) and the ducting will be installed either above or below the culvert to provide minimum separation distances in accordance with ESB and Uisce Éireann specifications ; | | |
| MM12 | Waste Management | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 3.2 | › 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 | | |
| **Construction Phase** | | | | | |
| MM13 | Refuelling | Ch. 4: Description of the Proposed Project<br><br>Ch.9: Water<br><br>CEMP Section 3<br><br>Appendix 4-7: Surface Water Management Plan | › 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 the temporary construction compounds.<br>› 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.<br>› Only designated trained and competent operatives will be authorised to refuel plant on-site.<br>› 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.<br><br>The following mitigation measures are proposed to avoid release of hydrocarbons at the site:<br><br>› On site re-fuelling of machinery will be carried out using a fuel truck at a dedicated refuelling area located at the temporary construction compounds. The fuel truck will also carry fuel absorbent material and pads in the event of any accidental spillages; | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;<br>› On-site refuelling will be carried out by trained personnel only;<br>› A permit to fuel system will be put in place;<br>› Fuels stored on site will be minimised. Fuel storage areas if required will be bunded appropriately for the fuel storage volume for the time period of the construction and fitted with a storm drainage system and an appropriate oil interceptor;<br>› The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,<br>› An emergency plan for the construction phase to deal with accidental spillages will be included within the Construction and Environmental Management Plan. Spill kits will be available to deal with and accidental spillage in and outside the re-fuelling area.<br>› Refuelling or maintenance of machinery will not occur within 100m of a watercourse. Fuel truck, drip kits, qualified personnel will be used where refuelling is required;<br>› A permit to refuel system will be adopted; | | |
| MM14 | Cement Based Products Deliveries and Management | Ch. 4: Description of the Proposed Project | › Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks.<br>› The closest concrete batching plant to the Proposed Project is located in the townland of Ballybrody, Co. Clare located approximately 25.2km to the northeast of the Site.<br>› The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching.<br>› When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site.<br>› Chute cleaning water will be isolated in temporary lined wash-out pits located near the Proposed Wind Farm site entrance. These temporary lined wash-out pits will be removed from the Proposed Wind Farm site at the end of the construction phase. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | The risks of pollution arising from concrete deliveries will be further reduced by the following:<br>› When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site.<br>› Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout.<br>› Site roads will be constructed to a high standard to allow transport of the turbine components around the site, and hence, concrete delivery trucks will be able to access all areas where the concrete will be needed. 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 bases 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.<br>› The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, confirming routes, prohibiting on-site washout and discussing emergency procedures.<br>› 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. | | |
| MM15 | Concrete Pouring | Ch. 4: Description of the Proposed Project<br><br>Appendix 4-7: Surface Water Management Plan | › Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.<br>› Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete.<br>› 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.<br>› 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<br>› Disposing of surplus concrete after completion of a pour in suitable off-site locations away from any watercourse or sensitive habitats. | | |
| MM16 | Road Cleanliness | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 3 | › It is not anticipated that vehicle or wheel washing will be required as part of the construction phase of the Proposed Project because site roads will be already formed using on-site materials before other road-going trucks begin to make regular or frequent deliveries to the site (e.g. with steel or concrete). A road sweeper will be available if any section of the public roads were to be dirtied by trucks associated with the Proposed Project. | | |
| MM17 | Existing Drainage Features | Ch. 4: Description of the Proposed Project<br><br>Appendix 4-7: Surface Water Management Plan<br><br>CEMP Section 3 | › There will be no direct discharges to any natural watercourses, 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. The distance will vary between 5-20m depending on local slope, the nature of local soil deposits and also the type of vegetation present. Buffer zones around the existing natural drainage features have been used to inform the layout of the Proposed Project.<br>› Minimum buffer zones of 50m around the existing natural drainage features have informed the layout of the Proposed Wind Farm.<br>› 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. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
|---|---|---|---|---|---|
| | | | › 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.<br>› 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 site roads will be maintained in their present location where possible.<br>› If it is expected that these artificial drains will receive drainage water from works areas, check dams will be added (as specified below) to control flows and sediment loads in these existing artificial drains.<br>› 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. | | |
| MM18 | Surface Water Drainage Measures | Appendix 4-7: Surface Water Management Plan | **Interceptor Drains**<br>› 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.<br>**Drainage Swales**<br>› Drainage swales (or collector drains) are shallow drains that will be used to intercept and collect run off from construction areas of the site during the construction phase. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Drainage swales will remain in place to collect runoff from roads and hardstanding areas of the Proposed Project during the operational phase and channel it to infiltration area for sediment settling.<br>› 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.<br>› The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive. Check dams will also be installed in some existing artificial drainage channels that will receive waters from works areas of the Site.<br><br>**Level Spreaders**<br><br>› 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 will not contribute further to water ingress to construction areas of the site.<br>› The water carried in interceptor drains will not have come in contact with works areas of the site and therefore should be free of silt and sediment. 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 so as to prevent erosion.<br>› Clean four-inch stone can be placed on the outside of the spreader lip and pressed into the ground mechanically to further dissipate the flow leaving the level spreader over a larger area.<br><br>**Vegetation Filters** | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Vegetation filters are the existing vegetated areas of land that will be used to accept surface water runoff from upgradient areas. The selection of suitable areas to use as vegetation filters will be determined by the size of the contributing catchment, slope and ground conditions.<br>› 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.<br>› Vegetation filters will not be used in isolation for waters that are likely to have higher silt loadings. In such cases, silt-bearing water will already have passed through stilling ponds prior to diffuse discharge to the vegetation filters via a level spreader.<br><br>**Stilling and Settlement Ponds**<br><br>› Stilling or settlement ponds will be used to attenuate runoff from works areas of the site 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<br>› 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.<br>› 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.<br><br>**Siltbusters** | | |

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| | | | › 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.<br><br>**Dewatering Silt bags**<br><br>› 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.<br>› The water will flow, via a pipe, from the stilling ponds into the silt bag. The silt bag will allow the water to flow through the geotextile fabric and will trap any of the finer silt and sediment remaining in the water after it has gone through the previous drainage measures. The dewatering silt bags will ensure that there will be no loss of peaty silt into the stream.<br><br>**Culverts**<br><br>› All new proposed culverts and proposed culvert upgrades will be suitably sized for the expected peak flows in the watercourse.<br>› Some culverts will be installed to manage drainage waters from works areas of the Proposed Project, 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. In some cases, two or more smaller diameter culverts may be used where this depth is limited, though this will be avoided as they will have a higher associated risk of blockage than a single, larger pipe. In all cases, culverts will be oversized to allow mammals to pass through the culvert.<br>› 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 | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | 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 doesn't occur above or below the culvert and water can continue to flow as necessary.<br><br>**Silt Fences**<br><br>› Silt fences will be installed as an additional water protection measure around existing watercourses in certain locations, particularly where works are proposed within the 50-metre buffer zone of a natural watercourse, which is inevitable where existing roads in proximity to watercourses are to be upgraded as part of the Proposed Wind Farm. These areas include around existing culverts, around the headwaters of watercourses.<br>› Silt fences will be installed as single, double or a series of triple silt fences, depending on the space available and the anticipated sediment loading. The silt fence designs follow the technical guidance document 'Control of Water Pollution from Linear Construction Projects' published by CIRIA (Ciria, No. C648, 1996). Up to three silt fences may be deployed in series.<br><br>**Sediment Entrapment Mats**<br><br>› 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<br><br>**Check Dams**<br><br>› The velocity of flow in the interceptor drains and drainage swales, particularly on sloped sections of the channel, will be controlled by check dams, which will be installed at regular intervals along the drains to ensure flow in the swale is non-erosive. Check dams | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | will also be installed in some existing artificial drainage channels that will receive waters from works areas of the Site.<br>› 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.<br>› Check dams will be used along sections of access road drains to attenuate flows and intercept silts at source. Check dams will be constructed from a 4/40mm non-friable crushed rock.<br>› Check dams will be used along sections of access road drains to intercept silts at source<br>› Check dams will not be used in any natural watercourses, only artificial drainage channels and interceptor drains. The check dams will be left in place at the end of the construction phase to limit erosive linear flow in the drainage swales during extreme rainfall events. | | |
| MM19 | Wastewater Management | Ch. 4: Description of the Proposed Project | › Temporary port-a-loo toilets located within a staff portacabin will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. The nearest licenced primary wastewater treatment plant is located in Kilmihil, approximately 5.6km South of the Proposed Project.<br>› There will also be a water supply onsite for hygiene purposes, by way of a temporary storage tank. The construction compound will also include a bunded refuelling and containment area for the storage of oil, lubricants and site generators etc, and full retention oil interceptor. | | |
| MM20 | Clear-Span Watercourse Crossing | Ch. 4: Description of the Proposed Project, Ch. 9: Water<br><br>CEMP Section 2 | It is proposed to construct a new clear-span watercourse crossing at one location within the Site and upgrade one existing crossing. 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: | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › 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.<br>› All drainage measures along the proposed road will be installed in advance of the works.<br>› 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 the stream bank with no instream works required.<br>› 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.<br>› 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.<br>› Where the box culvert is installed in sections, the joints will be sealed to prevent granular material entering the watercourse,<br>› Once the crossing is in position stone backfill will be placed and compacted against the structure up to the required level above the foundations.<br><br>Underground cabling ducting will be contained within the road make-up of the proposed crossing.<br><br>The watercourse crossings will be constructed to the specifications of the OPW bridge design guidelines 'Construction, Replacement or Alteration of Bridges and Culverts - A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945', and in consultation with Inland Fisheries Ireland. Abutments will be constructed from precast units combined with in-situ foundations, placed within an acceptable backfill material. | | |

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| | | | 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. | | |
| MM21 | Proposed Grid Connection – existing underground services, marker posts, joint bays and major watercourse crossings | Ch. 4: Description of the Proposed Project | **Existing Underground Services**<br>› Any underground services encountered along the grid cable routes will be surveyed for level and the ducting will pass over the service provided adequate cover is available.<br>› 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 communications duct and bottom of the service will be achieved.<br>› 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 ESB ducts where adjacent services are within 600mm, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle.<br><br>**Marker Posts**<br>› 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<br>› Surface cable markers will be placed along the route where cable depth is unavoidably shallow, due to constraints such as existing services, to indicate the precise location of the UGC. These markers will be metallic plates in accordance with ESBN and EirGrid standards.<br>› Marker posts will be used on non-roadway routes to delineate the cable route and joint bay positions. Corrosion proof aluminium triangular danger sign, with 700mm base, and | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | with centred lightning symbol, on engineering grade fluorescent yellow background shall be installed in adequately sized concrete foundations. Marker post shall also be placed in the event that burial depth is not to standard. Siting of marker posts to be dictated by ESBN as part of the detailed design process.<br><br>**Joint Bays**<br><br>› Joints Bays are to be installed approximately every 650m - 850m along the UGC route to facilitate the jointing of 2 No. lengths of 110kV UGC. Joint Bays are 6m x 2.5m x 2.05m pre-cast concrete structures installed below finished ground level. Joint Bays will be located in the non-wheel bearing strip of roadways, however given the narrow profile of local roads this may not always be possible. Please refer to Appendices 4-2 and 4-4 for further details on joint bay construction and cable installation.<br>› 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. During construction the joint bay locations will be completely fenced off, and once they have been constructed, they will be backfilled until cables are being installed.<br>› In association with joint bays, Communication Chambers will be installed at every joint slab location to facilitate communication links. Earth Sheath Link Chambers are also be installed at every joint bay along the cable route. Earth Sheath Links are used for earthing and bonding cable sheaths of underground power cables, 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.<br><br>**Major Watercourse Crossings** | | |

