Appendix 2-2 – Construction & Environmental Management Plan

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Cloghercor Wind Farm Ltd.

Cloghercor Wind Farm, County Donegal

Construction Environmental Management Plan (CEMP)

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1.0 INTRODUCTION

Cloghercor Wind Farm Limited (hereafter referred to as the Applicant), intend to apply to An Bord Pleanála for planning permission to construct the proposed Cloghercor Wind Farm in County Donegal. The proposed wind farm is located approximately 2 km south of Doochary in west County Donegal. The proposed wind farm will have an electrical output of between 95-136.8 MW.

The proposed project comprises a wind farm of 19 no. wind turbines and all associated infrastructure including turbine foundations, hardstanding areas, borrow pits, access tracks, an on-site 110kV electrical substation, works to facilitate delivery of equipment to site and a grid connection comprising a loop-in connection into the Ardnagappary to Tievebrack 110 kV line. The proposed project refers only to the elements of this for which planning permission is being sought as part of this application.

The overall proposed project comprises the proposed project and any facilitating works required along the public road network and at private properties to accommodate the delivery of turbine components (which includes a temporary turbine component transfer area). A description of the key elements of the proposed project is outlined in Section 2 of this CEMP. A full description of the proposed project is provided in Chapter 2 (Description of the Proposed Project) of the Environmental Impact Assessment Report (EIAR).

The planning application for the proposed project will be submitted to An Bord Pleanála (ABP) under Section 37E of the Planning and Development Act 2000 (as amended). An Environmental Impact Assessment Report (hereafter referred to as the EIAR) and Natura Impact statement (hereafter referred to as the NIS) have been prepared to accompany the planning application and incorporate all elements of the proposed project works including the main wind farm site, the electrical grid connection, the road/junction accommodation works to facilitate the abnormal load deliveries and forestry replanting works.

This Construction Environmental Management Plan (CEMP) has been prepared to present the proposed management and administration of site activities for the construction phase of the proposed project, to ensure that all construction activities are undertaken in an environmentally responsible manner. This CEMP summarises the environmental commitments related to the construction of the project, and the measures to ensure compliance with legislation and the requirements of statutory bodies, all as detailed in the EIAR and NIS.

This CEMP will be a live document and will be reviewed and updated, as necessary. Upon appointment, the Main Contractor for construction of the proposed project shall update this document to produce an updated version of the CEMP (i.e. the Contractor's CEMP) which will account for any additional requirements set out in Planning Conditions.

The CEMP provides a summary of the requirements from relevant guidance, standards, and codes of practice applicable to the work being undertaken as part of the proposed project. The following is a non-exhaustive list of relevant guidance/standards/codes referenced in the preparation of this CEMP:

- Environmental Protection Agency (EPA), Guidelines on the Information to be contained in Environmental Impact Assessment Reports (May 2022);
- Department of Housing, Planning and Local Government (DHPLG), Draft Revised Wind Energy Development Guidelines (December 2019);

- Department of Environment, Heritage and Local Government (DEHLG), Wind Energy Development Guidelines (December 2006);
- EPA Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects (November, 2021);
- Inland Fisheries Ireland (IFI) Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016);
- Construction Industry Research and Information Association (CIRIA) C532 publication 'Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors' (CIRIA, 2001);
- CIRIA C648 publication 'Control of water pollution from linear construction projects' (CIRIA, 2006);
- CIRIA C741 publication 'Environmental Good Practice on Site' (4th Edition) (CIRIA, 2015);
- CIRIA C750, 'Groundwater control: design and practice' (CIRIA, 2016);
- CIRIA C697 & C753F publications 'SuDS Manual' (CIRIA, 2007 & 2015);
- National Roads Authority (NRA) (2008). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. National Roads Authority;
- Irish Working Group on Groundwater (2005) Guidance Document GW5, Groundwater Working Group (WGGW) 2005;
- British Standards Institution (BSI), BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise;
- BSI, BS 5228: Part 1 and the European Communities (Construction Plant and Equipment) (Permissible Noise Levels);
- Scottish Natural Heritage (SNH) (2019) 'Good Practice during Wind Farm Construction' (4th edition). Scottish Natural Heritage;
- The Institute of Air Quality Management (IAQM) publication '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014);
- Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes published by the NRA (now TII) in 2011;
- The Control of Dust and Emissions during Construction and Demolition published by the Greater London Authority (GLA) in 2014;
- Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites".

1.1 SCOPE OF THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

The purpose of this document is to communicate the key environmental obligations that apply to all Contractors, their sub-Contractors and personnel while carrying out any form of construction activity for the development of the Cloghercor Wind Farm, Co. Donegal.

This CEMP should be read in conjunction with the Planning Documents & Drawings, the EIAR, NIS, and the construction stage elements[1] of the Traffic Management Plan (TMP) (see Appendix 2-7).

This CEMP provides a mechanism for ensuring compliance with environmental legislation and statutory consents. It defines the approach to environmental management at the site during the

[1] See Section 3.0 (Construction Phase) and Section 4.0 (Construction Phase Traffic Management Plan) of the TMP (Appendix 2-7).

construction phase and addresses all relevant environmental aspects of the management of site preparation and construction work within the development works area (as set out in section 2.0 'Project Description' of Chapter 2 (Description of the Proposed Project) of the EIAR).

The scope of the CEMP includes:

- All construction elements of the development;
- The proposed implementation and management of environmental controls and mitigation measures during each phase of construction works; and
- A documented process to ensure measures identified through the planning phase of the development will be applied in practice.

At a minimum, the Contractor's CEMP at construction stage will contain:

- A statement of the environmental aims and policy objectives of the development;
- Roles and Responsibilities of key individuals;
- Environmental management and reporting structure;
- Site management and construction activity details;
- Environmental mitigation measures;
- Environmental awareness training programmes;
- Environmental monitoring programmes and requirements;
- Inspection and auditing programmes; and
- Emergency response plans and procedures for any environmental incidents.

1.1.1 Implementation of the CEMP

In terms of overall environmental responsibility, everyone on site is responsible for ensuring that their actions constitute good environmental practice. All site personnel are charged with following good practice and encouraged to provide feedback and suggestions for improvements. All site personnel are also required to ensure compliance with the requirements of the CEMP.

Compliance with the CEMP, the procedures, work practices and controls will be mandatory and must be adhered to by the Contractor, all site personnel, and sub-contractors employed during the construction phase. The CEMP seeks to:

- Provide a basis for achieving and implementing the construction related mitigation measures identified in the EIAR and NIS; and
- Promote best environmental on-site practices for the duration of the construction phase.

1.1.2 Aims and Objectives of the CEMP

The key aims of the CEMP are:

- To ensure the project is undertaken in accordance with best practice guidance for the management of the environment during construction works;
- To ensure that mitigation measures to protect all aspects of the environment as set out in the EIAR and the NIS are put in place;
- To ensure that construction activities are carried out in accordance with all planning conditions for the development; and
- To carry out the works with minimal impact on the environment.

The primary objectives to ensure the above aims are achieved during the construction phase are:

- Appointment and delegation of responsibility to an individual for monitoring environmental compliance and adherence to the Contractor's CEMP;
- Updating the Contractor's CEMP on a continuous basis in accordance with regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the planning application documentation;
- Providing adequate environmental training and awareness to all project personnel;
- Establishing documented schedules and records for monitoring and inspections;
- Establishing reporting procedures for any incidents on site with potential to impact on the environment;
- Providing opportunities for community feedback and submission of complaints; and
- Adopting a sustainable and socially responsible approach to construction.

1.1.3 Revisions to the CEMP

As mentioned above, the CEMP is considered a 'live' document and as such will be reviewed on a regular basis to allow any changes to construction programme, operations or unforeseen issues be incorporated at any stage throughout the project as deemed necessary by the Applicant, their agents or relevant authorities. The CEMP will be subject to continual review to address, for example:

- Any conditions stipulated in the planning approval;
- Any requirements/issues highlighted through consultations prior to works e.g. by the National Parks and Wildlife Service (NPWS), Donegal County Council etc.;
- To ensure it reflects best practice at the time of construction; and
- To ensure it incorporates the findings of any pre-construction site investigations.

This CEMP will be provided to the appointed Contractor who will have responsibility for updating the document as necessary through the construction phase.

The Contractor's CEMP will incorporate the conditions associated with any grant of planning for the proposed project. This CEMP will be subject to ongoing review (throughout the construction phase of the development), through regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation.

The appointed Contractor is required to include further details and/or confirmation in the updated version of the CEMP which will include:

- Details of emergency plan including personnel and contact numbers;
- Site and traffic signage; and
- Method statements.

The appointed Contractor shall also agree and implement monitoring measures to monitor the effectiveness of the CEMP.