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| | | | The cable route will involve 6 No. bridge crossings, of which 5 no. will be horizontal directional drilling (HDD) crossings and will not interact with the existing bridge structure. As there is insufficient cover and depth in the bridge to cross with the bridge deck at these 5 locations, HDD will be required. Drawings of the bridge crossings and further details on culvert crossing methodology are included in Appendices 4-2 and 4-4 of this EIAR.<br>The underground cable will encounter 18 no. water culverts along the route, of which 2 no. Culverts are proposed to be replaced with an adequately sized HDPE Twin Wall pipe. Existing culverts will be crossed using open trenching with either an undercrossing or overcrossing. A confirmatory site survey of all culverts has been completed as part of this phase of the project prior to planning to confirm the crossing methods.<br>› Inland Fisheries Ireland have published guidelines relating to construction works along water bodies entitled "Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites (Eastern Regional Fisheries Board, 2004)", and these guidelines will be adhered to during the construction of the Proposed Project. | | |
| MM22 | Turbine Bases, Hardstanding and Infrastructure Foundations | Ch. 4: Description of the Proposed Project<br><br>Appendix 4-3: Peat and Spoil Management Plan<br><br>CEMP Section 2 | › All excavations within peat will be adequately supported or peat slopes are to 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 side slopes will be supported with granular fill..<br>› 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 is to be fed into an established watercourse or drainage ditch following suitable treatment. | | |
| MM23 | Peat and Spoil Management | Ch. 4: Description of the Proposed Project | All excavated peat and spoil will be permanently stored in the two no. borrow pits or in one of the designated peat and spoil management areas around six turbine locations<br>› Peat and overburden will be removed and temporarily stored in localised areas adjacent to the borrow pit locations before being placed into the permanent peat storage areas | | |

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| | | Appendix 4-3: Peat and Spoil Management Plan | within the borrow pits. The rock within the proposed borrow pit footprints will be removed by excavation and breaking based on the rock excavatability, which was determined from the ground investigation carried out at the proposed borrow pits.<br>› It is proposed to construct the borrow pits so that the base of the borrow pits are below the level of the adjacent section of access road.<br>› 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.<br>› 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.<br>› It will be necessary to construct rock buttresses founded on in-situ rock within the borrow pits to create individual cells (up to 4 no. depending on the borrow pit). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of rock fill from the borrow pit excavated, placed and compacted in layers. The founding stratum for each rock buttress will be inspected and approved by the Project Geotechnical Engineer.<br>› The rock buttresses will be constructed in stages to allow infilling of peat and spoil within cells. The buttress will be constructed of selected rock fill and placed and compacted in suitable layers to form a buttress of sufficient stability to retain the placed peat and spoil.<br>› Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance/rock buttress, allowing the borrow pit to be developed and infilled in cells.<br>› Peat will be placed in two cells on the upslope side of the borrow pit with overburden spoil in the other two cells. The contractor excavating the rock will be required to develop the borrow pits in a way which will allow the excavated peat and spoil to be reinstated safely. | | |

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| | | | › A number of rock buttresses to form cells within the borrow pits will be required to ensure access for trucks and excavators can be achieved. See Drawings P23-230-0600-0008 to 0009 for the location of the rock buttresses. The locations of the rock buttresses shown on Drawings P23-230-0600-0008 to 0009 for the borrow pits are indicative only and may change subject to local conditions encountered on site during construction.<br>› The rock buttresses will be wide enough (up to 4m) to allow construction traffic access for tipping and grading during the placement of the excavated peat and spoil. The permanent side slopes of the rock buttresses will be constructed at between 40 to 60 degrees.<br>› The internal rock buttresses will be founded on bedrock i.e., competent strata. The founding stratum for the rock buttress will be inspected and approved by the Project Geotechnical Engineer.<br>› In order to prevent water retention occurring behind the buttresses, the buttress will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of 100mm up to 500mm in size. In addition, drains will be placed through the buttresses close to the ground surface to allow surface water to drain from the surface of the placed peat.<br>› The use of temporary access ramps and long reach excavators during the placement of the excavated peat and spoil will be required.<br>› The surface of the placed peat and spoil will be shaped following backfill using excavators to allow efficient run-off of surface water from the placed arisings towards the perimeter of the borrow pit.<br>› The surface of the placed spoil will have a maximum grade of 5o<br>› The surface of the spoil will also be higher than the surface of the peat in the adjacent upslope cell.<br>› As the internal berms 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<br>› water within the repositories. These drains will be 150mm diameter flexible plastic drainage pipe or equivalent. | | |

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| | | | › A layer of geogrid to strengthen the surface of the placed peat within the borrow pits will be required.<br>› An interceptor drain will also be installed upslope 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.<br>› Temporary control of groundwater within the borrow pits will be required. A temporary pump and suitable outfall locations will be required during construction.<br>› Settlement ponds will be constructed at the lower side/outfall location of the borrow pits and are shown on the drainage drawings.<br>› 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 pits.<br>› Supervision by the Project Geotechnical Engineer will be carried out for the development of the borrow pits.<br>› All the above-mentioned general guidelines and requirements will be implemented by the Contractor during construction. | | |
| MM24 | Temporary Construction Compound | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 2 | The construction compounds will consist of temporary site offices, staff facilities and car-parking areas for staff and visitors. Construction materials and turbine components will be brought directly to the proposed turbine locations following their delivery to the site.<br><br>The 2 no. temporary construction compounds will be constructed as follows:<br><br>› The area to be used for each compound will be marked out at the corners using ranging rods or timber posts. Drainage runs and associated settlement ponds will be installed around the perimeter;<br>› The compound platform will be established using a similar technique as the construction of the substation platform; | | |

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| | | | › 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;<br>› A limited amount of fuel will have to be stored on the Proposed Project site and for the Grid Connection in appropriately bunded containers and a bunded area for oil storage will be constructed within the compound.<br>› Areas within the compound will be constructed as site roads and used as vehicle hardstanding during deliveries and for parking;<br>› A bunded containment area will be provided within the compound for the storage of lubricants, oils and site generators etc;<br>› A waste storage area will be provided within the compounds;<br>› The compounds will be fenced and secured with locked gates if necessary; and,<br>› Upon completion of the Proposed Project the temporary construction compounds will be decommissioned, granular material will be removed and the area will be allowed to vegetate naturally. | | |
| **Operational Phase** | | | | | |
| MM25 | Wastewater Management | Ch. 4: Description of the Proposed Project | › The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying.<br>› The wastewater storage tank alarm will be part of a continuous stream of data from the site's turbines, wind measurement devices and electrical substation that will be monitored remotely 24 hours a day, 7 days per week. 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 site. | | |

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| MM26 | Electrical Substation | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 2 | › The area of the onsite substation will be marked out using ranging rods or wooden posts and the soil and overburden stripped and will be either temporarily stockpiled locally at the substation location, or transported immediately on excavation to one of the 2 no. borrow pits<br>› Perimeter fencing will be erected<br>› The construction and components of the substation have been designed to EirGrid specifications.<br>› The electrical substation compound will be bunded appropriately to the volume of oils likely to be stored, and to prevent leakage to groundwater or surface water. The bunded area will be fitted with a storm drainage system and an appropriate oil interceptor; | | |
| **Ch. 5: Population and Human Health: Population and Human Health** | | | | | |
| **Pre-construction Phase** | | | | | |
| MM27 | Human Health | Ch. 5: Population and Human Health | At the outset of the Proposed Project, during the constraints mapping process detailed in Ch. 3: Site Selection & Reasonable Alternatives of this EIAR, all sensitive receptors within c. 1.63km of the area suitable for siting wind turbines within the EIAR Site Boundary were identified and mapped.<br>› This included all occupied and unoccupied dwellings, businesses, stud farms and schools. In addition, a planning history search to identify properties that may have been granted planning permission, but not yet been constructed, was carried out. Any property with a valid planning permission for a dwelling house was also added to the sensitive receptors' dataset.<br>All inhabitable dwellings (existing, proposed and permitted) and other sensitive receptors (inclusive of schools, businesses and stud farms) within 1.63km of the proposed turbines have been considered as part of the following shadow flicker assessment. There are 108 no. sensitive receptors located within 1.63km of proposed turbine locations. | | |

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| MM28 | Property Values | Ch. 5: Population and Human Health | The Proposed Wind Farm has been designed in accordance with the parameters set out in the Guidelines and with cognisance of the draft Guidelines, adhering to the required setback distances from sensitive receptors set out in those documents. | | |
| MM29 | Traffic and Transport | Ch. 5: Population and Human Health<br><br>Ch. 15 Material Assets | › A pre-condition survey of roads associated with the Proposed Project will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority.<br>› A competent Traffic Management Coordinator will be appointed for the duration of the construction of the Proposed Project and this person will be the main point of contact for all matters relating to traffic management.<br>› Locals in the area will be informed of any upcoming traffic related matters e.g. delivery of turbine components at night, via letter drops and posters in public places. Information will include the contact details of the Contract Project Coordinator, 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.<br>› Liaison with the relevant local authorities including the roads sections of local authorities that the delivery routes traverse, and An Garda Siochana, during the delivery phase of the large turbine vehicles, when an escort for all convoys will be required. | | |
| **Construction Phase** | | | | | |
| MM30 | Human Health | Ch. 5: Population and Human Health<br><br>CEMP Section 5 | The Proposed Project will be constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including:<br><br>› Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);<br>› Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); | | |

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| | | | › S.I. No. 291/2013 - Safety, Health and Welfare at Work (Construction) Regulations 2013 and<br>› Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).<br><br>The following measures will be taken:<br><br>› 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.<br>› 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.<br>› The suitability of machinery and equipment for use near power lines will be risk assessed.<br>› All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with underground cables. All contractors that may visit the Site are made aware of the location of lines before they come on to Site.<br>› 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. | | |