2.0 SITE LOCATION AND PROJECT DETAILS

2.1 LOCATION OF THE PROPOSED PROJECT

The site of the proposed wind farm (i.e. the no. 19 turbines and associated infrastructure within the proposed wind farm site boundary) is located within a peatland and forested landscape,

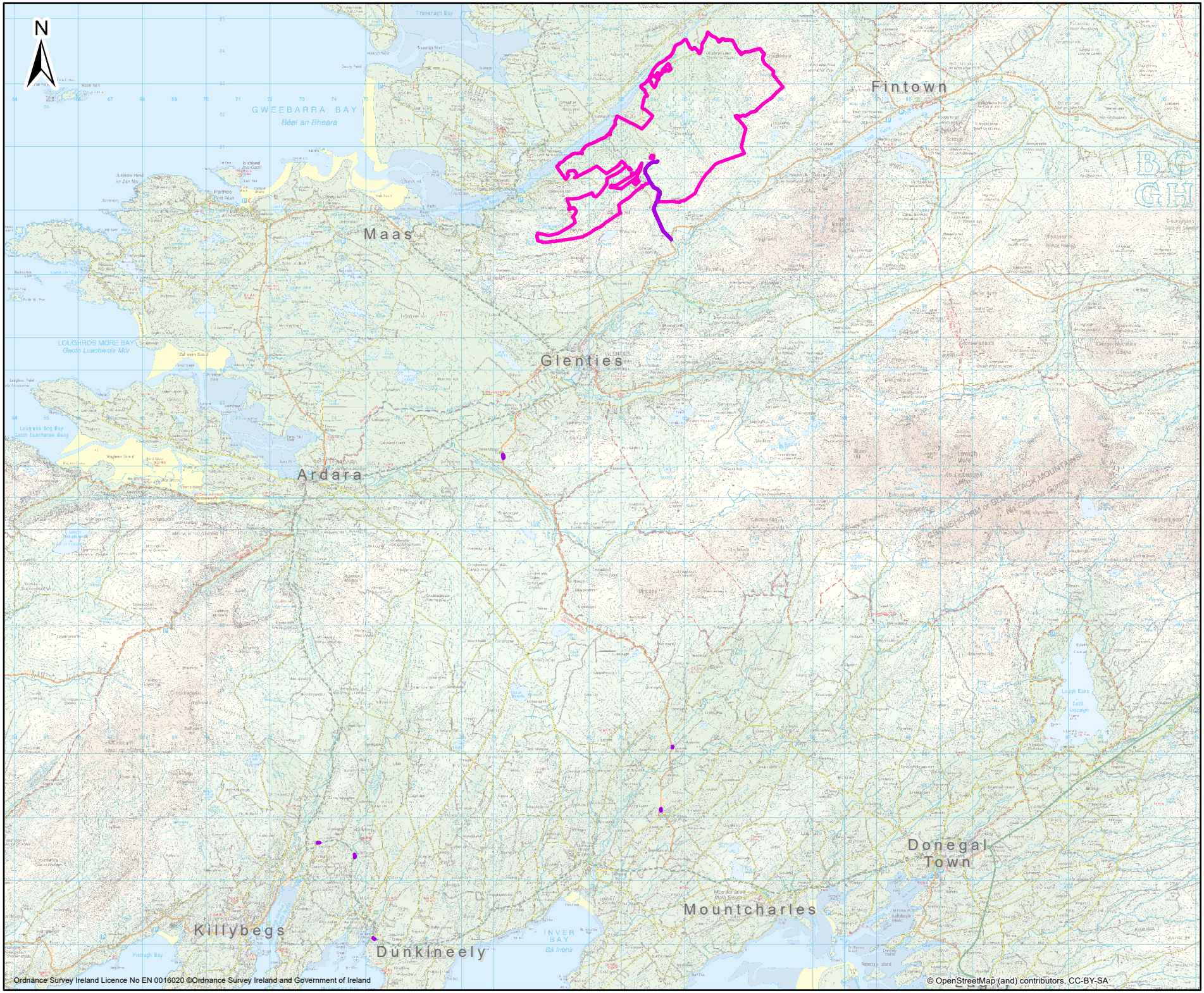
between Doochary, Lettermacaward and Glenties, which are located 2.1km north, 850m west and 3.5km south of the site of the proposed wind farm respectively and 2.3km north, 3.4km west and 6.2km south of nearest turbine, respectively in Co. Donegal, and is c. 22 km north of Donegal town, and c.31 km southwest of Letterkenny. The site lies between the R250 that runs from Glenties to Fintown and the Gweebarra River Estuary.

The proposed wind farm site is approximately 9.1 km long in the northeast/southwest direction and is approximately 3.7 km wide in a southeast/northwest direction at the widest point; the site covers an area of approximately 1,945 hectares (ha). The site is located on an elevated area beside the Gweebarra River Estuary with a topography of between 0 m and 365 m OD. A number of other areas to the east and south of the site are also elevated. The most significant features in the surrounding landscape are the Gweebarra Estuary Valley, and the upland areas (including Aghla Mountain) within and around the proposed wind farm particularly to the east of the proposed wind farm, towards Fintown.

The Gweebarra River Estuary is located adjacent to the northwest boundary of the wind farm site, although the nearest infrastructure (operational phase entrance) is located approximately 500m from this. The nearest turbine will be approximately 1 km from the estuary, and the entire site drains into the estuary.

The site of the proposed wind farm is situated within the following townlands; Cloghercor, Clogherculliion, Derryloaghan, Cleengort, Derk More and Derk Beg Co. Donegal. The proposed grid connection (including the proposed substation and connection masts) is located within the townland of Cloghercor, Co. Donegal.

There are a number of locations beyond the wind farm site which require temporary additional works to accommodate delivery of abnormal loads to site for turbine components (the Turbine Delivery Route). The proposed project includes temporary works at 5 locations on the R262 and N56 in the townlands of Tullycumber, Drumard, Darney, Cashelreagh Glebe and Aghayeevoge, construction of a temporary area of hard standing to function as a blade transfer area to facilitate turbine delivery in the townland of Drumnacross, and widening of sections of the L6363 and L6483 within the road corridor (up to 4.5 m running width) to facilitate delivery of abnormal loads/turbines is required in the townlands of Cloghercor, Shallogan More, Derryloaghan and Straboy. Figure 2-1 below shows the location and extent of the proposed project.



Legend ✱

- Proposed Wind Farm Site Boundary
- Turbine Delivery Route works

✱ all land identified is within Boundary of the Proposed Project

0 1 2 3 4
Kilometres

NOTES
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	03/03/2023	Final issue	S.P	J.S

Client: Cloghercor Wind Farm ltd.

Project: Cloghercor Wind Farm

Title: Figure 1-1: Proposed Project Extent

Scale @ A4: 1:150,000

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2.1.1 Designated Sites

Full details of the Special Areas of Conservation (SACs), Special Protected Areas (SPAs), Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA) and Nature Reserves within a 15 km Zone of Influence (ZoI) of the wind farm site are outlined in the EIAR and NIS. There are twelve SACs within 15 km of the wind farm site, of these, the following are closest to the proposed project:

- West of Ardara/Maas Road SAC – 0 km;
- Coolvoy Bog SAC – 0.3 km;
- Gannivegil Bog SAC – 0.5 km;
- River Finn SAC – 2.1 km; and
- Cloghernagore Bog and Glenveagh National Park SAC - 2.2 km.

There are five SPAs within 15 km of the wind farm site, of these, Derryveagh and Glendowan Mountains SPA is closest to the proposed project, at c.2.2 km.

Derkmore Wood Nature Reserve occurs adjacent to the western section of the wind farm site. This is a statutory nature reserve and is also a pNHA. The Meenmore West NHA occurs adjacent to the south-east corner of the wind farm site, with a small section extending into the wind farm site. 16 other NHAs / pNHAs are present within 15 km of the wind farm site. However, most of these are included within SAC and / or SPAs. The only NHA / pNHA within 15 km of the wind farm site that is not also included within a SPA or SAC is the Meenybraddan Bog pNHA, c.13 km from the wind farm site.

2.2 DESCRIPTION OF THE PROPOSED PROJECT

The Applicant proposes to develop the Cloghercor Wind Farm in Co. Donegal. It is proposed to supply the power from the Cloghercor Wind Farm to the Irish electricity network via loop-in 110kV underground cables (approximately 4.1km cable length within approximately 3.36km of internal access roads) to the existing overhead 110 kV power line in the townland of Cloghercor, Co. Donegal. A summary of the overall proposed project is as follows:

- Erection of 19 no. wind turbines with an overall blade tip height range from 18 5m to 200 m, a rotor diameter range from 149 m to 164 m, a hub height range from 112 m to 125 m, and all associated foundations and hard-standing areas in respect of each turbine;
- Construction of new site entrance with access onto the L6483 local road for the construction phase (operational phase maintenance traffic only), and utilisation of a permitted forest entrance (Pl. Ref. 1951040) to the L6483 as a second construction phase site access point. A third site entrance on the L6483 will form the operational phase public entrance to the wind farm;
- Improvements and temporary modifications to 5 no. locations adjacent to the public road to facilitate delivery of abnormal loads and turbine delivery on the R262 and N56 in the townlands of Tullycumber, Drumard, Darney, Cashelreagh Glebe and Aghayeevoge;
- Construction of an area of temporary hard standing to function as a blade transfer area to facilitate turbine delivery on the R262 in the townland of Drumnacross;
- Widening of sections of the L6363 and L6483 within the road corridor (up to 4.5 m running width) to facilitate delivery of abnormal loads/turbines in the townlands of Cloghercor, Shallogan More, Derryloaghan and Straboy;
- Construction of 2 no. temporary construction compounds with associated temporary site offices, parking areas and security fencing;
- Installation of 1 no. permanent meteorological mast with a height of 100 m;

- 4 no. borrow pits;
- Construction of new internal site access roads and upgrade of existing site roads, to include passing bays and all associated drainage;
- Construction of drainage and sediment control systems;
- Construction of 1 no. permanent 110kV electrical substation including:
    - 1 no. EirGrid control building containing worker welfare facilities and equipment store;
    - 1 no. Independent Power Producer (IPP) control building containing HV switch room, site offices, kitchen facilities, storeroom and toilet amenities.
    - All electrical plant and infrastructure and grid ancillary services equipment;
    - Parking;
    - Lighting;
    - Security Fencing;
    - Wastewater holding tank;
    - Rainwater harvesting equipment;
    - All associated infrastructure and services including site works and signage;
- All associated underground electrical and communications cabling connecting the wind turbines to the proposed wind farm substation;
- All works associated with the connection of the proposed wind farm to the national electricity grid, which will be via a loop-in 110 kV underground cable connection (approximately 4.1km cable length within trenches on approximately 3.36 km of internal access roads) to the existing 110 kV overhead line in the townland of Cloghercor, Co. Donegal, with two new 16m and 21m high steel lattice end masts at each interface;
- Removal of 13 no. existing wooden polesets and 1 no. steel lattice angle mast between the two new interface end masts;
- 2 no. watercourse (stream) crossings on the grid connection route;
- All related site works and ancillary development including berms, landscaping, and soil excavation;
- Forestry felling to facilitate construction and operation of the proposed project and any onsite forestry replanting;
- Development of a permanent public car park with seating/picnic tables at the end of the construction phase of the development at the location where the proposed grid connection intersects the L6483;
- Permanent recreational facilities including marked walking trails along the site access roads and paths, and associated recreation and amenity signage; and
- Approximately 252 ha of biodiversity enhancement lands located over 3km from the proposed wind turbines.

A 10-year planning permission and 35-year operational life from the date of commissioning of the entire wind farm is being sought.

The construction phase includes all elements of the proposed project as listed above, in addition to any works required on public roads to accommodate turbine delivery, including the hard standing area proposed at Drumnacross to accommodate blade transfer.

2.3 KEY ROLES AND RESPONSIBILITIES

At this stage it is envisaged that the following roles will be appointed for the construction phase of the proposed project; Site Manager; Ecological Clerk of Works (ECoW); Safety, Health, Environment and Quality (SHEQ) Advisor; Project Ecologist/Ornithologist; Project Hydrologist; Project Geotechnical Engineer / Geologist; and Project Archaeologist.

Details of these roles are outlined in the following sections. The Contractor's CEMP at construction stage will confirm roles and finalise responsibilities once appointed.

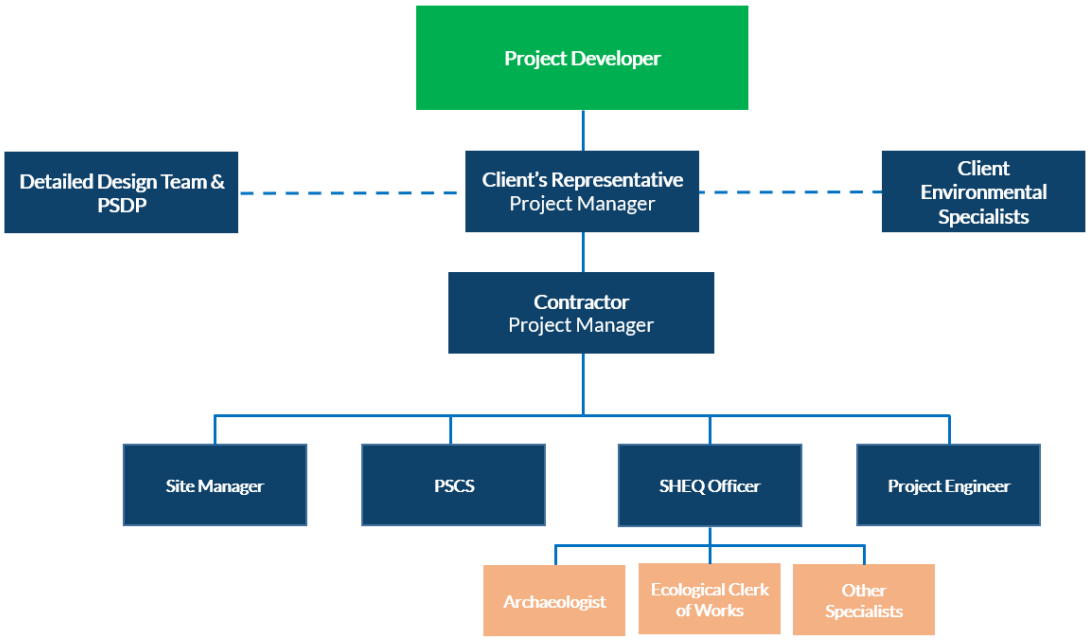

Figure 2.2: Example Project Development Organisational Chart

2.3.1 Construction / Site Manager

A suitably qualified Construction / Site Manager will be appointed by the contractor for the duration of the construction period. The Construction / Site Manager will have overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements.

2.3.2 Ecological Clerk of Works (ECoW)

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the contractor for the duration of the construction period. The Ecological Clerk of Works will ensure that all relevant mitigation measures in this CEMP are implemented. The duties of the ECoW will include review of method statements; supervision of the installation, operation and removal of construction phase mitigation measures such as sediment control traps; supervision of the implementation of the Invasive Species Management Plan, compliance checks; supervision of the peat replacement plan; and liaison with relevant statutory bodies.

2.3.3 Safety, Health, Environment & Quality (SHEQ) Advisor

A suitably qualified Safety, Health, Environment and Quality (SHEQ) Advisor will be appointed by the contractor for the duration of the construction period. The SHEQ will ensure compliance with all relevant Health and Safety regulations, environmental regulations, and quality control on-site during the construction stage. The SHEQ will be on-site full time during the construction phase.

2.3.4 Project Ecologist / Ornithologist

The Project Ecologist / Ornithologist is responsible for the protection of sensitive habitats and species encountered during the construction phase of the project will report to the ECoW. The Project Ecologist will not be full time on site but will visit the site at agreed periods during construction.

2.3.5 Project Hydrologist

The Project Hydrologist will report to the Environmental Clerk of Works and is responsible for inspection and review of drainage and water quality aspects associated with construction of the wind farm. The Project Hydrologist will not be full time on site but will regularly visit the site at agreed periods during construction and on a weekly basis during site preparation/groundworks.

2.3.6 Project Geotechnical Engineer / Geologist

The Geotechnical Engineer / Project Geologist will report to the ECoW and is responsible for inspection and review of geotechnical aspects associated with construction stage of the project. The Geotechnical Engineer will be full time on-site during the site preparation and groundworks and will visit site regularly at agreed periods during the construction phase.

2.3.7 Project Archaeologist

The Project Archaeologist will report to the ECoW and is responsible for inspection and review of geotechnical aspects associated with construction of the wind farm. The Geotechnical Engineer will be full time on site during the site preparation/groundworks and will visit site at least once a month during the remainder of the construction phase.

2.4 FACILTIES, SAFETY AND SECURITY

The proposed Cloghercor Wind Farm will be constructed, in accordance with all relevant Health and Safety Legislation.

Aspects of the development that will present health and safety issues include:

- Health and safety aspects of construction activities;
- General construction site safety (e.g. slip/trip, moving vehicles etc);
- On site traffic safety during construction associated with localised high road embankments;
- Traffic safety during the transport of abnormal loads to the site;
- Lifting of heavy loads overhead using cranes;
- Working at heights; and
- Working with electricity during commissioning.

A (Preliminary) Health and Safety (H&S) Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared prior to the construction stage by the PSDP.

Rigorous safety checks will be conducted on the turbines during construction. Signs will be erected at suitable locations across the site as required. Further details regarding signage is provided in Section 2.4.3 of this CEMP.

2.4.1.1 Safety and Security

All activities carried out by the appointed Contractor on the proposed project will be in accordance with the requirements of the *Safety, Health and Welfare at Work Act 2005* as amended and Regulations made under this Act.

The scale and scope of the proposed project will require the appointment of a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) in accordance with the provisions of the *Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2103)*, as amended. These persons will be appointed by the Applicant and notified to the Health and Safety Authority (HSA) prior to commencement of detailed design works (in the case of the PSDP) and prior to commencement of construction (in the case of the PSCS). As mentioned, the PSDP will prepare a Preliminary H&S Plan which will identify any particular risks, residual risks and particular sequences of work that are envisaged during the design of the works.

Prior to commencement of construction, this Preliminary H&S Plan will be provided to the Contractor and the PSCS will further develop the document to prepare a Construction Stage H&S Plan addressing all aspects of the construction process and providing relevant contact details and emergency response procedures for the project. This H&S Plan will be developed at the procurement stage and developed further at construction stage to the satisfaction of the Applicant. The H&S Plan will identify the potential safety hazards associated with the site and the works and assess the associated risks. Mitigation and control measures will be implemented to minimise the identified risks.

Evidence of completion of construction safety training, typically in the form of a Safepass Card, will be required for all construction personnel prior to commencing on site. A record of Safepass Cards and personnel approved for entrance to site will be completed as part of a site induction process. The Contractor's H&S Plan will detail the site induction and access requirements. Where relevant, equipment operators or specialist works will require personnel to hold a valid Construction Skills Scheme Card. All equipment and machinery used on site will be appropriately certified for its intended purposes. The Applicant will ensure that only competent contractors are appointed to carry out the construction works on the site.

2.4.1.2 Covid-19

The emergence of the Covid-19 virus in Ireland in the early part of 2020 has presented a new human health risk and concern amongst the general public across the country and within the proposed project study area. At a minimum, the prevailing Government public health advice in relation to Covid-19 will be fully adhered to during the construction of the proposed project.

2.4.1.3 Site Access and Public Safety

Public safety will be addressed by restricting site access during construction works and the erection of security fencing as appropriate at construction works areas. The entrance to the wind farm construction site will be controlled by the Contractor. Construction vehicle access to the site will be via the L6483 local road using two access points (See Drawing 10798-2040, Appendix 1-1).

Access point one will be used as a main entrance point during the early stages of construction until such time as the internal access roads are constructed as far as access point two. At that stage access point two will be the main site exit and access point one will

be the main site entrance. A one-way system will be in place for construction traffic on the local road network, as described in Chapter 16 (Traffic & Transportation) of the EIAR.

Access point one will be located in the townland of Cloghercor on the L6483 and will be the single access/egress point for wind farm maintenance vehicles during the operational phase. Access point two will use a permitted, not yet constructed, forest entrance on the L6483, further east in the townland of Clogheracullion during construction phase. Internal access roads will be constructed as part of the initial phase of the construction of the wind farm. The internal roads will be permanent (construction/operational) roads.

The site entrance gates from the L6483 will be securely locked outside of construction hours to prevent unauthorised entry and will be monitored during construction hours to regulate access to the site for authorised personnel.

For the duration of the construction works, access rights to the forestry lands for local groups will be restricted during the construction phase to minimise the risks for public health and safety.

2.4.2 Compound and Facilities

At the commencement of the construction phase, a temporary compound area will be constructed to provide office space, welfare facilities, car parking and hardstands for storing materials. At a later stage of the site development (when the construction works reach the northern end of the site) a second compound area will be constructed there as per the proposed site layout to provide additional facilities onsite. These will cover approximately 1.4 and 1.7ha each, and the 2 no. locations are shown on the site layout drawings (Appendix 1-1). At the end of the construction phase, the compounds will be removed, with any stone being used towards reinstatement of the nearest onsite borrow pits. After removal of the compound, the area will be replanted with forestry as described in Appendix 2-5 of the EIAR (Forestry Report).