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| | | | › Information on safe clearances will be provided to all staff and visitors.<br>› Signage indicating locations and health and safety measures regarding electrical cables will be erected in canteens and on Site.<br>› 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.<br>› The suitability of machinery and equipment for use near power lines will be risk assessed.<br>› All staff will be trained on operating voltages of electricity cables running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site.<br>› 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.<br>› Information on safe clearances will be provided to all staff and visitors.<br>› Signage indicating locations and health and safety measures regarding electrical cables will be erected in canteens and on Site.<br>› 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.<br>› The suitability of machinery and equipment for use near power lines will be risk assessed.<br>› All staff will be trained on operating voltages of electricity cables running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Site are made aware of the location of lines before they come on to Site.<br>› When activities must be carried out beneath overhead lines, e.g., component delivery, a site-specific risk assessment will be undertaken prior to any works. The risk assessment | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | 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.<br>› Overhead line proximity detection equipment will be fitted to machinery when such works are required.<br><br>The scale and scope of the project requires 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*'.<br><br>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):<br><br>› When activities must be carried out beneath overhead lines, e.g., component delivery, 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.<br>› Overhead line proximity detection equipment will be fitted to machinery when such works are required.<br>› Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;<br>› Where possible, eliminate the hazards or reduce the risks;<br>› Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan;<br>› Ensure that the work of designers is coordinated to ensure safety;<br>› Organise co-operation between designers;<br>› Prepare a written Safety and Health Plan;<br>› Prepare a safety file for the completed structure and give it to the client; and | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Notify the Authority and the client of non-compliance with any written directions issued. | | |
| | | | **Operational Phase** | | |
| MM31 | Human Health | Ch. 5: Population and Human Health | › Prepare a safety file for the completed structure and give it to the client; and<br>› 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.<br>› 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.<br>› 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:<br>› Buried cable route markers at 50m (maximum) intervals and change of cable route direction;<br>› Directions to relevant turbines at junctions;<br>› "No access to Unauthorised Personnel" at appropriate locations;<br>› Speed limits signs at Site entrance and junctions<br>› "Warning these Premises are alarmed" at appropriate locations;<br>› "Danger HV" at appropriate locations;<br>› "Warning – Keep clear of structures during electrical storms, high winds or ice conditions" at Site entrance;<br>› "No unauthorised vehicles beyond this point" at specific Site entrances; and<br>› Other operational signage required as per Site-specific hazards.<br>› The proposed substation, which will be operated by Eirgrid/ESBN 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.<br>› Periodic service and maintenance work which include some vehicle movement. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › For operational and inspection purposes, substation access is required.<br>› Servicing of the substation equipment will be carried out in accordance with the manufacturer's specifications, which would be expected to entail the following:<br>○ Six-month service – three-week visit<br>○ Annual service – six-week visit<br>○ Weekly and daily visits as required.<br>› 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. | | |
| MM32 | Shadow Flicker | Ch. 5: Population and Human Health | <u>Wind Turbine Control Measures</u><br><br>All predicted incidents of shadow flicker will 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 any shadow flicker occurrences at properties which are not naturally screened nor can be screened in any other manner.<br><br>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. The shadow flicker prediction data will be used to select dates on which a shadow flicker event could be observed at one or multiple affected properties and the following process will be adhered to.<br><br>1. *Recording the weather conditions at the time of the site visit, including wind speeds and direction (i.e. blue sky, intermittent clouds, overcast, moderate breeze, light breeze, still etc.).*<br>2. *Recording the house number, time and duration of site visit and the observation point GPS coordinates.*<br>3. *Recording the nature of the sensitive receptor, its orientation, windows, landscaping in the vicinity, any elements of the built environment in the vicinity, vegetation.* | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | *4. In the event of shadow flicker being noted as occurring the details of the duration (times) of the occurrence will be recorded.*<br>*5. The data will then be sent to the wind farm operational team to confirm that the model and SCADA system are working.*<br>*6. Following 12 months of full operation of the Proposed Project a report can be prepared for the Local Authority describing the shadow flicker mitigation measures used at the wind farm and confirming the implementation and successful operation of the system.* | | |
| **Ch. 6: Biodiversity** | | | | | |
| **Pre-construction** | | | | | |
| MM33 | Invasive Species Management | Ch. 6: Biodiversity<br><br>Appendix 6-4<br><br>CEMP Section 3 | During field surveys, a search for Invasive Alien Species (IAS) listed under the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) was conducted.<br><br>**Rhododendron**<br><br>One species - Rhododendron (*Rhododendron ponticum)* - was recorded as small immature stands within the Proposed Wind Farm site, with one infestation recorded within the footprint of T5. Within the HHELs, Rhododendron (*Rhododendron ponticum)* was recorded on multiple occasions as small immature stands as well as large bushes. This species is listed on the 'First Schedule' of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and 'Third Schedule' of Regulations 49 & 50 of the Birds and Natural Habitats Regulations 2011.<br><br>Prior to the commencement of any works, the following site setup procedures will be carried out: | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › A pre-commencement survey for Rhododendron will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Site and record any changes in the extent of the infestation since the 2025 surveys.<br>› The locations and extent of Rhododendron within the Site will be clearly marked out using hazard tape to ensure they are not disturbed. A 10m buffer zone (Higgins, 2008) surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils.<br><br>Due to the relatively small extent of Rhododendron within the 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:<br><br>› 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.<br>› The cut material can be stacked and stored on site, used as firewood or mulched as this plant material is deemed inert and can be used for landscaping as natural weed barriers or for other horticultural purposes.<br>› 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.<br>› Where immature plants occur, hand pulling can be undertaken at any time of the year and left to dry out on an impermeable surface.<br><br>Where the Ecoplug method is unsatisfactory, manual extraction of the root/stump from the ground is recommended. The following methods for root extraction are outlined below:<br><br>› 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. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | ➢ The root/stump will be removed from the ground using hand tool or an excavator.<br>➢ The cut material can be stacked and stored on the Site, used as firewood or mulched as this plant material is deemed inert and can be used for landscaping as natural weed barriers or for other horticultural purposes.<br>➢ The root/stump will be placed on an impermeable surface such as palettes or a radon barrier membrane and left to dry out.<br><br>In areas where it is proposed to restore peatlands from conifer plantations, the following guidelines should be followed:<br><br>➢ There is a high potential for spread of rhododendron when the trees are cleared and the ground disturbed via tree felling, stump flipping / re-profiling etc. This risk is higher where there is mature flowering bushes where potential seed production / dispersal is high. Therefore high risk areas should be identified in advance.<br>➢ Areas identified in advance to be at high risk of further spread should be controlled / treated in advance of the felling / restoration works where possible, or immediately after the forestry works.<br>➢ Cutting and stump treatment / removal, with any herbicide treatment should be done immediately after cutting.<br>➢ An ongoing plan should be in place to deal with any young shoots to ensure they are controlled before they mature and set seed.<br><br>Following treatment or eradication of the plant, the soil at the Site of the infestation should 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 stored outside of the construction footprint, and within the Site and will then be clearly fenced off. This fenced off area will then be monitored and if necessary, re-treated. Treatment should continue until no growth is recorded for a period of at least two consecutive years. Alternatively, the excavated buffer zone can be moved to an offsite waste facility, under licence from NPWS. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | **Japanese Knotweed**<br><br>Along the Proposed Grid Connection route, two stands of Japanese knotweed (*Reynoutria japonica*) were recorded on existing public road verges.<br><br>Prior to the commencement of any works, the following steps will be undertaken:<br><br>› A pre-commencement survey for Japanese knotweed will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Proposed Project and record any changes in the extent of the infestation which may have occurred since the 2024 and 2025 surveys.<br>› The locations and extent of Japanese knotweed along the Proposed Grid Connection route will be clearly marked out using hazard tape to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and an appointed ecological clerk of works (ECoW) will inform the extent of the area to be treated as potentially contaminated. The exclusion zone will extend to 7m around the identified stands.<br>› The ECoW will be appointed to supervise all works carried out within the exclusion zones, when required.<br><br>To accommodate the Proposed Grid Connection route, the requirement for the removal of vegetation adjacent to existing roads is likely to arise. As stands of Japanese Knotweed are located along the Proposed Grid Connection route, the following will be undertaken to ensure these works do not result in the further spread of this species into the wider environment:<br><br>› All vegetation clearance in proximity to recorded stands of Japanese knotweed will be undertaken under the supervision of the appointed ECoW. No vegetation cleared from within the 7m exclusion zone will be removed from the infested area.<br>› All personnel and machinary which enter the exlcusion zones must be thouroughly washed down, as per the following: | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | • All plant, machinery, tools and personnel will be cleaned down prior to leaving the contaminated areas.<br>• Clean down will be undertaken on an impermeable membrane such as a radon barrier and following completion of the clean down operation, this will be brushed clean with sweepings left within the contaminated area to ensure that there is no potential to spread any contaminated material.<br>• Power washing will be avoided to prevent potentially contaminated run-off spreading outside the Proposed Project site.<br>• No plant, machinery, tools, or personnel will leave the exclusion zone, until authorised by the ECoW. All washed down material will remain within the 7m exclusion zone. | | |
| MM34 | Fauna | Ch. 6: Biodiversity | **Otter:**<br>› Taking a precautionary approach, and due to the time that can elapse between the original surveys, any future planning consent and construction, a pre-construction otter survey will be carried out by a qualified ecologist to identify the presence of any breeding sites along the Proposed Grid Connection route, that may have been established in the intervening period. Watercourses within the Proposed Wind Farm site and HHELs are small first order streams, and are unlikely to support breeding sites for otter.<br>› The requirement for a pre-construction survey is fully in line with industry best practice.<br>› Any holts identified within 50m of proposed infrastructure will subsequently be monitored for a minimum period of 2 weeks using remote cameras in order to ascertain use by otter and levels of activity. If an active otter holt is identified and | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | works can be undertaken safely then an exclusion zone will be set up around the holt as follows:<br>› Exclusion zone fencing and appropriate signage will be put in place between working areas and otter holt exclusion zones to ensure that there will be no encroachment of the breeding site exclusion zones by construction activities.<br>› If a newly established and active holt was identified within an area where works could not avoid direct impacts on the holt, the holt would likely need to be excluded, with the provision of a derogation licence from NPWS, prior to works commencing. This would involve the erection of one-way fencing, only allowing egress from the holt and will be undertaken in line with current guidelines by an appropriately qualified ecologist in advance of construction works commencing.<br>› Currently based on the finding of the surveys and current information regarding the Site, no derogation licence is required for this application, as no breeding sites have been recorded in close proximity to the Site. However, should the pre-commencement surveys identify a new breeding site and exclusion is required, a derogation licence will be in place from the NPWS.<br><br>**Badger:**<br><br>› 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 to identify the presence of any setts that may have been established in the intervening period. 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. Any setts identified 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. If an active badger sett is identified and works can be undertaken safely (as to avoid sett collapse) then an exclusion zone will be set up around the sett as follows: | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Exclusion zone fencing and appropriate signage will be put in place between working areas and badger sett exclusion zones to ensure that there will be no encroachment of the badger sett exclusion zones by construction activities.<br>› If a newly established and active sett was identified within an area where works could not avoid direct impacts on the sett, then the sett would likely need to be excluded prior to works commencing. This would need to be undertaken in line with current guidelines by an appropriately qualified ecologist in advance of construction works commencing and in consultation with NPWS.<br><br>**Red Squirrel and Pine Marten:**<br><br>› Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction survey for pine marten/red squirrel will be carried out to identify the presence of any new breeding sites. These surveys will focus on areas of Conifer plantation (WD4) to be felled and all suitable habitat within 50m of the felling blocks. Any potential breeding sites should be monitored to ascertain if they are active breeding sites. Surveys will be undertaken in line with Nature Scot and TII guidelines.<br>› Should active dreys/dens be identified within the blocks to be felled, the following mitigations and best practice procedures will be followed to ensure that no breeding site for either red squirrel or pine marten are impacted:<br>› Felling works to be undertaken in October–January inclusive, this will avoid the main breeding season (February-September) when vulnerable young are most likely to be found within breeding sites for both species.<br>› Any breeding sites identified within the 50m buffer that wouldn't be directly affected by felling works, but are vulnerable to disturbance related impacts, will be clearly marked out with an exclusion zone, and works/access through these areas will be avoided. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Plant machinery will be turned off when not in use.<br>› Operating machinery will be restricted to the Proposed Project works site area (and outside any exclusion zone)<br>**Bats**:<br>› Robust pre-construction bat surveys are undertaken to establish baseline activity and assess the potential risks associated with turbine operation. Survey design and impact assessment were guided by current legislation, scientific literature, and best-practice guidance, with full consideration given to spatial, temporal, and behavioural patterns relevant to bat ecology. | | |
| **Construction Phase** | | | | | |
| MM35 | Surface Watercourses and Sensitive Aquatic Faunal Species | Ch. 4: Description of the Proposed Project<br>Ch. 6: Biodiversity<br>Ch.9 Water | Mitigation measures addressing surface watercourses and sensitive aquatic faunal species are dealt with in Section MM19. | | |
| MM36 | Bats | Ch. 6: Biodiversity<br>Appendix 6-2 | The below describes the best practice and site-specific mitigation measures that are in place to avoid and reduce the potential for significant effects on local bat populations.<br>**Noise Restriction**<br>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 |
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| | | | 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.<br><br>**Lighting Restriction**<br><br>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.<br><br>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).<br><br>The applicant also commits to the Dark Sky Ireland Lighting Recommendations, ensuring that:<br><br>› Every light is justified;<br>› Light is used only when necessary;<br>› It is directed where needed;<br>› Light intensity is minimised;<br>› Spectra are adapted to the environment;<br>› White light sources will have a “warm” colour temperature (less than 3000K).<br><br>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. Post-construction monitoring | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | 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.<br><br>**Bat felling Buffers**<br><br>In accordance with NatureScot (2021) and NIEA (2021) guidance, a minimum 50m buffer is applied between turbines and habitat features used by bats (e.g. hedgerows, treelines). Though increased buffers (100–200m) are recommended by Eurobats No. 6 and NIEA around woodland areas, these are not currently supported by empirical evidence in the UK and Ireland.<br><br>A 50m buffer between turbine blade tip and the nearest habitat feature will be implemented, based on a worst-case-scenario turbine dimension of the largest blade with the lowest hub height (blade length 81.5m; hub height 110.5 m; total height 185 m). These buffers were calculated using the Natural England formula and have been applied in the turbine layout.<br><br>There will be a requirement to remove areas of conifer plantation to facilitate the required bat buffers at the Proposed Wind Farm. These vegetation-free areas (i.e. less than 2m in height) will be maintained during the operational life of the Proposed Project and form part of the overall bat collision risk mitigation strategy. | | |
| MM37 | Habitats | Ch. 6: Biodiversity<br><br>Ch. 7: Birds<br><br>Appendix 7-8: Hen Harrier | **Hen Harrier Enhancement Plan/Lands**<br><br>In order to mitigate the loss of Hen Harrier foraging lands a Hen Harrier Enhancement Plan has been prepared, and mitigation measures are discussed in detail in MM48.<br><br>**Mitigation of Habitat loss during vegetation loss to facilitate Turbine Delivery Route (TDR)** | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | Enhancement Plan/Lands | To mitigate the losses of the above habitats to facilitate the proposed TDR, the following will be implemented during vegetation removal:<br>› A risk assessment and method statement will be provided by the Contractor prior to commencing works.<br>› A suitably qualified ecological clerk of works (EcOW) will be appointed and will supervise all vegetation removal.<br>› All vegetation removal will be undertaken in line with the Wildlife Act (1976).<br>› Entire trees will only be removed where absolutely necessary, with pruning to be considered first (i.e. for oversails)<br>› In the event where trees or shrubs are removed, they will be replanted using native species once construction works have been complete. | | |
| MM38 | Invasive Species – Site Hygiene and Biosecurity Measures | Ch. 6: Biodiversity<br><br>Appendix 6-4 | The following site hygiene and biosecurity measures will be adhered to for the management of invasive species within the Proposed Project site:<br>› All works in relation to invasive species will be supervised by an ECoW.<br>› All staff will be given a Toolbox Talk, by a suitably qualified person or ecologist, on invasive species removal in relation to Japanese Knotweed and Rhododendron and their management on site.<br>› The contractor will assign a member of their team as Environmental Officer to ensure the management plan is adhered to throughout the proposed works.<br>› A designated bio-secure area/exclusion zone will be set up at recorded invasive species locations to prevent disturbance in these areas. Invasive species will be marked with hazard tape in order to identify the species prior to vegetation clearance works and to keep it separate from other brash material. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.<br>› Machinery that is used for excavation and onsite removal of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of invasive plant material are present.<br>› Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area.<br>› As a precautionary measure, machinery will be thoroughly cleaned down before exiting the site to prevent potential spread of invasive species elsewhere.<br>› Clean down will be carried out using brushes and shovels and power washing will be avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site.<br>› Material used for tracking machinery out of the contaminated areas on site e.g. plywood will be thoroughly cleaned down under supervision of the ECoW prior to removal off site.<br>› Any soil, topsoil or material required on the Site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. | | |
| **Operational Phase** | | | | | |
| MM39 | Bats | Ch. 6: Biodiversity<br><br>Appendix 6-2 | **Blade Feathering**<br><br>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). | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | 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. | | |
| **Ch. 7: Birds** | | | | | |
| **Pre-Construction Phase** | | | | | |
| MM40 | Birds (Pre-Construction Surveys) | Ch. 7: Birds | › It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the Proposed Wind Farm and its environs.<br>› Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Wind Farm to identify sensitive sites (e.g. nests or roosts) that may have been established in the intervening period between the surveys undertaken and the initiation of works at the Site.<br>› Any requirement for construction works to run into the subsequent breeding and winter seasons following commencement will be subject to a repeat of the pre-commencement confirmatory bird surveys to confirm the absence of breeding birds of conservation concern once per month during the breeding season (April to July) and once during the winter season (October). The survey will aim to identify sensitive sites e.g., nests or roosts, depending on the season in question. | | |
| MM41 | Design of the Proposed Project | Ch. 7: Birds | The project design has followed the basic principles outlined below to avoid the potential for significant effects on avian receptors:<br>› The Proposed Project avoids any designated SPAs, NHAs and pNHAs<br>› The Proposed Project avoids wildlife refuge sites (e.g., waterbodies)<br>› The turbine delivery route has been selected to utilise built infrastructure i.e., public roads, insofar as possible. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › 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). Cables will be laid underground as a result and will avoid effects on roadside hedgerows. | | |
| MM42 | Hen Harrier Enhancement Plans (Pre-Construction Phase) | Ch. 7: Birds<br><br>Appendix 7-8: Hen Harrier Enhancement Phase | This Hen Harrier Enhancement Plan will be implemented prior to the commissioning of the Proposed Wind Farm. | | |
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| | | | **Construction Phase** | | |
| MM43 | Birds (Construction Phase) | Ch. 7: Birds | › During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of birds. All plant and equipment for use will comply with the European Communities (Noise Emission By Equipment For Use Outdoors) Regulations, 2001, as amended (SI 632/2001). Plant machinery will also be turned off when not in use. Please see Chapter 12: Noise and Vibration for more detail associated with noise during the construction phase.<br>› Water protection measures will be implemented around existing watercourses as outlined in Chapter 9, to protect the use of watercourses by birds.<br>› An Environmental Clerk of Works and Project Ecologist will be appointed. Duties will include:<br>○ Organise the undertaking of pre-construction and construction phase confirmatory bird surveys to avoid impacts on birds.<br>○ Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Proposed Wind Farm. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | ○ Oversee management of ornithological issues during the construction period and advise on ornithological issues as they arise.<br>○ Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.<br>○ Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress as necessary.<br>› If winter roosting or breeding activity of birds of high conservation concern is identified, the roost or nest site will be located and no works shall be undertaken within a species-specific disturbance buffer in line with industry best practice (e.g. 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. | | |
| MM44 | Hen Harrier Enhancement Plans (Construction Phase) | Ch. 6: Biodiversity<br><br>Ch. 7: Birds<br><br>Appendix 7-8: Hen Harrier Enhancement Plans | The Proposed Project has been specifically designed to achieve a net gain for Hen Harrier in order to mitigate the loss of Hen Harrier foraging lands. The net gain will be achieved in two key ways.<br><br>› Firstly, through targeting the key threat/pressures acting on hen harrier that are classed as of high importance (as per Article 12).<br>› Secondly, through the rigorous implementation and audits of industry best practice prescriptive measures for the benefit of hen harrier.<br><br>The enhancement plan aims to provide an increase in the availability of passerine prey within the enhancement lands to offset the loss of the foraging habitat due to the proposed Wind Farm through deforestation and the enhancement of farmland. To achieve this increase in passerine prey, it is planned to promote plant diversity and structure within the enhancement lands, which will increase the diversity and abundance of passerines.<br><br>Three parcels of currently forested land and six farmland folios, totalling c.124ha, are proposed to offset the predicted (indirect) habitat loss (62ha). In quantitative terms, it is proposed to permanently deforest 56.3ha, which alone nearly matches the total habitat loss figures | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | calculated for hen harrier within the Proposed Wind Farm (62ha). In addition, it is proposed to enhance a further 67.4ha of farmland. | | |
| | | | **Operational Phase** | | |
| MM45 | Birds (Operational Phase Surveys) | Ch. 7: Birds | Significant displacement impacts on foraging hen harrier were predicted, as such an enhancement plan will be implemented. No further significant operational phase impacts requiring mitigation were identified. | | |
| | | | **Ch. 8: Land, Soils and Geology Land, Soils & Geology** | | |
| | | | **Construction Phase** | | |
| MM46 | Peat and Spoil Excavation | Ch. 4: Description of the Proposed Project<br><br>Ch. 8: Land, Soils and Geology Land, Soils & Geology<br><br>Appendix 4-3 | **Proposed Wind Farm**<br><br>› 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);<br>› 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 6 no. designated peat and spoil storage areas;<br>› Excavated peat/soils/subsoils will be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards;<br>› At the identified peat and spoil management areas, the vegetative topsoil layer will be removed to allow for spoil to be placed and upon reaching the recommended height, the vegetative topsoil layer will be reinstated; | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › The peat placed within the peat and spoil management areas will be restricted to a maximum height of 1m. Weak/liquified peat will be stored in the borrow pits and not at the 6 no. peat and spoil management areas;<br>› 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 peat and spoil management areas will require the use of long reach excavators, low ground pressure machinery and possibly bog mats in particular for drainage works;<br>› It will be ensured that the surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat and spoil management area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat;<br>› Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate;<br>› 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;<br>› Supervision by the Project Geotechnical Engineer will be carried out for the works;<br>› 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);<br><br>**<u>Proposed Grid Connection:</u>**<br><br>› Any overburden excavated from the cable trench will be transported to the peat and spoil management areas at the Proposed Wind Farm; and, | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Some 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.<br>**Borrow Pits**<br>› 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.<br>› In order to prevent water retention occurring behind the buttresses, the buttress will be constructed of coarse boulder fill with a high permeability. The buttress will be constructed of well graded granular rock fill of 100mm up to 500mm in size. In addition, drains will be placed through the buttresses close to the ground surface to allow surface water to drain from the surface of the placed peat.<br>› Temporary control of groundwater within the borrow pits will be required. A temporary pump and suitable outfall locations will be required during construction.<br>**Designated Peat and Spoil Management Areas within Turbine Clearfell Areas**<br>› 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.<br>› The surface of the placed peat will be shaped to allow efficient run-off of surface water. Shaping of the surface of the peat will be carried out as placement of peat within the peat placement area progresses. This will reduce the likelihood of debris run-off and reduce the risk of instability of the placed peat.<br>› Finished/shaped side slopes in the placed peat will be not greater than 1 (v): 4 (h). This slope inclination will be reviewed during construction, as appropriate. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM47 | Erosion of Exposed Subsoils and Peat During Tree Felling and Construction Works | Ch. 8: Land, Soils and Geology | All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment. All excavated material will be completed in accordance with the Peat and Spoil Management Plan. Material will be moved over the least possible distance.<br><br>Any excess peat will be moved to peat storage areas or will be temporarily surrounded by earthen berms to prevent erosion. This will prevent erosion of soil. Silt fences will be installed around temporary stockpiles to limit movement of entrained sediment in surface water runoff. The use of earthen berms and silt fencing around earthworks and spoil mounds will prevent egress of water from the works.<br><br>In order to minimize erosion of mineral subsoils stripping of peat will not take place during extremely wet periods (to prevent increased silt rich runoff). Temporary drainage systems will be implemented to limit runoff impacts during the construction phase.<br><br>All proposed felling works will be completed in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure that felling results in minimal potential negative effects on the local soil and subsoil environment.<br><br>In addition, the following mitigation measures will be implemented during felling operations:<br><br>› Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff;<br>› Proposed off-road routes will be walked in advance of any machinery;<br>› All machinery operators will be experienced; | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff;<br>› The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines;<br>› All machinery will be operated by suitably qualified personnel;<br>› These machines will traverse the Proposed Wind Farm along specified off-road routes (referred to as racks);<br>› 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;<br>› 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;<br>› 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,<br>› The location of racks will be chosen to avoid wet and potentially sensitive areas. | | |