Site accommodation will consist of temporary porta-cabins constructed on a granular platform. The topsoil will be stripped where development of the temporary compounds are proposed. The compounds shall be constructed to heights of up to approximately 0.5m above existing ground level.

2.4.3 Signage

Warning signs will be erected at the construction works areas clearly stating that construction works are underway. A notice board will be erected at the site entrance and at the construction compound gates with information on the contact details for site management, PPE requirements for the site and any other information deemed necessary in accordance with the H&S Plan.

Signage will be erected on both sides of the L6483 local road both north and south of the site entrance location to warn approaching vehicles of the construction site entrance location and the potential presence of slow-moving vehicles.

On the internal roadways, prior to exit from the site out onto the L6483, signage will be erected to inform construction traffic that they are leaving the site and directing them in the correct direction.

Road signage on the public road will be in accordance with the current *Traffic Signs Manual*[2] (Chapter 8) and associated best practice guidelines. Signage in respect of traffic management is discussed in the TMP in Appendix 2-7 and will be in accordance with the Local Authority recommendations and relevant planning conditions. Within the site, maximum speed signage will be erected along the access roads for construction vehicles and health and safety signage will be erected at borrow pits and where deep excavations, or other areas of increased risk, are occurring. Signage will also be erected as a reminder to concrete delivery drivers that concrete truck wash-out is not permitted on-site and identifying the area(s) where concrete chute wash-out is permitted.

2.4.4 Emergency Response Plan

The Contractor will be responsible for developing a detailed Emergency Response Plan (ERP) for the proposed works, to cover health and safety emergencies as well as environmental emergencies, as part of the H&S Plan. Details related to the ERP are outlined in Section 5.0 (Emergency Response Plan / Procedures) of this CEMP.

Further information relating to the management of spills or leaks and the procedure for responding to a health and safety or environmental incident is outlined in Section 5.3.

2.4.5 Incidents / Complaints

All safety or environmental incidents associated with the project will be reported and investigated in line with the ERP. Details related to the Incidents / Complaints are outlined in Section 5.0 (Emergency Response Plan / Procedures) of this CEMP.

3.0 CONSTRUCTION METHODOLOGY

3.1 CONSTRUCTION PROGRAMME (DURATION AND PHASING OF THE PROPOSED PROJECT)

It is estimated that the construction phase will take approximately 24 months from starting onsite to completion of commissioning of the turbines. Where practical, vegetation clearance that is required during construction works will commence outside the breeding birds season, which runs from the 1st of March to the 31st of August.

The construction phase can be broken down into 5 no. main phases as follows (there will be overlap of these phases):

- 14 months - Civils (including site roads, hardstands, turbine foundations, forestry felling, drainage);
- 6 months - Electrical grid connection/substation installation and commissioning;
- 12 months - Site electrical (installing between turbines and substation, pulling cables);
- 4 months - Turbine deliveries and erection;
- 2 months - Commissioning.

[2] Department of Transport, Tourism and Sport, *Traffic Signs Manual – Chapter 8: Temporary Traffic Measures and Signs for Roadworks* (August 2019)

3.1.1 Construction Hours

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 19:00hrs on weekdays and between 07:00hrs and 14:00hrs on Saturdays.

However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e., concrete pours or to accommodate delivery of large turbine components along public routes), it may be necessary on occasion to work outside of these hours. Any such out of hours working will be agreed in advance with the Local Authority.

3.1.2 Employment

It is anticipated that 96-139 persons will be directly employed during the peak construction period.

3.2 OVERVIEW OF THE CONSTRUCTION METHODOLOGY

The proposed construction methodology is summarised in the following sections, however further detail is found in Chapter 2 (Description of the Proposed Project) and drawings in Appendix 1-1 of the EIAR.

3.2.1 Site Roads and Passing Bays

Site roads will be constructed to each turbine location, and to all proposed site infrastructure as shown in the site layout drawings of Appendix 1-1 of the EIAR, with a proposed running width of 5m. Passing bays will be included along roads strategically, as indicated in Appendix 1-1, and there will be a number of site entrances. Sections of new roads and upgraded roads are shown on drawings in Appendix 1-1 of the EIAR. Where required, the road widths will be increased to a maximum of 9.5m to form the indicated passing bays, as shown in drawings in Appendix 1-1 of the EIAR. All on-site roads will be maintained for the duration of the construction phase of the project.

3.2.1.1 Excavated New Road

Tracked excavators will carry out excavation for roads with appropriate equipment attached. When the topsoil has been removed and/or the formation layer has been reached, stone from the onsite borrow pits shall be placed to form the road foundation. In the event of large clay deposits being encountered in sections of road, a geotextile layer will be required at subbase level. The sub grade will be compacted with the use of a roller or other approved compaction method. The final top dressing of unbound material will not be provided until all turbine bases have been poured.

3.2.1.2 Floating New Road

Monitoring posts will be installed prior to construction to monitor movement of soils in the area around the construction. A base geotextile membrane will be laid directly on top of the peat/soil surface, and a suitable granular fill will be placed on top of this. The stone will be levelled with an excavator or bulldozer and rolled to provide a suitable surface. The stone material will either be tipped over a long area (>10m) or in several small piles rather than being tipped in one location to prevent excess soil loading and compaction. To ensure a smooth transition between excavated and floating access track, a short (10-20m) length of the access track will have all peat excavated and filled with a suitable fill, which will be

graded to allow for an appropriate transition. The final top dressing of unbound material will not be provided until all turbine bases have been poured.

3.2.2 Proposed Clear-Span Bridge and Culverts

There are 2 existing stream crossings and 10 no. clear-span bridges proposed as part of the proposed works, as shown on the site layout drawings (Appendix 1-1 of the EIAR). The site access tracks will be constructed as far as possible to allow easy access to the works area. Following this, the topsoil will be stripped from the foundation footprint on either side of the stream, taking care to avoid disturbing any part of the stream bed or banks. Suitable stone fill material (clause 804 or similar) will be added in layers and compacted to form the base of the foundation. The precast clear-span bridge will be placed onto this either as one or more pieces. Following this, barriers will be attached to the sides of the bridge structure, and the site access tracks will be constructed over the structure.

3.2.3 Borrow Pits

4 no. borrow pits will be constructed within the development site in order to fulfil the majority of stone material requirements. These are located near T13, T4/T5, and T1/T2. The locations of these borrow pits can be seen on the site layout drawings in Appendix 1-1 of the EIAR.

Borrow pits will be reinstated using any surplus inert material from the site (including peat) and made secure using permanent stock proof fencing. Rock and fill material may need to be extracted from a number of proposed turbine foundation locations as part of the required excavations there; this material will be used where possible to replace the material requirements from borrow pits.

3.2.3.1 Rock Extraction - Rock Breaking / Blasting

Rock will be extracted from borrow pits using two main methods: Rock breaking and rock blasting. It is anticipated that the primary method will be rock breaking.

The entire blasting process, from drilling to explosives handling to execution of the blast, will be designed, carried out and overseen by a specialist engineer. In order to carry out a blast, a number of holes are drilled into the rock over several days. Once these are prepared, the required amount of explosives will be brought to the site and installed in the holes. Explosive material will not be stored on site. Transport and handling of explosive material and carrying out of any blasts will be carried out with agreement and supervision of An Garda Siochána. Where blasting is required, local residents and noise sensitive locations will be notified of the upcoming blast.

3.2.4 Forest/Tree Felling

There will be a requirement to fell some of the forestry in the areas immediately surrounding the footprint of the wind farm infrastructure. The total area of forestry to be felled is estimated to be between approximately 69.8ha and 90.9ha, of which approximately 12.6ha will be replanted on site at the end of the construction phase (at the temporary construction compounds and reinstated borrow pits).

3.2.5 Peat and Spoil Management

The use of the borrow pits shall be phased. This will then allow materials to be placed in the first borrow pit thereby minimizing the volume of soils requiring temporary storage. In order to

further reduce temporary storage requirements, reinstatement of soils and turves around infrastructure, and in restoration and landscaping works on areas of excavated / disturbed ground, will be carried out during the construction phase or as soon as is practical after the completion of the works in any one area of the site. Approximately 178,000m^3 will be excavated from the borrow pits onsite. A total of 184,000 m^3 will be used to reinstate the borrow pit area as well as for landscaping.

Where the proposed project footprint is located on any mineral-based soil, this material can be side-cast, profiled, and bermed as close to the excavation areas as is practical, or in the case of peat it will be used to reinstate the borrow pits). The sides of the excavated areas will be battered/sloped sufficiently to ensure that slippage does not occur.

3.2.6 Crossing Methodology - Directional Drilling

A launch and reception pit is required for directional drilling, with each measuring approximately 1m wide, 2m long and 1m deep. Two ducts will be required at each crossing location. A specialised directional drill machine will be anchored to the ground and will drill at a suitable shallow angle to allow it to achieve the required depth for the bore. If ground conditions are unfavourable, the drilling process may need to be repeated using progressively larger drill heads until the required size is achieved. The drilling process involves pumping a drilling fluid through the drill head, which is inert, natural and biodegradable (e.g. Clear Bore™). This fluid will be used sparingly and only as required to avoid an excess and will be appropriately stored when not in use. This fills voids locally around the drill head and enables the drill to progress without the hole collapsing. Should any excess drilling fluid occur, it will be contained and removed for disposal at a licensed waste facility. The duct will be positioned, and the launch and reception pits will be refilled.

Further details of this crossing method are provided in Appendix 1-1 of the EIAR. Associated construction methodologies are provided in Appendix 2-4 of the EIAR.

3.2.7 Joint Bays

Joint bays will be located at various points along the ducting route as specified by EirGrid requirements and as shown in the drawings of Appendix 1-1 of the EIAR. Joint bays will measure up to 6m x 2.5m x 2m deep as shown in the drawings of Appendix 1-1 of the EIAR. A reinforced concrete base and sides will be constructed in the bay to accommodate the jointing enclosure. Communication chambers will also be installed at the joint bay locations to facilitate connection of fibre-optic communication cables.

3.2.8 Proposed Site Drainage

Temporary (for the duration of the construction phase) and permanent drainage infrastructure will be installed as part of the proposed site development. These features include site drains and silt control measures (check dams/silt dams). Site drainage measures will be installed from the outset, being constructed at the same time as the initial civils works (site roads, hardstands, etc.). This will ensure that there is no uncontrolled runoff from the site during proposed works. Excavators will be used to construct the main drainage features (drains, settlement ponds, etc.), while small items such as silt dams/check dams will be constructed manually. Silt fences which trap suspended particles will be erected manually ahead of civil works as required on particularly steep ground, or near watercourses.

3.2.9 Temporary Construction Compounds

A temporary compound area will be constructed to provide office space, welfare facilities, car parking and hardstands for storing materials. At a later stage of the site development (when the construction works reach the northern end of the site) a second compound area will be constructed there as per the proposed site layout to provide additional facilities onsite. These will cover approximately 1.4 and 1.7ha each, and the 2 no. locations are shown on the site layout drawings (Appendix 1-1 of the EIAR). At the end of the construction phase, the compounds will be removed, with any stone being used towards reinstatement of the nearest onsite borrow pits. After removal of the compound, the area will be replanted with forestry as described in Appendix 2-5 of the EIAR (Forestry Report).

The site accommodation will consist of temporary porta-cabins constructed on a granular platform. The topsoil will be stripped where development of the temporary compounds are proposed. The compounds shall be constructed to heights of up to approximately 0.5m above existing ground level.

3.2.10 Public Car Park and Recreation Area

A gravel public car park will be constructed for the proposed amenity trails will be located at an existing forest entrance on the L6483 (See the Drawing 10798-2003, in Appendix 1-1 of the EIAR). This will be constructed in a similar way to the site roads. A number of picnic tables and informational signage will be installed.

3.2.11 Turbine Hardstand, Foundations and Erection

The topsoil will be stripped where development of the hardstands are proposed. The hardstands shall be constructed to heights of up to approximately 0.5m (on average) above existing ground level.

Each of the turbines to be erected on site will have a reinforced concrete base. Overburden will be stripped off the foundation area to a suitable formation using a 360º excavator and will be stored as detailed in Section 3.2.5 (Peat and Spoil Management). The sides of the excavated areas will be sloped sufficiently (2:1 or as determined by a suitably qualified site engineer) to ensure that slippage does not occur. Precise excavation depths and batter requirements will depend on soil types locally and the turbine manufacturer requirements. Material excavated to create the working area will be stored locally for later reuse in backfilling the working area around the turbine foundation, or for reinstatement elsewhere on site (such as the borrow pits). If the excavated material is peat, it will be brought straight to reinstate the borrow pit. The excavated material will be smoothed with the back of an excavator bucket and surrounded by silt fences to minimise the potential for sediment-laden run-off occurrence.

In the case of gravity foundations, if the formation level is reached at a depth lower than the depth of the foundation, the ground level will have to be raised with clause 804 hardcore material and/or lean mix concrete, compacted in layers as required, with sufficient compaction effort. 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 with the spreader or settlement pond. It is not anticipated that piled foundations will be required.

An embankment approximately 600mm high and a fence or berm will be constructed around the perimeter of each turbine base to prevent construction traffic from driving into

the excavated hole and also 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 gangway to a standard 1:12 grade, thereby allowing safe passage into/out of the foundation area.

Approved lifting equipment will be used to unload reinforcing steel to required areas. The bottom matt of steel will be fixed prior to the tower cans, if used, being lifted into position and reinforcing steel will be positioned and fixed in accordance with the turbine suppliers' requirements. The detailed design and exact dimensions will be determined once a turbine manufacturer has been selected following a competitive procurement process.

Formwork to concrete bases will be propped/supported sufficiently to prevent failure. Concrete for bases will be poured using a concrete pump. 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 filled with suitable fill (i.e. hardcore) up to existing ground level. The working area around the perimeter of the foundation will be backfilled with suitable material (hardcore). These hardstand areas around the turbines will be levelled, compacted and finished with a suitable surface material for traffic (clause 804 or similar) as per the site access tracks and remainder of the hardstand areas.

3.2.12 Grid Connection

As stated above, the proposed wind farm will connect to the existing national grid (through an existing overhead line in Cloghercor) via the onsite substation and associated underground grid connection. Once fixed into position, the substation and electrical grid connection will be commissioned and made live to allow removal of the existing wooden polesets, part of the overhead line. The internal site cabling (between turbines and the substation) will remain off until the turbines are being commissioned and the wind farm enters into service.

Thirteen existing wooden polesets and a single steel angle mast (reference 148 to 161 on drawing 05725-DR-100 in Appendix 1-1 of the EIAR) between the two new end masts will be removed as part of the grid connection works. Once the new underground cable is energised the wooden polesets will be removed by an excavator and incorporated back into the stock for further use, in line with ESBN best practise procedures.

The new end masts at the northern and southern ends of the proposed grid connection will generally be constructed by installing the foundations and lower section of the mast first. The upper sections of the masts will only be constructed when the rest of the grid connection infrastructure is ready to become live. This approach will minimise the amount of time the main 110kV line must be switched off.

A full description of the Grid Connection works and the construction methodologies for each element are provided in Appendix 2-4 of the EIAR. The construction methodologies for the various elements of the grid connection are summarised below.

3.2.12.1 110 kV Substation and Electrical Works

Two control buildings will be constructed using traditional techniques for constructing small buildings (i.e. concrete block walls, timber and slate tile roof). Foundations will be built for all of the proposed electrical infrastructure. All the electrical equipment will be installed

to EirGrid/ESB requirements. Perimeter fencing will be constructed around the substation compound for security and safety purposes. Further information and drawings of the substation and electrical infrastructure are provided in Appendix 1-1 of the EIAR. Associated construction methodologies are provided in Appendix 2-4 of the EIAR.

3.2.12.2 110 kV Underground Cable Trenches

The cables will be installed for the majority within the internal access roads, with a single crossing point of the existing public road corridor as indicated on the site layout drawings in Appendix 1-1 of the EIAR. A section of the route (approximately 1km) will also be located within/adjacent to the proposed main site access road, and a smaller access track will be put in place over the entire remaining route. It should be noted that works within the public road corridor will also be subject to further consents/agreements with local authorities, for example a Road Opening Licence as appropriate.

The underground cable required to facilitate the grid connection will be laid beneath the ground surface and/or public road using the following methodology:

- The area where excavations are planned will be the subject of a confirmatory survey, prior to the commencement of works, with a cable locating tool and all existing underground services will be identified.
- A verification condition survey will be carried out for all parts of the route within the public road. Details of this survey will be agreed with the local authority in advance of the survey.
- A trench will be opened using an excavator to accommodate the formation required.
- The excavated material will be cast to the side to be reused as backfilling material where appropriate. This material will not be stored in the vicinity of any watercourse and will be smoothed with the back of an excavator bucket to minimise runoff. It will be cast on the upgradient side of the trench, so if any runoff did occur it will run into the down gradient trench. Excess material will be used on the site of the proposed project for local landscaping, borrow pit reinstatement.
- Silt fences will be installed alongside the road/works areas as required near watercourses.
- Clay dams/plugs will be installed at regular intervals (depending on the gradient) to prevent conduit flow of water within the trench.
- Works will not be carried out during periods of heavy precipitation. In the event that some surface water does accumulate in the trench, this will be allowed to percolate into the ground naturally.
- The trench will be surfaced as per the road surface specifications of the local public road, the wind farm road, or (in the case of off road section) an EirGrid/ESB specification gravel access track capable of supporting maintenance vehicles if required.
- Cable joint pits are normally located at regular intervals as shown in the site layout drawings (Appendix 1-1 of the EIAR). Each joint pit will be approximately 2.5m x 6m in size with a communications chamber and an earth link box in close proximity to the joint pit as shown in the detail drawing (Appendix 1-1 of the EIAR). They have been located where possible in accessible areas away from watercourses. They will be constructed off the public road. A temporary surface is provided over these for safety and to allow easy access until the cables are pulled, after which time the area will be permanently reinstated/surfaced as appropriate. The location of these joint pits are provided on site layout drawings provided in Appendix 1-1 of the EIAR.
- It is anticipated that construction will be carried out by a single team (with plant items likely to include excavators and dumpers) along the route, but there is a

possibility to use two separate teams to speed up the construction. It is expected that each team could lay approximately 150m of the route per day.

Further details on the design for the grid connection cable trenches are provided in Appendix 1-1 of the EIAR; associated construction methodologies are provided in Appendix 2-4 of the EIAR.

3.2.13 Turbine Delivery Accommodation Works Areas

Where works are needed along the public road corridor to facilitate deliveries to site, they will be agreed in advance with the local authority and carried out to the appropriate standard (TII, purple book, etc.).

Where a temporary surface is needed for the turbine delivery route (including the blade changeover area), works will start with the clearing of any vegetation, and the topsoil will be stripped and either used locally for landscaping purposes/bermed for later use in reinstatement or used for borrow pit reinstatement onsite. Where local use for landscaping does occur it will be smoothed off with the back of a bucket and seeded with a suitable grass seed mix. Silt control curtains will also be employed within 50m of a stream. Topsoil material will not be used locally within 50m of a stream, and peat material will not be used if found to be present at any location. It is anticipated that the majority of material will be taken to the wind farm site for borrow pit reinstatement. It may also be taken to a local licensed/permitted waste facility if found to contain any contaminants such as bitumen. Suitable fill material (broken stone and clause 804) will be used to create a firm running area for the passage of turbine delivery vehicles. The areas will be fenced off when the delivery is not occurring. After the delivery of turbines to site, the site will be re-instated to the original condition with removal of the temporary surface, and any removed vegetation will be reseeded/replanted with a similar native species composition.

3.2.14 Permanent Meteorological Mast

The met mast installation works shall be carried out by a small crew and are described as follows:

- An access track shall be extended towards the mast location from the existing forestry track. The access track shall be 3.5m in width. Associated drainage infrastructure shall be extended also;
- A small aggregate crane pad shall be constructed in front of the proposed mast location;
- General construction methods for the above access track and hard standing shall match those described for wind farm access tracks and hard standings however the dimensions and stone depth requirements of the infrastructure will be considerably less than that required for that serving the wind turbine construction;
- The foundation shall be excavated followed by shuttering, steel fixing and finally concrete pouring by ready mix truck. The foundation shall be 10m x 10m x 1.8m in size;
- Following crane setup, the mast sections shall be delivered and unloaded by truck;
- In accordance with an agreed lifting plan, mast sections shall be lifted by crane into place. Wind speeds shall be monitored at all times during lifting operations by the lead climber and crane operator;
- Mast sections shall be bolted together by climbers; and
- Following erection of main mast sections, lightning protection and other ancillary components shall be fixed to the mast.