| MM48 | Peat Instability and Failure | Ch. 8: Land, Soils and Geology<br><br>Appendix 8-1 | The following measures incorporated into the construction phase of the project will be implemented in full and assist in the management of the risks for this site.<br><br>› 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,<br>› Appointment of experienced and competent contractors;<br>› The site will be supervised by experienced and qualified personnel;<br>› Allocate sufficient time for the project (be aware that decreasing the construction time has the potential to increase the risk of initiating a peat movement);<br>› Prevent undercutting of slopes and unsupported excavations;<br>› Maintain a managed robust drainage system;<br>› Prevent placement of loads/overburden on marginal ground; | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Set up, maintain and report findings from monitoring systems;<br>› Ensure construction method statements are followed or where agreed modified/ developed; and,<br>› Revise and amend the Geotechnical Risk Register as construction progresses | | |
| MM49 | Hen Harrier Enhancement Lands | Ch. 8: Land, Soils and Geology | All proposed habitat management and enhancement works will be in accordance with the best practice Forest Service regulation, policies and strategic guidance documents as well as Coillte, DAFM and NatureScot guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment.<br><br>Given the nature of the restoration measures the following mitigation measures are proposed:<br>› Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff;<br>› Proposed off-road routes will be walked in advance of any machinery;<br>› All machinery operators will be experienced and suitably trained;<br>› The proposed enhancement lands will be walked before a machine goes off-road in order to prevent any damage to sensitive habitats;<br>› Bog mats will be used where the excavator is required to travel over wet ground; and,<br>› A low ground pressure excavator with wide tracks (1.9m or greater) will be used to reduce compaction of the peat and subsoils. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| **Operational Phase** | | | | | |
| MM50 | Use of Oil In Transformers | Ch. 8: Lands, Soil, and Geology | › All transformers and substation areas will be bunded to 110% of the volume of oil used in each transformer/substation; and,<br>› An emergency plan for the operational phase to deal with accidental spillages will be contained in the Environmental Management Plan for the wind farm operational phase. | | |
| **Ch. 9: Water** | | | | | |
| **Pre-Construction Phase** | | | | | |
| MM51 | Temporary Drainage Works | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water<br><br>Appendix 4-3<br><br>CEMP Section 3 | Prior to the commencement of construction works (new road/hardstand, turbine foundation installs or upgrade of existing roads) the following key temporary drainage measures will be installed:<br><br>› All existing land and forestry drain that intercept the proposed works area will be temporarily blocked down-gradient of the works using forestry check dams/silt traps;<br>› Clean water interceptor drains will be installed upgradient of the works areas;<br>› Check dams/silt fence arrangements (silt traps) will be placed in all existing that have surface water flows; and,<br>› A double silt fence perimeter will be placed down-slope of works areas that are located inside the watercourse 50m buffer zone. | | |
| **Construction Phase** | | | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM52 | Tree Felling | ECh. 9: Water | › Mitigation measures addressing the impact of tree felling during the Construction Phase are dealt with in Section MM3-9 and MM19 above. | | |
| MM53 | Earthworks Resulting in Suspended Solids Entrainment in Surface Waters | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water<br><br>Appendix 4-3<br><br>CEMP Section 3 | › Mitigation measures addressing the impact of earthworks resulting in suspended solids entrainment in surface waters during the Construction Phase are dealt with in Section MM3-9 and MM19 above. | | |
| MM54 | Effects on Groundwater Levels during Excavation Works | Ch. 9: Water | › If required, pumping of excavation inflows will prevent build-up of water in the excavation; | | |
| MM55 | Surface Water Quality from Excavation Dewatering | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water<br><br>Appendix 4-3 | › Mitigation measures addressing surface water quality from excavation dewatering during the Construction Phase are dealt with in Section MM19 above. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | CEMP Section 3 | | | |
| MM56 | Hydrocarbons | Ch. 4: Description of the Proposed Project<br><br>Ch.9: Water<br><br>CEMP Section 3<br><br>Appendix 4-7: Surface Water Management Plan | › Mitigation measures addressing hydrocarbons have been dealt with in Section MM14 above. | | |
| MM57 | Wastewater | Ch. 9: Water | › It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. It is not proposed to treat wastewater on-site. | | |
| MM58 | Use of Cement Based Products | Ch. 4: Description of the Proposed Project<br><br>Appendix 4-7: Surface Water Management Plan<br><br>CEMP Section 3 | › Mitigation measures addressing the use of Cement based products have been dealt with in Section MM15-16. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | Ch. 9: Water | | | |
| MM59 | Effects due to new Watercourses along the Proposed Grid Connection | Ch. 9: Water | › All proposed 2 no. stream crossings will be bottomless or clear span structures and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location;<br>› Where the proposed cable route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road;<br>› All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings;<br>› As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this | | |
| MM60 | New Watercourse Crossing Works | Ch. 9: Water | › Prior to the commencement of cable trenching or crossing works the following key temporary drainage measures will be installed:<br>› All proposed 2 no. stream crossings will be bottomless or clear span structures and the existing banks will remain undisturbed. No in-stream excavation works are proposed and therefore there will be no direct impact on the stream at the proposed crossing location;<br>› Where the proposed cable route follows an existing road or road proposed for upgrade, the cable will pass over or below the culvert within the access road;<br>› All guidance / mitigation measures proposed by the OPW or the Inland Fisheries Ireland is incorporated into the design of the proposed crossings;<br>› As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);<br>› During the near stream construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas;<br>› All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent; and,<br>› All crossings will be designed to accommodate a 100-year design flood with allowance for 300mm freeboard (refer to Table 9 7 for design flood flows). | | |
| MM61 | Effects on Designated Sites | Ch. 9: Water | › Mitigation measures addressing effects on designated sites during the Construction Phase are dealt with in Section MM3-9 and MM19 above. | | |
| **Operational Phase** | | | | | |
| MM62 | Replacement of Natural Surfaces with Lower Permeability Surfaces | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water | › Mitigation measures addressing replacement of natural surfaces with lower permeability surfaces during the Construction Phase are dealt with in MM19 above. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | Appendix 4-3<br><br>CEMP Section 3 | | | |
| MM63 | Runoff Resulting in Contamination of Surface Waters | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water<br><br>CEMP Section 3 | › Mitigation measures addressing runoff resulting in contamination of surface waters surfaces during the Construction Phase are dealt with in MM3-9 and MM19 above. | | |
| **Ch. 10: Air Quality** | | | | | |
| **Construction Phase** | | | | | |
| MM64 | Exhaust Emissions | Ch. 10: Air Quality<br><br>Ch. 15: Material Assets | **Proposed Wind Farm**<br><br>› All plant and materials vehicles will be stored in dedicated areas (onsite). Machinery will be switched off when not in use.<br>› Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority.<br>› Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.<br>› Aggregate materials for the construction of the Proposed Wind Farm infrastructure will be predominantly sourced onsite. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase and will be a key contract document that will be implemented in full by the contractor.<br>› Waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste generated onsite, such as peat and spoils will be managed on site. Any hazardous materials encountered on site will be removed to a suitably licensed facility. Any facility used will be as local to the site as possible to reduce the emissions associated with additional vehicle movements.<br><br>**Proposed Grid Connection**<br><br>› All plant and materials vehicles will be stored in dedicated areas (onsite). Machinery will be switched off when not in use.<br>› Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority.<br>› Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.<br>› Aggregate materials for the construction of the Proposed Wind Farm infrastructure will be predominantly sourced onsite.<br>› A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase and will be a key contract document that will be implemented in full by the contractor.<br>› Waste volumes generated on site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste generated onsite, such as peat and spoils will be managed on site. Any hazardous materials encountered on site will be removed to a suitably licensed facility. Any facility used will be as local to the site as possible to reduce the emissions associated with additional vehicle movements<br><br>**Transportation to and from the Site** | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Aggregate materials for the construction of site access tracks and all associated infrastructure will all be locally sourced, where possible, which will further reduce potential emissions.<br>› Turbines and construction materials will be transported to the Site on specified haul routes only.<br>› A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase.<br>› Any waste or hazardous material that requires transferring from the site will be transported to the most local suitably licensed facility. | | |
| MM65 | Dust Emissions | Ch. 10: Air Quality<br><br>CEMP Section 3 | › 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.<br>› All plant and materials vehicles will be stored in dedicated areas within the Site.<br>› Areas of excavation will be kept to a minimum, and stockpiling will be minimised by coordinating excavation, spreading and compaction.<br>› Turbines and construction traffic will be transported to the Site on specified haul routes only.<br>› The agreed haul route road adjacent to the Site will be regularly inspected for cleanliness and cleaned as necessary.<br>› The roads adjacent to the Site entrances will be checked weekly for damage/potholes and repaired as necessary.<br>› The transportation of materials from the borrow pit around the Site will be covered by tarpaulin or similar covered vehicles where necessary.<br>› The transportation of construction materials from locally sourced quarries for the Proposed Grid Connection infrastructure and a small volume for the Proposed Wind Farm to the Site will be covered by tarpaulin where necessary.<br>› If necessary, excavated material will be dampened prior to transport to the spoil management areas. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase . The CEMP includes dust suppression measures. The CEMP will be a key construction contract document and will be implemented in full by the contractor. | | |
| | | | **Operational Phase** | | |
| MM66 | Exhaust Emissions | Ch. 10: Air Quality | › 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.<br>› When stationary, delivery and onsite vehicles will be required to turn off engines.<br>› Waste material will be transferred to a suitably licensed/permitted facility by a fully licensed waste contactor where the waste will be sorted into individual was streams for recycling, recovery or disposal. The MRF facility will be as local to the Site as possible to reduce the emissions associated with vehicle movements | | |
| | | | **Ch. 11: Climate** | | |
| | | | **Construction Phase** | | |
| MM67 | Greenhouse Gas Emissions | Ch. 10: Air Quality<br><br>Ch.11: Climate<br><br>Ch. 15: Material Assets | › Mitigation measures addressing Greenhouse Gas emissions are dealt with in MM71.<br>› All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. | | |
| | | | **Operational Phase** | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM68 | Greenhouse Gas Emissions | Ch. 11: Climate | › 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.<br>› The identified 21ha of forestry 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. | | |
| **Ch. 12: Noise and Vibration Noise & Vibration** | | | | | |
| **Construction Phase** | | | | | |
| MM69 | Construction Phase (Noise) | Ch. 12: Noise and Vibration<br><br>CEMP Section 3 | The following list of measures will be implemented, where necessary, to ensure compliance with the relevant construction noise criteria:<br><br>› 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.<br>› Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;<br>› Establishing channels of communication between the contractor/developer, Local Authority and residents;<br>› Monitoring typical levels of noise and vibration during critical periods and at sensitive locations;<br>› Selection of plant with low inherent potential for generation of noise and/ or vibration where practical;<br>› Placing of noise generating / vibratory plant as far away from sensitive properties as practical within the site constraints, and;<br>› The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 07:00hrs and | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | 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. Any out of hours works will be communicated with local residents in advance of any works.<br><br>Where rock breaking is employed in relation to the proposed borrow pit location or other locations across the Site, the following are examples of measures that will be employed, where necessary, to mitigate noise emissions from these activities:<br><br>› Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency.<br>› Ensure all leaks in air lines are sealed.<br>› Use a dampened bit to eliminate ringing.<br><br>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, blasting will be avoided during unfavourable weather conditions. 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.<br><br>The methods used to minimise impacts will consist of the following:<br><br>› Restriction of hours within which blasting can be conducted (e.g. 09:00 – 19:00hrs).<br>› The firing of blasts at similar times to reduce the 'startle' effect.<br>› On-going circulars informing people of the progress of the works.<br>› The implementation of an onsite documented complaints procedure.<br>› The use of independent monitoring for verification of results. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence | | |
| | | | **Operational Phase** | | |
| MM70 | Operational Phase (Noise) | Ch. 12: Noise and Vibration | **Amplitude modulation**<br><br>In the event that a complaint which indicates potential excessive amplitude modulation (AM) or tonality 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 or tonality occurs. A noise monitoring protocol would be established, in consultation with the local authority, which would set out the location and analysis methodology to be employed for the noise monitoring. This can be secured via a planning condition.<br><br>If an ongoing issue with excessive AM is identified, a mitigation strategy to reduce the level of AM will be agreed with Clare County Council and implemented through engineering methods and/or curtailment of specific turbines. The operator will appoint a qualified acoustic consultant to objectively assess the level of AM in accordance with the methods outlined in the Institute of Acoustics IOA Noise Working Group (Wind Turbine Noise) Amplitude Modulation Working Group Final Report: A Method for Rating Amplitude Modulation in Wind Turbine Noise (9 August 2016) or subsequent revisions.<br><br>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.<br><br>Examples of mitigation measures which could be considered include turbine blade modifications, the implementation of specific operational controls for the relevant turbine type or operating turbines in different operational modes or turbine curtailment under specific | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | operational conditions. The aim of the mitigation would be to minimise adverse impacts from excessive AM associated with the proposed project as much as is reasonably practicable.<br><br>The commitments outlined to control amplitude modulation (AM) and tonality from wind turbines are considered best practice. The proposed approach provides a clear commitment that additional adverse impacts from excessive amplitude modulation (AM) or tonality associated with the operation of the proposed project will be effectively managed and minimised by the operator.<br><br>**Tonality**<br><br>In the unlikely event that a clearly audible tone or tones are identified at a noise-sensitive location, the operator would liaise with the turbine manufacturer to investigate and implement measures to mitigate or minimise the occurrence of tonality as much as is reasonably practicable. The appropriate mitigation measures will depend on the cause or source of the tonal noise and will typically be applied at source. This may involve engineering modifications to mechanical or electrical components, or the implementation of software-based operational controls via the turbine control system, such as adjustments to the turbine operating mode, rotor speed and/or blade pitch. These capabilities are embedded within the control systems of modern wind turbines. | | |
| **Ch. 13: Cultural Heritage Cultural Heritage** | | | | | |
| **Pre-Commencement, Construction, Operation and Decommissioning** | | | | | |
| MM71 | Indirect and Direct Construction Phase | Ch. 13: Cultural Heritage | All elements of the Proposed Project located within existing greenfield will be subject to archaeological monitoring of topsoil stripping. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation will be implemented as required and will | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | include preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH.<br><br>All interventions that are required along townland boundaries, as part of the construction of the Proposed Wind Farm, will be subject to archaeological monitoring, and will include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH.<br><br>The excavation of the Proposed Grid Connection, where it runs through bridges CH59 and CH60 will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and include a full record of the fabric of the bridge and any earlier road surfaces contained within same.<br><br>All topsoil stripping, where it is required for the construction of the temporary access road at CH39, will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and should any remains of the earlier road be identified during the course of works, these will be preserved by record. | | |
| **Operational Phase** | | | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM72 | Indirect Operational Phase | Ch. 14: Landscape and Visual | It is not possible to mitigate indirect effects on the archaeological, architectural and cultural heritage resource, due to the nature and scale of the proposed turbines within the landscape. It is noted that effects are not significant or permanent and would be removed following the decommissioning and removal of the turbines.<br><br>Sites of National Significance within 10km of the Proposed Wind Farm<br>With regards to sites of national significance, no significant negative operational impacts have been identified. One indirect, negative impact has been identified of moderate significance of effect, which relates to the site of a ringfort - cashel (AH70; CL048-005; Preservation Order 4/1957), which is situated c. 840m south of Turbine 8.<br><br>Archaeological Heritage (AH) sites within 5km of the Proposed Wind Farm<br>With regards to recorded archaeological heritage sites, no significant negative operational impacts have been identified. One indirect, negative impact has been identified of moderate significance of effect, which relates the site of a ringfort and children's burial ground (AH45), which is situated c. 1.12km north of Turbine 1. The remaining effects vary from imperceptible to slight in significance.<br>Built Heritage (BH) sites within 5km of the Proposed Wind Farm<br>› No significant negative operational effects have been identified upon the recorded built heritage resource. No significant effects are predicted on all four BH sites in the study area of the Proposed Wind Farm | | |
| **Ch. 14: Landscape and Visual Landscape & Visual** | | | | | |
| **Pre-Construction/ Construction Phase** | | | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM73 | Landscape Effects | Ch. 14: Landscape and Visual | **Mitigation by Design:**<br><br>The Proposed Wind Farm site was strategically selected as a landscape highly suitable for the development of wind energy. The Proposed Wind Farm layout that is the subject of this LVIA incorporates the following landscape and visual design considerations for best practice wind farm design:<br><br>› 7 no. proposed turbines of the Proposed Project are sited in a "Strategic Area" for wind energy development in the Clare Wind Energy Strategy, and 1 no. proposed turbine 'T8' is sited within an area designated as 'Acceptable in Principle'.<br>› The Proposed Wind Farm is primarily sited within the Slieve Callan Uplands Landscape Character Area (LCA), an LCA of the lowest landscape sensitivity rating for wind energy development in County Clare, as set out in local planning policy. The landscape characteristics of this LCA make it highly suitable and capable of absorbing multiple large scale wind energy developments.<br>› The Proposed Wind Farm is not located within any high sensitivity landscape designations of County Clare ('Heritage' Landscapes'), nor is it the subject of protected scenic amenity designations within the local planning policy.<br>› The Site is primarily comprised of a marginal upland landscape with commercial forestry, where wind energy is well established. As such, it is a modified working landscape with low sensitivity, deemed capable of effectively absorbing the Proposed Wind Farm.<br>› The proposed turbines are sited in an upland landscape of large scale, capable of effectively accommodating multiple wind energy developments.<br>› The proposed turbines are sited in a sparsely populated area with appropriate setback distances from local population centres.<br>› The topographical characteristics of the marginal upland landscape and its surrounding area naturally limit the visual exposure of the proposed turbines. Distinctive ridgelines and landforms of the upland landscape to the east and north effectively obscure visibility of the | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | turbines from much of the broader landscape, thereby limiting the extent of landscape and visual impact upon large numbers of receptors.<br>› The turbine layout has been designed to create a coherent arrangement of turbines, contiguous and connected to each other visually and with consistent spacing in line with the guidance for design and siting of wind farms in 'Transitional Marginal' Landscape Types in the WEDGs (2006), and regard to the 'Draft WEDGs (2019).<br>› Siting of proposed turbines adheres to the minimum 500m set back distance in the current WEDGs (2006) and also the recommended larger 4 times tip height set back distance to third party properties, explicitly set out for residential visual amenity, prescribed by the Draft WEDGs (2019).<br>› The proposed Grid Connection is underground and follows the local road network and existing forestry tracks, thereby eliminating potential landscape and visual effects during the operational phase;<br>› The internal site road layout makes use of the existing forestry tracks wherever possible (to be upgraded for construction and delivery of wind turbine components), to minimise the requirement for new tracks within the Site;<br>› Felling of existing coniferous plantation is predominantly limited to keyhole felling in localised parts of the Site, in keeping with existing practices in the commercial forestry plantation on-site. | | |
| **Ch. 15: Material Assets Material Assets** | | | | | |
| **Material Assets - Traffic** | | | | | |
| **Pre-Construction, Construction and Operation** | | | | | |
| MM74 | Traffic | Ch. 15: Material Assets | **Mitigation by Design**<br>› Selection of the most appropriate delivery route to transport the wind turbine components, requiring the minimum remedial works to accommodate the vehicles. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › Selection of the shortest Proposed Grid Connection diversion routes, minimising the impacts on the existing road network and traffic. | | |
| MM75 | Delivery of abnormal loads | Ch. 15: Material Assets | The following are the main mitigation measures for these deliveries. These will take place after peak evening traffic:<br>› 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.<br>› The deliveries will be made in consultation with the Local Authority and An Garda Síochána.<br>› It is estimated that 64 abnormal sized loads will be delivered to the site, comprising 22 convoys of 3 (1 convoy will have one vehicle only), undertaken over 22 separate nights.<br>› These nights will be spread out over an approximate period of 5 weeks and will be agreed in advance with the relevant authorities.4<br>› For each convoy there will be two police escort vehicles that will stop traffic at the front and rear of the convoy of 3 vehicles in addition to two escort vehicles provided by the haulage company. | | |
| MM76 | General Traffic Management | Ch. 15: Material Assets<br><br>Appendix 15-2 | Prior to the commencement of the construction phase of the Proposed Project a detailed Traffic Management Plan will be prepared by the Contractor for agreement with the relevant local authorities and An Garda Síochána. In the event that An Coimisiúin Pleanála decides to grant consent for the Proposed Project the final TMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by the ACP. The TMP prescribes the following:<br><br>› **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | › **Delivery Programme** – a programme of deliveries will be submitted to the relevant County Councils (Clare and Limerick) in advance of deliveries of turbine components to site. Liaison with the Local Authorities and Transport Infrastructure Ireland (TII) 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.<br>› Temporary traffic management measures during construction of Wind Farm Site at access junctions during construction – Temporary measures including signage at access junctions on the L6254.<br>› Temporary traffic management measures during construction of Grid Connection – Including signage and implementation of temporary traffic diversions.<br>› **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.<br>› **A Pre and Post Construction Condition Survey** – Where required by the Local Authorities, a pre-condition survey of roads associated with the Proposed Project will be carried out immediately prior to construction commencement to record an accurate condition of the road at the time. A post construction survey will be carried out after works are completed to ensure that any remediation works are carried out to a satisfactory standard. 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.<br>› **Liaison with the relevant local authority** - Liaison with the County Councils 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 relevant Roads Sections will be informed of the names and | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | contact numbers for the Project Developer/Contractor Site Manager as well as the Site Environmental Manager.<br>› Implementation of temporary alterations to road network at critical locations.<br>› **Identification of delivery routes** – These routes will be agreed with the County Councils and adhered to by all contractors.<br>› **Delivery times of large turbine components** - The management plan 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.<br>› **Travel plan for construction workers** – While the assessment above has assumed the worst case in that construction workers will drive to the site, the Contractor will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the site.<br>› **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.<br>› **Re-instatement works** - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers. | | |
| **Chapter 15: Material Assets - Other** | | | | | |
| **Pre-Constructions Phase** | | | | | |
| MM77 | Existing Underground Services | Ch. 4: Description of the Proposed Project<br><br>Ch. 15: Material Assets | To facilitate the installation of the proposed UGC, it may be necessary to relocate existing underground services such as water mains, telecoms, 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 to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | If existing 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, and the underground cables will then be re-energised.<br><br>Uisce Eireann will be consulted and advised on details of the project proposals in the form of a completed Building-over or Near an Irish Water Asset Application Form and associated technical information largely comprising drawings and schedules with details of proposed crossings etc with as much available information as possible. Uisce Eireann will be involved in the early engagement on projects that may involve any infrastructure which may be located near their assets with the intention of identifying as early as possible, if bespoke design measures or diversions are necessary.<br><br>The water supply will be turned off by the utility so work can commence on diverting or crossing the service. The section of the 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.<br><br>Any underground services encountered along the grid cable routes 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 communications duct 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 ESB ducts where | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | adjacent services are within 600mm, with marker tape on the side of the trench. Back fill around any utility services will be with dead sand/pea shingle. | | |
| | | | **Construction Phase** | | |
| MM78 | Waste Management | Ch. 15: Material Assets<br><br>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.<br>› The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation at the 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.<br>› 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.<br>› 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.<br>› 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. | | |
| | | | **Operational Phase** | | |
| MM79 | Waste Management Services | Ch. 15: Material Assets | › All waste generated on-site will be contained in waste skip 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 | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| | | | Site are unlikely to be large enough to warrant source segregation at the Site. Therefore, all waste streams generated on site will be deposited into a single waste skip. The waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licenced waste contractor where the waste will be sorted into individual waste stream for recycling, recovery or disposal.<br>› Site personnel will be instructed at induction that under no circumstances can waste be brought on 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. | | |
| MM80 | Telecommunications | Ch. 15: Material Assets | The *'Wind Energy Development Guidelines for Planning Authorities'* (Department of the Environment, Heritage and Local Government, 2006) state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required. Developers are advised to contact individual local and national broadcasters and mobile phone operators to inform them of proposals to develop wind farms. This consultation has been carried out by MKO as part of the assessment of the Proposed. Both the adopted 2006 and the 2019 draft *'Wind Energy Development Guidelines for Planning Authorities'* produced by the Department of the Environment, Heritage and Local Government (DOEHLG) state that interference with broadcast communications can be overcome by the installation of deflectors or repeaters where required<br><br>2rn (formerly RTÉ Transmission Network Ltd.), replied on the 7th of February 2024 to a scoping request from MKO stating that there is no fixed linking within the area. 2rn has recommended that a protocol agreement be put in place for the Proposed Wind Farm if the Site goes ahead. The Protocol Document ensures that in the event of any interference occurring to 2rn television or radio reception due to operation of a wind farm, the required measures as set out in the document, will be carried out by the developer to rectify this. The Protocol Document ensures that the appropriate mitigation is carried out in the event of any unanticipated broadcast interference arising to RTÉ television or radio reception as a result of the proposed Wind Farm. | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Audit Result | Action Required |
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| MM81 | Aviation | Ch. 15: Material Assets | As no impacts were identified by the 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:<br><br>**Irish Aviation Authority**<br><br>7. *Agree an aeronautical obstacle warning light scheme for the wind farm development*<br>8. *Provide as-constructed coordinates in WGS84 format together with ground and blade tip height elevations at each wind turbine location and*<br>9. *Notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection.*<br><br>**Department of Defence**<br><br>1. *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.* | | |