3.2.15 Biodiversity Enhancement Lands

The land management being proposed for this area will involve vegetation management through livestock grazing and/or cutting and will not involve any excavations or construction. Agricultural land management practices for each plot of land will be prescribed and agreed with land owners, and will follow along these principles:

- Encourage the growth of Ling Heather (Calluna vulgaris), of diverse age structure and encourage the growth of wet flushes with tall grasses, rushes and sedges.
- Burning for any reason will not take place.
- Control bracken by cutting/rolling/bruising.
- Where necessary management measures will include predator control, supplementary feeding and control of disturbance.
- Exclusion and reduction of grazing for a 2-5 year period will be employed for restoration of degraded habitat to allow heather to establish.
- Avoid use of weed killer or fertiliser during peak breeding times.
- No permission of hedgerow removal, planting of conifers, land drainage, turf cutting, shooting during bird breeding season, or recreational activities involving road vehicles.

4.0 ENVIRONMENTAL MANAGEMENT

Good construction practice will be implemented throughout the construction phase of the project, which will assist in the management of the risks for this site The following sections detail the approach to good construction practice and environmental management during the construction stage of the proposed project.

4.1.1 Environmental Training and Awareness

In order to ensure that environmental awareness and compliance is communicated effectively at the start and throughout the construction works, this CEMP and its contents will be communicated to all site personnel, including management staff, operatives and sub-Contractors. The key elements of this CEMP will form part of the site induction which will be mandatory for all employees, Contractors and visitors attending the site.

Environmental toolbox talks will be provided to all site personnel and sub-consultants on a regular basis. These will be targeted at particularly sensitive environmental issues such as:

- Protection of sensitive ecological habitats and key ecological receptors;
- Works close to sensitive water bodies - oligotrophic lakes present;
- Area of peat - peat replacement plan;
- Invasive species management;
- BioClass areas;
- Water pollution and silt control;
- Water pollution in relation to cement and concrete handling;
- Spill prevention and control;
- Dust management.

4.1.2 Traffic Management

Traffic management measures will be implemented in accordance with those included in the Chapter 16 (Traffic and Transportation) of the EIAR and a Traffic Management Plan (TMP) (Appendix 2-7 of the EIAR) will be agreed with Donegal County Council.

4.1.3 Noise and Vibration Control

The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures when deemed necessary to comply with the recommendations of British Standard BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise*[3].

The SHEQ Officer, or equivalent, will supervise the works to ensure compliance with the noise and vibration limits set out in the Standards document referred above and the EIAR. The following list of measures will be considered, where necessary, to ensure compliance with the relevant construction noise criteria:

- No plant used on site will be permitted to cause an on-going public nuisance due to noise;
- The best means practicable, including regular and proper maintenance of plant and machinery, will be employed to minimise the noise produced by on site operations;

[3] British Standards Institute (BSI), *BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites* (2008)

- Plant with low inherent potential for generation of noise and/ or vibration will be selected where practicable;
- Noisy / vibratory plant will be placed as far away from sensitive properties as permitted by site constraints;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen.
- The hours of construction activity likely to create high levels of noise and vibration will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 07:00hrs and 19:00hrs on weekdays and between 07:00hrs and 14:00hrs on Saturdays. However, to ensure that optimal use is made of good weather period or at critical periods within the programme (i.e., concrete pours) or to accommodate delivery of large turbine component along public routes it could be necessary on occasion to work outside of these hours.
- Channels of communication will be established between the contractor/applicant, Local Authority, and residents;
- A site representative responsible for matters relating to noise and vibration will be appointed;
- Monitoring of typical levels of noise and vibration during critical periods and at sensitive properties will be undertaken;
- The surface of the site access tracks will be kept even to mitigate the potential for vibration from lorries.

During the construction phase of the proposed project, supervision of the works will include ensuring compliance with the limits detailed in Chapter 12 (Noise and Vibration) the EIAR using methods outlined in the aforementioned BS 5228-1. This approach calls for the designation of an Noise Sensitive Location (NSL) into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. A threshold noise value is applied to each category. Exceedances (construction noise only) of the threshold value, at the facade of a NSL during construction, indicates a potential significant noise impact associated with the construction activities. The threshold values recommended by BS 5228-1 are depicted in Table 4.1.

Table 4.1: Example Threshold Potential Significant Effect at Dwellings

Assessment category and threshold value period (T)	Threshold value, in $L_{Aeq,T}$ dB		
	Category A [Note A]	Category B [Note B]	Category C [Note C]
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends [Note D]	55	60	65
Daytime (07:00 – 19:00hrs) and Saturdays (07:00 – 13:00hrs)	65	70	75

Note A Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

It should be noted that this method is only valid for residential properties. The following method should be followed: For the appropriate period (e.g., daytime) the ambient noise level is determined and rounded to the nearest 5 dB. At some properties, particularly those located close to busy roads, the ambient noise levels are expected to be relatively high. However, given the rural nature of the site in general, daytime noise levels are below 65dB $L_{Aeq,T}$. Therefore, for the purposes of the management of construction noise, as a worst case, all properties will be afforded a Category A designation. If the specific construction noise level exceeds the appropriate category value (e.g., 65 dB $L_{Aeq,T}$ during daytime periods) then a significant effect is deemed to occur.

Vibration from construction activities will managed in accordance with the guidance relevant to acceptable vibration limits within buildings is contained in the following documents:

- BS 7385 – Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground borne vibration (BSI, 1993) (BS7385): BS7385 states that there should typically be no cosmetic damage if transient vibration does not exceed 15 mm/s at low frequencies rising to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above. These guidelines relate to relatively modern buildings and should be reduced to 50% or less for more critical buildings.
- BS 5228-2:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (BSI, 2014) (BS5228-2): BS5228-2 recommends that, for a soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e., non-structural) damage should be taken as a peak particle velocity of 15 mm/s for transient vibration at frequencies below 15 Hz and 20 mm/s at frequencies above than 15 Hz. Below these vibration magnitudes minor damage is unlikely, although the standard notes that where there is existing damage these limits may be reduced by up to 50%. In addition, where continuous vibration is such that resonances are excited within structures the limits discussed above may need to be reduced by 50%.

The Transport Infrastructure Ireland (TII) (formerly National Roads Authority (NRA)) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, 2004)* also contains information on the permissible construction vibration levels during the construction phase, these levels are depicted in Table 4.2 below.

Table 4.2: Allowable Vibration at Sensitive Properties (NRA, 2004)

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	**10 to 50Hz**	**50 to 100Hz (and above)**
8 mm/s	12.5 mm/s	20 mm/s

It should be noted that these limits / levels are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage, these limits may need to be reduced by up to 50%.

Where rock breaking is employed, the following are examples of measures that will be considered, 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;

- Erect acoustic screen between compressor or generator and noise sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured;
- Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation.

Methods used to minimise effects of rock blasting may consist of some or all the following:

- Restriction of hours within which blasting can be conducted (e.g., 09:00 – 18:00hrs);
- A publicity campaign undertaken before any work and blasting starts (e.g., 24 hours written notification);
- 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 by external bodies for verification of results;
- Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence.

If blasting is required, the following mitigation measures will be employed to control the impact during blasts:

- Trial blasts will be undertaken to obtain scaled distance analysis;
- Ensuring appropriate burden to avoid over or under confinement of the charge;
- Accurate setting out and drilling;
- Appropriate charging;
- Appropriate stemming with appropriate material such as sized gravel or stone chipping;
- Delay detonation to ensure small maximum instantaneous charges;
- Decked charges and in-hole delays;
- Blast monitoring to enable adjustment of subsequent charges;
- Good blast design to maximise efficiency and reduce vibration;
- Avoid using exposed detonating cord on the surface.

4.1.4 Dust Suppression / Management

There will be some temporary dust and exhaust emissions from construction activities during the construction phase.

The Contractor will have due regard to relevant guidance such as *The Control of Dust and Emissions during Construction and Demolition* published by the Greater London Authority (GLA) in 2014 and *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* published by the NRA (now TII) in 2011.

During the construction phase, dust or air pollutants generated from the proposed project will typically arise from:

- Movement of construction vehicles;
- Laying hardstanding areas and access tracks (i.e. roads);
- Transportation of turbines and construction materials to and within the site;
- Excavation and crushing of rock for use as a base material for internal roads and hardstanding areas;
- Excavation, movement and placement of soil stockpiles (excavated soils / fill materials); and
- Wind generated dust from stockpiles, exposed unconsolidated soils and roads.

The TA Luft/VDI 2119/Bergerhoff Method of dust emission monitoring has become the most commonly used method. This method involves using a direct collection pot to standardised

dimensions of either glass or plastic. The system benefits from being a direct collection method i.e. less transferring of material and consequent reduction in sampling errors. This method is defined as an internationally recognised standard and has been adopted by the Environmental Protection Agency (EPA) as the method of choice for licensed facilities. The compliance threshold limit is 350mg/m^2/day as recommended by the TA Luft/VDI 2119/Bergerhoff Method. Dust monitoring will be carried out pre-construction to establish the baseline dust environment and during construction to monitor any potential increases in dust emissions.