# 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 An Coimisiúin Pleanála.

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.

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.

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | **Pre-Construction Phase** | | | |
| MX1 | Drainage Maintenance | Ch. 4: Description of the Proposed Project, 9<br><br>CEMP Section 3,4<br><br>Appendix 4-7: Surface Water Management Plan | › An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.<br>› Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. Checks will be carried out on a daily basis.<br>› Prior to commencement of works in sub-catchments across the site, drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. These inspections will be done on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously. | On going | Monthly | Project Hydrologist |
| MX2 | Surface Water Management Plan | Appendix 4-7: Surface Water Management Plan<br><br>Ch. 9: Water | › Water quality field testing and laboratory analysis will be undertaken prior to commencement of felling and construction at the site. The monitoring programme will be subject to agreement with Clare County Council but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document.<br>› Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standard's | As required | As required | Project Hydrologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | (EQSs) and sampling will be undertaken for each stream that drains from the construction site.<br>› Baseline sampling will be completed on at least two occasions, and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell.<br>› Prior to commencement of works in sub-catchments across the site, drain inspections will be competed to ensure ditches and streams are free from debris and blockages that may impede drainage. These inspections will be done on a catchment by catchment basis as the construction works develop across the site, as works in all areas will not commence simultaneously. | | | |
| MX3 | Environmental Management | CEMP Section 4 | › 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.<br>› 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 |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | ECoW will report their ongoing audit findings, monitoring results and site observations to both the Project Developer and the Proposed Contractor, having been nominated by the developer to fulfil the role.<br>› 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. | | | |
| MX4 | Invasive Species | Ch. 6: Biodiversity<br><br>Appendix 6-4 | › A pre-commencement survey for Rhododendron will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Site and record any changes in the extent of the infestation since the 2025 surveys.<br>› The locations and extent of Rhododendron within the Site will be clearly marked out using hazard tape to ensure they are not disturbed. A 10m buffer zone (Higgins, 2008) surrounding each stand will also be applied using temporary fencing, to avoid disturbance of potentially contaminated soils.<br>› A pre-commencement survey for Japanese knotweed will be undertaken by a suitably qualified ecologist to determine the locations and extent of the species within the Proposed Project and record any changes in the extent of the infestation which may have occurred since the 2024 and 2025 surveys.<br>› The locations and extent of Japanese knotweed along the Proposed Grid Connection route will be clearly marked out using hazard tape to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and an | Once | As required | Project Ecologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | appointed ecological clerk of works (ECoW) will inform the extent of the area to be treated as potentially contaminated. The exclusion zone will extend to 7m around the identified stands.<br>› The ECoW will be appointed to supervise all works carried out within the exclusion zones, when required. | | | |
| MX5 | Fauna | Ch. 6: Biodiversity | **Otter:**<br>› As outlined above in Section MM56 taking a precautionary approach, and due to the time that can elapse between the original surveys, any future planning consent and construction, a pre-construction otter survey will be carried out by a qualified ecologist to identify the presence of any breeding sites along the Proposed Grid Connection route, that may have been established in the intervening period<br>**Badger**<br>› 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 to identify the presence of any setts that may have been established in the intervening period.<br>**Red Squirrel and Pine Marten:**<br>› Due to time that can elapse between the original surveys, any future planning consent and construction, a pre-construction survey for pine marten/red squirrel will be carried out to identify the presence of any new breeding | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | sites. These surveys will focus on areas of Conifer plantation (WD4) to be felled and all suitable habitat within 50m of the felling blocks. Any potential breeding sites should be monitored to ascertain if they are active breeding sites. Surveys will be undertaken in line with Nature Scot and TII guidelines.<br><br>**Bats:**<br><br>› Robust pre-construction bat surveys are undertaken to establish baseline activity and assess the potential risks associated with turbine operation. Survey design and impact assessment were guided by current legislation, scientific literature, and best-practice guidance, with full consideration given to spatial, temporal, and behavioural patterns relevant to bat ecology. | | | |
| MX6 | Birds | Ch. 7: Birds<br><br>Appendix 7-8: Hen Harrier Enhancement Plan<br><br>Appendix 7-7: Bird Monitoring | › It is proposed that construction works will commence outside the bird nesting season (1st of March to 31st of August inclusive) to avoid the most sensitive time of the year for most bird species with the potential to use the site and its environs. Pre-commencement confirmatory surveys will be undertaken within one month prior to the initiation of works at the Proposed Project to identify sensitive sites (e.g. roosts).<br>› Any requirement for construction works to run into the subsequent breeding or winter seasons following commencement will be subject to a repeat of the pre-commencement bird surveys to confirm the absence of breeding or roosting birds of conservation concern. These surveys will be conducted once per month during the breeding season (April to | Once | As required | Project Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | Programme | July) and once at the start of the winter season (October). The survey will aim to identify sensitive sites (e.g., nests or roosts depending on the season in question).<br>› This monitoring will involve surveying onsite and to a 500m radius of the development footprint/works areas. Monitoring will be undertaken by a suitably qualified ornithologist. The survey period will include one month prior to the initiation of works, four visits between April and July and one visit during the winter period (October). If a sensitive area is identified, the nest/roost sites will be located, and no works shall be undertaken within a species-specific buffer in line with best practice guidance (e.g. Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007). No works within the buffer zone shall be permitted until it can be demonstrated that the species is no longer reliant on the area for breeding or roosting.<br>› All site staff and subcontractors will be made aware of any restrictions to be imposed by means of a toolbox talk and a map of the 'no-work zone' will be made available to all construction staff. The restricted area will also be marked off using hazard-tape fencing to alert all personnel on site to the suspension of works within that area. | | | |
| MX7 | Hen Harrier Enhancement Plan | Ch. 7: Birds<br><br>Appendix 7-8: Hen Harrier Enhancement Plan | In summary, the monitoring measures at the Proposed Lands will include:<br><br>› The areas proposed for enhancement will be the subject of ongoing monitoring during the operational phase of the wind farm to ensure it is offering supporting habitat for breeding hen harrier. The ongoing monitoring will take place during the breeding bird season. The monitoring will seek to identify | On going | As required | Project Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | whether hen harrier are utilising the areas under active management for foraging and will be conducted by way of vantage point surveys (six hours in duration). These surveys will be undertaken once a month March to August inclusive, at each enhancement area, each year.<br>› Passerine point counts will be undertaken monthly from April to September inclusive in each monitoring year at each of the enhancement areas. The monitoring aims to investigate to what extent enhancement measures e.g. seed crops, increase the availability of prey species for hen harrier.<br>› Areas of favourable hen harrier foraging habitat (i.e. scrub, blanket bog, wet heath and heather banks) within the enhancement areas should be accurately mapped and should be monitored annually to check that the areas so covered have not altered in size and that the grazing regime that is in place is maintaining the current state of these habitats (i.e. neither poaching nor overgrowth of open areas is occurring). As well as mapping, this monitoring will be recorded by means of fixed-point photography. | | | |
| MX8 | Tree Felling | Ch. 9: Water | Sampling will be completed before, during (if the operation is conducted over a protracted time) and after the felling activity. The 'before' sampling will be conducted within 4 weeks of the felling activity commencing, preferably in medium to high water flow conditions. The "during" sampling will be undertaken once a week or after rainfall events. The 'after' sampling will comprise as many samplings as necessary to demonstrate that water quality has returned to pre-activity status (i.e., where an impact has been shown). | As Required | Monthly | ECoW |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | Criteria for the selection of water sampling points include the following:<br>› Avoid man-made ditches and drains, or watercourses that do not have year-round flows, i.e. avoid ephemeral ditches, drains or watercourses;<br>› Select sampling points upstream and downstream of the forestry activities;<br>› It is advantageous if the upstream location is outside/above the forest in order to evaluate the impact of land-uses other than forestry;<br>› Where possible, downstream locations will be selected: one immediately below the forestry activity, the second at exit from the forest, and the third some distance from the second (this allows demonstration of no impact through dilution effect or contamination by other land-uses where impact increases at third downstream location relative to second downstream location); and,<br>› The above sampling strategy will be undertaken for all on-site sub-catchments streams where tree felling is proposed. | | | |
| **Construction Phase** | | | | | | |
| MX9 | Health and Safety | Ch. 4: Description of the Proposed Project | 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): | Daily | Daily | PSCS |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | CEMP Section 5 | › Avoid man-made ditches and drains, or watercourses that do not have year-round flows, i.e. avoid ephemeral ditches, drains or watercourses;<br>› Development of the Safety and Health Plan for the construction stage with updating where required as work progresses;<br>› Compile and develop safety file information.<br>› Reporting of accidents / incidents;<br>› Weekly Site meeting with PSCS;<br>› Coordinate arrangements for checking the implementation of safe working procedures.<br>› Ensure that the following are being carried out:<br>› Induction of all site staff including any new staff enlisted for the project from time to time;<br>› Toolbox talks as necessary;<br>› 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;<br>› Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;<br>› Monitor the compliance of contractors and others and take corrective action where necessary; and<br>› Notify the Authority and the client of non-compliance with any written directions issued. | | | |
| MX10 | Peat & Spoil Management | Appendix 4-3 | › Routine inspection of the wind farm site by the Contractor and Project Geotechnical Engineer will be undertaken and will include an assessment of ground stability conditions (e.g., | On going | As Necessary | Project Geotechnical Engineer |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | 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).<br>› Site reporting procedures will be implemented to ensure that working practices are suitable for the encountered ground conditions. Ground conditions will be assessed by a suitably experienced geotechnical engineer.<br>› Regular briefing of all site staff (e.g., toolbox talks) to provide feedback on construction and ground<br>› performance and to promote reporting of any observed change in ground conditions<br><br>**Movement Monitoring Posts**<br>To monitor possible peat movements, it is proposed to install sighting posts upslope and downslope of the access road at staggered intervals at locations where the peat depth is greater than 2m. Additional monitoring locations will be provided at infrastructure locations with deeper peat deposits. Details of sighting posts are given below:<br><br>› A line of sighting posts will comprise:<br>1. A line of wooden stakes (proposed to be 1 to 1.5m long) placed vertically into the peat to form a straight line.<br>2. The sighting line will comprise 6 no. posts at 5m centres that is a line some 25m long.<br>3. 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.<br>› Lines of sighting posts will be placed across the existing slope about 5m away from the area to be worked. It is recommended that the posts are located along the road at 10m intervals in | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | areas of deep peat (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 useful by the Project Geotechnical Engineer.<br>› 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 posting line 1).<br>› 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).<br>› Monitoring of the posts will comprise sighting along the line and recording any relative movement of posts from the string line.<br>› Where increased movements are recorded the frequency of monitoring will be increased.<br>› 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.<br><br>**Borrow Pits**<br><br>› It will be necessary to construct rock buttresses founded on in-situ rock within the borrow pits to create individual cells (up to 4 no. depending on the borrow pit). The cells will be opened in sequence and filled as needed. The rock buttresses will be constructed of rock fill from the borrow pit excavated, placed and compacted in layers. The founding stratum for each rock buttress will be inspected and approved by the Project Geotechnical Engineer. | | | |