All relevant mitigation measures as described in Chapter 14 (Air Quality and Climate) of the EIAR will be implemented during construction works, the majority of which are related to machinery and vehicles at the site. Vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction and will not be left running unnecessarily. Similarly, emphasis will be put on dust reduction measures and inspections. Potential effects arising from dust and exhaust emissions will be minimised through the provision of the following mitigation measures:

- Minimisation of extent of working areas;
- Stockpiling of excavated materials will be limited to the volumes required to practically meet the construction schedule;
- Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level;
- Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found;
- Provision of dust suppression measures (e.g. sweeps/covers/water bowsers) will be used on stockpiles and the road surface during periods of extended dry weather
- If necessary, water will be taken from settling ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and site compounds to prevent the generation of dust;
- Silty or oily water will not be used for dust suppression, because this will 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;
- Traffic coming to site will only use the specified haul routes;
- Onsite borrow pits will be used to minimise quantities of stone material being brought to site;
- Best practice (including industry recognised dust suppression techniques/equipment) will be used to minimise the potential for dust production during the extraction of rock from the borrow pits and excavations elsewhere;
- Vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction;
- Vehicles will not be left running unnecessarily and low emission fuels will be used where possible; and
- A wheel wash will be provided near the main site entrance and used to prevent the transfer of dust from vehicles used during construction works on to public roads - The drawings in Appendix 1-1 of the EIAR include typical details and proposed location of a proposed self-contained wheel-wash system;
- A road sweeper will be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed project.

4.1.5 Protection of Water Quality

4.1.5.1 Site Drainage

The site of the proposed wind farm will have both temporary (for the duration of the construction phase) and permanent drainage infrastructure installed as part of the proposed site development. These features include site drains and silt control measures (check dams/silt dams).

The site drainage measures will be installed from the outset, being constructed at the same time as the initial civils works (site roads, hardstands, etc.). This will ensure that there is no uncontrolled runoff from the site during proposed works. Excavators will be used to construct the main drainage features (drains, settlement ponds, etc.), while small items such as silt dams/check dams will be constructed manually. Silt fences which trap suspended particles will be erected manually ahead of civil works as required on particularly steep ground, or near watercourses.

4.1.5.2 Pre-emptive Site-Drainage Management

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

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

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

Works will be suspended if the following is likely to occur:

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

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

- Secure all open excavations;
- Provide temporary or emergency drainage to prevent back-up of surface runoff; and,
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded; and
- Provide cover to material storage areas i.e., adequate tarpaulin over stockpile areas if material cannot be reinstated prior to suspension.

4.1.5.3 Refuelling - Fuel and Oil Management

Any easily manoeuvrable road-going construction vehicles will be refuelled off-site, wherever possible. This will primarily be the case for road vehicles such as vans and trucks. However, for any construction machinery that will be based on-site continuously, or vehicles which are slow moving or tracked or those for whom regular trips off-site to refuel will not be practical, on-site fuelling will be required and a limited amount of fuel will have to be stored on site.

On-site refuelling of machinery will mainly be carried out using a mobile double skinned fuel bunded fuel tank. A spill kit in the form of a supply of fuel absorbent material and mats and a drip tray will be kept with the tank at all times. The drip tray and fuel absorbent mats will be used at all times during refuelling.

No refuelling will be carried out within 50 m of a stream. The fuel bowser, typically a double-axle custom-built refuelling trailer, will be re-filled off-site, where possible, or at either of the two construction compounds and will be towed as required within the site by a 4x4 vehicle to where machinery is located. It is not practical or preferable for most heavy construction vehicles (such as cranes, excavators, dozers, dumpers etc.) to travel back to the refuelling point in the construction compounds given the size of the proposed wind farm site. The 4x4 vehicle will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level impermeable area in either of the construction compounds when not in use.

Oils, lubricants and other hazardous liquids required for maintenance of equipment during the construction phase will be stored on the dedicated impermeable storage platform in the construction compounds. Any additional fuel containers, other than the fuel bowser, used for smaller equipment (such as generators, lights etc.) will be stored within additional secondary containment e.g. bund for static tanks or drip trays for smaller mobile containers. Taps/nozzles for fuels and storage containers for oils will be fitted with locks to ensure their use is controlled. Only designated trained and competent operatives will be authorised to refuel plant on site.

New clean ancillary machinery equipment such as hoses, pipes and fittings required on-site will be contained within a bunded area, however any used or damaged parts will not be stored on-site and will be removed immediately. Any repair works required on machinery involving fuel and oil control will be carried out off-site where practical, or in the construction compounds over an impermeable surface. Unless unavoidable, repair works carried out in the field where machinery is operational will use spill trays and absorbent materials to prevent release of contaminants to the ground. Maintenance and repair works will be carried out at least 50m from any stream.

At least daily checks prior to start-up of plant and machinery will minimise the risk of break-down and associated contamination risks for on-site repairs. Records of daily pre-start checks will be maintained and kept in the site office. A clean site policy and diligent housekeeping will also reduce the potential of hydrocarbon release on-site.

4.1.5.4 Spill Control and Response

Emergency spill kits with oil boom and absorbent materials will be kept on-site in the event of an accidental spill. Spill kits will be stored in each construction compound, and at the on-site substation in case of emergency and with the 4x4 vehicle transporting the fuel bowser, smaller spill control kits will also be kept in all construction machinery. All construction personnel will be notified of where the spill kits are located as part of the site induction and will be trained on the site procedures for dealing with spills.

In the event of a leak or accidental fuel spill in the field, the source of the spill will be fixed, and the fuel will be contained and cleaned as quickly as possible using the spill kits to contain and absorb the pollutant and prevent any further potential contamination. The absorbed pollutants and contaminated materials will be placed into leak proof containers and transferred to a suitable waste container for hazardous materials in the construction compounds. Where a leak has occurred from machinery, the equipment will not be permitted to be used further until the issue has been resolved. The incident will be reported to the site manager and Environmental Clerk of Works, and appropriate remediation will be carried out (i.e. soil removal for safe disposal at a licensed waste facility south of Donegal Town, etc.).

The SHEQ Officer (or equivalent appointed person) will be notified of any spills on-site and will determine the requirement to notify the authorities as set out in Section 5.3.3 (Incidents / Complaints).

4.1.5.5 Forest / Tree Felling

The proposed project must have obtained planning consent before an application can be made for a felling license from the Forest Service as per their policy on tree felling for wind farms.

As part of this process, an area of at least an equivalent size to that which was felled must be replanted. This replanting land can be located anywhere within the state, provided an afforestation license is granted for the land. This replanting will be carried out at a number of suitable technically approved afforestation sites the state, and these will be located in a different county, therefore not having any cumulative impacts with the proposed wind farm (i.e. not in the same river catchment, no ecological connections and with no potential for visual/landscape cumulative impacts with the wind farm.

4.1.5.6 Directional Drilling

Drilling fluid required for the directional drilling process will be used sparingly and only as required to avoid an excess and will be appropriately stored when not in use. The fluid used during the process is inert, natural and biodegradable (e.g. Clear Bore™). Should any excess drilling fluid occur, it will be contained and removed for disposal at a licensed waste facility. The duct will be positioned, and the launch and reception pits will be refilled.

Further details of this crossing method are provided in Appendix 1-1 of the EIAR; associated construction methodologies are provided in Appendix 2-4 of the EIAR.

4.1.5.7 Peat / Spoil Management

Topsoil and sub-soil are to be stockpiled separately. Turves will be stored turf side up and will not be allowed to dry out. Stockpiles are to be isolated from any surface drains and a minimum of 50m away from streams. Measures such as interceptor ditches around the bases of these

areas, sediment traps and seeding of the bunds shall be incorporated to prevent runoff of suspended solids laden surface water and soil erosion. No permanent spoil or stockpiles will be left on site.

The method for restoration of excavated or disturbed areas is to encourage stabilisation and early establishment of vegetation cover, where available, vegetative sods/turves or other topsoil in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface.

A temporary peat deposition area will be set up on site for storage of peat that is excavated on site. It will be mainly used until the first borrow pit is fully excavated. Once all stone has been extracted, then it is proposed to place peat within the borrow pit to reinstate it. The temporary peat deposition area may be used throughout the construction phase of the project while waiting for availability of space in the onsite borrow pits.

To prevent erosion and run-off and to facilitate vegetation reinstatement, any sloped embankment will be graded such that the slope angle is not too steep and that embankments match the surrounding ground profile.

4.1.5.8 Borrow Pits

Borrow pits will be reinstated using any surplus inert material from the site (including peat) and made secure using permanent stock proof fencing.

Rock and fill material may need to be extracted from a number of proposed turbine foundation locations as part of the required excavations there; this material will be used where possible to replace the material requirements from borrow pits. The onsite borrow pits will be used for the long-term storage of peat which is excavated around the site.

Once all of the required stone has been mined from each borrow pit, it will be reinstated using excess spoil from the site, most of which will be peat. As these will be excavated into the ground, peat stability risks associated with storage will be mitigated.

4.1.5.9 Concrete Deliveries and Pouring

Concrete is required for the construction of the turbine bases and foundations. After concrete is poured at a construction site, the chutes of ready mixed concrete trucks must be washed out to remove the remaining concrete before it hardens. Wash out of the main concrete bottle will not be permitted on site; wash out is restricted only to chute wash out. Wash down and washout of the concrete transporting vehicles will take place at an appropriate facility offsite.

The best management practice objectives for concrete chute washout are to collect and retain all the concrete washout water and solids in leak proof containers or impermeable lined wash out pits, so that the wash material does not reach the soil surface and then migrate to surface waters or into the ground water. The collected concrete washout water and solids will be emptied on a regular basis. Washout will be undertaken at the construction compounds.

The small volume of water that will be generated from washing of the concrete trucks chute will be directed into a temporary lined impermeable containment area, or a concrete wash unit. This type of unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site as waste material. Where temporary lined impermeable containment areas are used, such containment areas will be excavated and lined with an impermeable membrane.

General measures to prevent surface water contamination from concrete pouring on-site will include:

- Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast;
- Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete;
- Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets;
- Ensuring that covers/mesh are available for freshly placed concrete to avoid the surface washing away in heavy rain;
- Disposal of surplus concrete after completion of a pour off-site; and
- Discussing arrangements for concrete deliveries with the suppliers before works commence to ensure they are aware of on-site wash-out restrictions.

4.1.5.10 Works Near Waterbodies

The construction works will involve some works within 50m of streams (such as site access tracks and clearspan bridges). However, no instream works are proposed, and a suite of measures are in place to avoid any adverse effects on streams. Clear span bridges will be utililsed for stream crossings. Trees will be cut manually inside the 50m buffer. During the near stream construction work, silt traps and a double row silt fences will be placed immediately down-gradient of the construction area for the duration of the construction phase.