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| | | | 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.<br>› Supervision by the Project Geotechnical Engineer will be carried out for the development of the borrow pits. | | | |
| MX11 | Water Quality and Monitoring – Forestry Felling Drainage Measures | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water<br><br>CEMP Section 4 | Before the commencement of any felling works, an Environmental Clerk of Works (ECoW) will be appointed to oversee the felling and extraction works. The ECoW will have the following functions:<br><br>› Attend the site for the setup period when drainage protection works are being installed and be present on site during the remainder of the forestry felling works.<br>› Prior to the commencement of works, review and agree 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).<br>› 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.<br>› Conduct daily and weekly inspections of all water protection measures and visually assess their integrity and effectiveness.<br>› Take representative photographs showing the progress of operation onsite, and the integrity and effectiveness of the water protection measures. | As required | As Necessary | ECoW |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | › Collect water samples for analysis by a 3rd party accredited laboratory, adhering to the following requirements:<br>○ Surface water samples shall be collected upstream and downstream of the keyhole felling site at suitable sampling locations.<br>○ Sampling shall be taken from the stream / river bank, with no in-stream access permitted.<br>○ The following minimum analytical suite shall be used: pH, Electrical Conductivity, Total Suspended Solids, Biochemical Oxygen Demand, Total Phosphorus, Ortho-Phosphate, Total Nitrogen, and Ammonia.<br>› Review of operator's records for plant inspections, evidence of contamination and leaks, and drainage checks made after extreme weather conditions.<br>› Prepare and maintain a contingency plan.<br>› 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. | | | |
| MX12 | Water Quality and Monitoring | Ch. 4: Description of the Proposed Project<br><br>Ch. 9: Water | › Regular inspections (weekly and monthly) of all installed drainage features will be undertaken. Additional event based inspections will also be completed, i.e. after heavy rainfall in order to check for blockages and to ensure there is no build-up of standing water at parts of the drainage systems where it is not intended. The inspection of the drainage system will be the responsibility of the ECoW or the supervising hydrologist.<br>› If necessary, any excess sediment build up behind check dams will be removed. For this reason, check dams will be inspected | Daily | As Necessary | ECoW |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | CEMP Section 4 | and maintained weekly during the construction phase of the project to ensure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam.<br>› Check dams will also be inspected following rainfall events to ensure the structure of the dam is still effective in controlling flow. Any scouring around the edges of the check dams or overtopping of the dam in normal flow conditions will be rectified by reinforcement of the check dam.<br>› Drainage swales will be regularly inspected for evidence of erosion along the length of the swale. If any evidence of erosion is detected, additional check dams will be installed to limit the velocity of flow in the channel and reduce the likelihood of erosion occurring in the future.<br>› A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 50% of the trap's capacity. Sediment will be cleaned out of the silt trap when it exceeds 50% of trap capacity. Silt traps will be inspected weekly during the construction phase of the Proposed Project and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows.<br>› The frequency of drainage system inspections will be reduced following completion of the construction phase of the Proposed Project. Weekly inspections during the construction phase will be reduced to monthly, bi-monthly and eventually quarterly inspections during the operational phase up until the site has revegetated and the natural silt controls regenerate. The frequency will be increased or decreased depending on the | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | effectiveness of the measures in place and the amount of remedial action required in any given period. | | | |
| MX13 | Reactive Site Drainage Management | Ch. 4: Description of the Proposed Project<br><br>Appendix 4-3 | › 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.<br>› 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. This may require the installation of additional check dams, interceptor drains or swales as deemed necessary on-site.<br>› 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 the situation on the ground at a particular time.<br>› Daily visual inspections of drains and outfalls will 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.<br>› 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. | As required | As Necessary | ECoW |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| MX14 | Surface Water Drainage Measures Monitoring | Appendix 4-7: Surface Water Management Plan | **Stilling Ponds**<br>› A water level indicator such as a staff gauge will be installed in each stilling pond with marks to identify when sediment is at 10% of the stilling pond capacity. Sediment will be cleaned out of the still pond when it exceeds 10% of pond capacity. Stilling ponds will be inspected weekly and following rainfall events. Inlet and outlets will be checked for sediment accumulation and anything else that might interfere with flows<br>**Culverts**<br>› All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.<br>**Silt Fences**<br>› Site fences will be inspected regularly to ensure water is continuing to flow through the fabric, and the fence is not coming under strain from water backing up behind it.<br>**Check Dams**<br>› Check dams will be inspected and maintained regularly to insure adequate performance. Maintenance checks will also ensure the centre elevation of the dam remains lower than the sides of the dam. | As required | Monthly | ECoW |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| MX15 | Surface Water Quality and Monitoring | Ch. 9: Water<br><br>CEMP Section 4 | › Daily surface water monitoring forms (for visual inspections and field chemistry measurements) will also be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.<br>› Water quality field testing and laboratory analysis will be undertaken prior to commencement of felling and construction at the site. The monitoring programme will be subject to agreement with Clare County Council but will be based on the planning stage programme already outlined in the EIAR and CEMP and presented in this document.<br>› Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standard's (EQSs) and sampling will be undertaken for each stream that drains from the construction site.<br>› Baseline sampling will be completed on at least two occasions, and these will coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell. | Daily | As Necessary | ECoW |
| MX16 | Tree Felling | Ch. 9: Water | › Daily surface water monitoring forms (for visual inspections and field chemistry measurements) will be utilised at every works site near any watercourse. These will be taken daily and kept on site for record and inspection.<br>› Checking and maintenance of roads and culverts will be on-going through any felling operation. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Existing drains will not be disturbed during felling works; | As Required | Monthly | ECoW |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| MX17 | Plant and Equipment Inspections | Ch. 9: Water | › The plant used will be regularly inspected for leaks and fitness for purpose. | As Required | Monthly | ECoW |
| MX18 | Traffic and Transport | CEMP Section 3 | › The agreed haul route roads adjacent to the site will be regularly inspected for cleanliness and cleaned as necessary.<br>› The roads adjacent to the site entrances will be checked weekly or damage/potholes and repaired as necessary. | As required | Weekly | ECoW |
| MX19 | Biodiversity | CEMP Section 4 | The Project Ecologist 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:<br>› Undertake a pre-construction transect/walkover bird survey to ensure that significant effects on breeding birds will be avoided.<br>› Inform and educate on-site personnel of the ornithological and ecological sensitivities within the Site.<br>› Oversee management of ornithological and ecological issues during the construction period and advise on ornithological issues as they arise.<br>› Provide guidance to contractors to ensure legal compliance with respect to protected species onsite.<br>› Liaise with officers of consenting authorities and other relevant bodies with regular updates in relation to construction progress. | As required | As required | Project Ecologist/Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| MX20 | Peat and Spoil Management, Borrow Pits | Ch. 4: Description of the Proposed Project<br><br>CEMP Section 4 | › Inspections of the peat and spoil management areas will be made by the Project Geotechnical Engineer through regular monitoring of the works<br>› Once excavated, 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. All temporary peat placement areas will be upslope of founded roads/hardstands and will be inspected by the Project Geotechnical Engineer before material is temporarily stored in the area.<br>› The construction and upgrading of access roads in areas of deep peat (greater than 2m) will be inspected on a routine basis (by the Site Manager/Ecological Clerk of Works/Project Geotechnical Engineer) during the works, particularly before/following tracking by heavy vehicular loads. It should be noted that the new access tracks have been designed to avoid areas of deep peat where possible, with an average peat depth of 0.55m recorded along these tracks | As required | As required | Geotechnical Engineer |
| | Exhaust Emissions | Ch. 10: Air Quality | › Proposed Project construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager will produce and follow a site inspection and machinery checklist which will be followed and updated as required. | As required | As required | Site Supervisor/Construction Manager |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| MX21 | Archaeological Monitoring | Ch. 13: Cultural Heritage<br><br>CEMP Section 4 | › All elements of the Proposed Project located within existing greenfield will be subject to archaeological monitoring of topsoil stripping. This work will be carried out under licence to the National Monuments Service of the DHLGH. If archaeological remains are identified during the course of these works further mitigation will be implemented as required and will include preservation by record or in-situ. Any further mitigation will require agreement from the DHLGH.<br>› All interventions that are required along townland boundaries, as part of the construction of the Proposed Wind Farm, will be subject to archaeological monitoring, and will include a full record of the sections of townland boundaries that are removed. This work will be carried out under licence to the National Monuments Service of the DHLGH.<br>› The excavation of the Proposed Grid Connection, where it runs through bridges CH59 and CH60 will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and include a full record of the fabric of the bridge and any earlier road surfaces contained within same.<br>› All topsoil stripping, where it is required for the construction of the temporary access road at CH39, will be subject to archaeological monitoring. This work will be carried out under licence to the National Monuments Service of the DHLGH and should any remains of the earlier road be identified during the course of works, these will be preserved by record. | As Required | As Required | Project Archaeologist |

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| **Operational Phase** | | | | | | |
| MX22 | Drainage Inspections | CEMP Section 3<br><br>Ch. 9: Water | › An inspection and maintenance plan for the on-site construction drainage system will be prepared in advance of commencement of any works. Regular inspections of all installed drainage systems will be undertaken, especially after heavy rainfall, to check for blockages, and ensure there is no build-up of standing water in parts of the systems where it is not intended. Inspections will also be undertaken after tree felling.<br>› Any excess build-up of silt levels at dams, the settlement pond, or any other drainage features that may decrease the effectiveness of the drainage feature, will be removed. Checks will be carried out on a daily basis.<br>During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken for each primary watercourse, and specifically following heavy rainfall events. | Monthly | Monthly | ECoW |
| MX23 | Bats | Ch. 6: Biodiversity<br><br>Appendix 6-2 | 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, walked survey transects and corpse searching to record any bat fatalities resulting from collision.<br><br>At the end of each year, the efficacy of any mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. | Years 1, 2, 3 | Annually | Project Ecologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | 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, walked survey transects and corpse searching to record any bat fatalities resulting from collision.<br><br>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.<br><br>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.<br><br>The below subsections provide additional detail on the proposed survey effort, timing, and mitigation. | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | **Monitoring Year 1**<br><br>Bat activity surveys<br><br>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). Walked survey transects will also be conducted.<br><br>Key weather parameters and other factors that are known to influence collision risk will be monitored and shall include:<br><br>› Windspeed in m/s (measured at nacelle height)<br>› Temperature (ºC)<br>› Precipitation (mm/hr)<br><br>Carcass searches<br><br>Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with most recent 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 | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | use of a trained dog detection team will be carried out to ensure maximum efficiency.<br><br>**Monitoring Years 2&3**<br><br>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.<br><br>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. | | | |
| MX24 | Birds | Ch. 7: Birds<br><br>Appendix 7-7: Bird Monitoring Programme | The programme of works will monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys will be scheduled to coincide with years 1, 2, 3, 5, 10 & 15 of the lifetime of the wind farm. Monitoring measures are based on guidelines issued by NatureScot (SNH, 2009 and NatureScot, 2025). The following individual components will be implemented: | Years 1,2,3,5, 10 and 15 | Monthly | Project Ornithologist |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | › Monthly flight activity surveys: vantage point surveys.<br>› Targeted bird collision surveys (corpse searches) will be undertaken with trained dogs. The surveys will include detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust.<br><br>The proposed Bird Monitoring Programme was not put forward in response to any identified significant effect but rather as a best practice measure (as per guidance outlined in NatureScot, 2009). The monitoring programme is comprehensive and considered entirely adequate in this regard. The results of this monitoring will be reported to the Planning Authority following each monitoring year and will include recommendations that may inform additional mitigation or adaptation if required. | | | |
| MX25 | Hen Harrier Enhancement Plans | Ch. 7: Birds<br><br>Appendix 7-7: Bird Monitoring Programme<br><br>Appendix 7-8: Hen Harrier Enhancement Plan | Following commencement of the Hen Harrier Enhancement Plan, the efficacy of the enhancement measures will be reviewed yearly. Analysis of the data collected will be the basis for a review of the measures and techniques employed. This analysis will be contained in an annual report. Should any adjustments to the plan be deemed necessary or advisable, these should be undertaken in consultation with the NPWS prior to any alterations to the plan.<br><br>Additional monitoring measures will include:<br><br>**Habitat scoring**<br>The enhancement lands will be scored based on the Hen Harrier Project scorecards for Bog and Heath (Areas A, B, C and 6) and Wet Grassland (Areas 1, 2, 3, 4 and 5). Scoring will be carried out | | | |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
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| | | | based on the methods outlined in the Hen Harrier Project guidance documents for each habitat type. Scoring will be carried out between May 15th and August 31st as per these methods.<br><br>**<u>Vegetation sampling</u>**<br>A number of fixed relevé sites (i.e. permanent quadrats) will be set up in the proposed enhancement lands. Data will be recorded prior to the commencement of the enhancement plan activities. The character of each relevé will be recorded (e.g. species proportions present using Domin scale, vegetation structure) and photographs will be taken of each relevé from a fixed point. These relieves will then be re-examined annually following the commencement of the enhancement plan in place to establish the extent of habitat improvement resulting from management practices.<br><br>Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the plan will be prepared and submitted to the planning authority yearly following commencement of the plan. The farm plan agreements and enhancement area plan agreements will provide for such amendments | | | |
| MX26 | Noise and Vibration | Ch. 12: Noise and Vibration | Prior to the commissioning of the wind farm, the developer will submit a Noise Complaint Monitoring Programme (NCMP) to the planning authority for written agreement. The NCMP will include a detailed methodology for noise measurements and procedures for recording results and a protocol for managing complaints. | Once within six months | As Required | Noise Consultant |

| Ref. No. | Reference Heading | Reference Location | Mitigation Measure | Frequency | Reporting Period | Responsibility |
|---|---|---|---|---|---|---|
| | | | Compliance 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 taken into account.<br><br>In the unlikely event that an exceedance of the noise criteria is identified as part of the commissioning assessment, implementation of noise reduced operational modes resulting in curtailment of turbine operation will be implemented for specific turbines in specific wind conditions to ensure turbine noise levels are within the relevant noise criterion curves/planning conditions limits. Such curtailment can be applied using the wind farm SCADA system without undue effect on the wind turbine performance. Following implementation of these measures, noise surveys will be repeated to confirm compliance with the noise criteria. | | | |

# 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 April to July. The EIAR stipulates that construction may commence between August to 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 Figure 9-1 below.

| | | | Year 1 | | | | Year 2 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ID | Task Name | Task Description | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 1 | Site Health and Safty | | | | | | | | | |
| 2 | Grid Connection | Construct grid connection to Athlone 110kV substation | | | | | | | | |
| 3 | Site Compounds | Site Compounds, site access, fencing, gates | | | | | | | | |
| 4 | Site Roads | Construction/upgrade of roads, construct underpasses install drainage measures, install water protection measures | | | | | | | | |
| 5 | Substation and Electrical Works | Constuction substation, underground cabling between turbines | | | | | | | | |
| 6 | Turbine Hardstands | Excavate/pile for turbine bases where required | | | | | | | | |
| 7 | Turbine Foundations | Fix reinforcing steel and anchorage system, erect shuttering, concrete pour | | | | | | | | |
| 8 | Backfilling and Landscaping | | | | | | | | | |
| 9 | Turbine Delivery and Erection | | | | | | | | | |
| 10 | Substation Commissoning | | | | | | | | | |
| 11 | Turbine Commisioning | | | | | | | | | |

*Figure 9-1 Indicative Construction Schedule*

# 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 for the site. The findings of each audit will be made available to Clare 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 wind farm:

**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 boundary.

**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 Environmental Clerk of Works 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.