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"*, that is, 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.

Runoff will be maintained at Greenfield (pre-development) runoff rates. The layout of the development has been designed to collect surface water runoff from hardstanding areas within the development and discharge to associated surface water attenuation lagoons adjacent to the proposed infrastructure. It will then be managed by gravity flow at Greenfield runoff rates.

It is proposed, that during the ground clearance of the proposed project, the contractor will implement water control measures to limit the effect on water quality using standards measures as set out in the Forestry Felling Report – Appendix 2-5. Brash will be used along harvesting and extraction routes for soil protection. The forwarder will be loaded to the manufacturer's maximum specification and no more to avoid overloading and unnecessary soil compaction.

Suspended solid (silt) removal features will be implemented in accordance with CIRIA C697 SuDS Manual, and CIRIA C648 Control of water pollution from linear construction projects.

All temporary and permanent drainage from the site shall be designed to have as a minimum three stages of treatment, as defined in the SuDS Manual. Management of runoff will include the following:

- Filtration of water through filter media (sand / stone check dam, silt fence);
- Detention / settlement in settlement ponds or behind check dam in swales; and
- Conveyance of shallow depths of water in vegetated swale.

4.1.5.11 Monitoring

Local surface water features in the immediate vicinity of the site boundary will be monitored at the pre-construction stage and during construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed project.

Inspections of silt control measures are critical after prolonged or intense rainfall while maintenance will ensure maximum effectiveness of the proposed measures. A programme of inspection and maintenance will be designed, and dedicated construction personnel assigned to manage this programme. A checklist of the inspection and maintenance control measures will be developed, and records kept.

During the construction phase, field testing and laboratory analysis of a range of parameters will be undertaken at adjacent watercourses, specifically following heavy rainfall events (i.e., weekly, monthly and event based as appropriate).

Regular visual inspections of all watercourses (flow conditions, discolouration, collection of debris, fish in distress or floating), presented in a monthly report on water quality, is advised by an independent, suitably qualified ECoW with particular emphasis placed on:

- Streams downstream of site activities;
- At times when heavy traffic is frequenting the site;
- During and after periods of heavy or prolonged rainfall and during winter months;
- During fish migration and spawning periods; and
- Stream crossings to ensure that the existing mitigation measures are effective in preventing any sediment reaching streams.

4.1.6 Invasive Species Management

An Invasive Species Management Plan has been prepared (see Appendix 6-6 of the EIAR) and will be reviewed and updated prior to construction and implemented to prevent the construction work from causing the introduction and / or spread of invasive species. Preparation of the plan will include a resurvey of the infrastructure buffer to identify any additional invasive species stands, or spread of existing invasive species stands, that may have developed since the August 2022 survey.

Invasive Species Stands

All invasive species stands will be securely fenced with warning signs and access to these areas will only be permitted for designated personnel. The fencing will be a minimum of 7 m from the invasive species plants. No construction work will take place until an inspection by the Ecological Clerk of Works has confirmed that all the relevant invasive species stands are adequately fenced.

The removal of the Rhododendron, Japanese Knotweed and Montbretia stands identified in this Environmental Impact Assessment Report, and any additional invasive species stands identified from the resurvey will use appropriate methods based on the National Roads Authority's *Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (NRA, 2010) or other relevant guidance. This may include chemical treatment and/or physical removal.

Any invasive species material removed will be either buried on site at a depth of 2 m, incinerated, or disposed of to an appropriately licensed landfill. Storage of contaminated soil will only take

place in designated storage areas. These storage areas will be securely fenced with warning signs and access to these areas will only be permitted for designated personnel.

Appropriate biosecurity measures will be applied to all personnel and machinery involved in the invasive species control work. A designated wash-down area will be created, where material from a power-washed vehicle can be effectively contained, collected and buried/removed off-site along with other contaminated material. The area will have a washable membrane or hard surface.

No construction work will take place within, or adjacent to, areas with invasive species stands until the above measures have been implemented, and the removal has been verified by an inspection by the ECoW.

General Biosecurity Protocols

An Invasive Species Risk Assessment Method Statement will be provided by the contractor prior to commencement of any works. This will include: procedures for inspection and decontamination of vehicles and equipment prior to arrival and on departure from the site; designation and management of wash-down areas; procedures for checking materials entering the site; and biosecurity measures for construction works associated with the drainage ditch near stream works.

4.1.7 Biodiversity Management Plan

A Biodiversity Management Plan (BMP) will be implemented as part of the development and operation of the wind farm. A particular focus of the Plan will be the management of habitat creation and enhancement measures and bat buffer zones. The Plan will include:

- Creation of a wetland buffer zone around Lough Aneane More;
- Protection / restoration of four areas of lowland blanket bog habitat; and
- Management of the corridor of open grassland / heath along the forest road in the northern part of the site.

Additional general biodiversity management measures will be implemented throughout the site. The BMP can be found in Section 6.5.6, Chapter 6 (Biodiversity) of the EIAR. The updated BMP will become part of the Contractor's CEMP for the construction works.

A Golden Eagle Habitat Management Plan (Appendix 7-9 of the EIAR) will be implemented to mitigate or the potential displacement impacts to Golden Eagles.

4.1.8 Waste Management

Best practice in waste management will be employed during all phases of the Proposed Project, with a view to reducing, reusing, recycling and recovering waste produced, in that order of preference. Waste disposal will be avoided where possible. The following sections outline the Waste Management Plan (WMP) and waste management practices associated with the proposed project, which will be in accordance with relevant provisions of the Waste Framework Directive (Directive 2008/98/EC on waste), the Waste Management Act 1996 as well as all other Irish and EU legislation.

4.1.8.1 Waste Management Plan

The main site contractor will appoint a Waste Manager who will ensure that all waste contractors have the correct permits for any waste streams they are removing from site,

and that they are taking it to the appropriately licensed/permitted waste facilities. They will also ensure that all parts of the WMP will be implemented onsite.

All waste generated from the Cloghercor Wind Farm development construction phase will be managed in accordance with the provisions of the Waste Management Act 1996 as amended and associated Regulations. The following measures will be implemented on site by the appointed Contractor for the duration of construction:

- The appointed Contractor will ensure all excavated topsoil and subsoils will be reused within the site boundary, insofar as possible, primarily for reinstatement of the borrow pits. Any excess material which cannot be reused in creating berms or reinstating the borrow pits will be transferred off-site to a licensed waste facility. Similarly, any excess or unsuitable rock material which cannot be reinstated in the borrow pits will be transferred off-site. However, it is not anticipated that any excess material will not be suitable for reuse within the site;
- The appointed Contractor will ensure that any excess material which cannot be reused will be transferred off-site to a suitable licensed waste facility. Similarly, any excess or unsuitable soil / rock material which cannot be reinstated will be transferred off-site. However, it is not anticipated that any excess material will not be suitable for reuse within the site;
- The appointed Contractor will ensure typical waste streams (such as metals, paper, cardboard, plastics, wood, rubber, textiles, bio-waste, packaging, WEEE (electronic waste, batteries, accumulators and construction waste) will be managed, collected, segregated and stored in separate area(s) at the site before being removed off site by a licensed waste management contractor at regular intervals for the duration of the construction works;
- The appointed Contractor will provide skips and bins of appropriate sizes onsite in a designated area(s) and used to maximise source segregation of waste materials. This will include food and packaging waste from canteen and welfare facilities. Appropriate control of food waste in the compound will minimise the potential for pests and rodents to visit the area;
- Any contaminated materials used for spills and equipment maintenance works will be separately stored in a suitable container for collection by the appointed authorised hazardous waste contractor(s);
- The appointed Contractor will encourage all staff to minimise waste generation and to maximise the segregation of waste at source. Material wastage will be avoided by delivering only the required quantities of material to site and utilising off-site manufacturing of materials as much as possible;
- The appointed Contractor will establish 'just-in-time deliveries to avoid excess material storage at the site which can lead to waste generation. Delivery drivers will be encouraged to remove any excess packaging from materials delivered to site and remove unused timber pallets where possible;
- Reusable formwork for concrete pouring will be used where possible, in preference of non-reusable options. Other opportunities for material reuse across the site will be sought by the appointed Contractor;
- Due to the current nature / use of the site (commercial forestry / agriculture), it is not anticipated that there will be contaminated soils or materials encountered during the excavation works. No contaminated soils were identified during the site investigation works.

- It is noted that illegal dumping is common in large forestry areas and may be encountered at the time of construction. Where illegal dumping is discovered, appropriate communication and measures will be taken to try and identify the source of the illegal waste. The appropriate authorities will be notified, and the materials will be removed from site by authorised waste collection contractors and transferred to suitably licensed waste facilities:
- The SHEQ Officer, or other appropriate person, will be chosen by the appointed Contractor as the Waste Manager for the duration of the project in accordance with the general guidance set out in the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*[4], published by the EPA in November 2021;
- At the pre-construction stage, the appointed construction and demolition (C&D) Waste Manager will be in a position to require fellow designers to take full advantage of all reasonable C&D waste prevention, reuse and recycling opportunities;
- During construction, the practicalities of waste prevention, salvaging re-useable materials, and the need to synchronise the recycling of waste materials through the timing of their use in the new construction works will be emphasised by the appointed Waste Manager; and

The appointed Waste Manager will be responsible for auditing waste handling and storage throughout the project and for advising construction personnel on best practices. All waste collections and records of waste movement

4.1.9 Vehicle Washing

Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. 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). 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.

However, in the interest of best practice and to avoid the potential for the transfer of alien invasive plant species into the site, it is proposed to install a self-contained wheel-wash system near the project site entrance (access points one and two). The drawings in Appendix 1-1 of the EIAR include typical details and proposed location of a proposed self-contained wheel-wash system which will be installed as part of the construction phase of works.

A road sweeper will be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed project.

[4] EPA *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects* (November 2021) - https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf (26 August 2022)

5.0 EMERGENCY RESPONSE PLAN / PROCEDURES

5.1 HAZARD IDENTIFICATION

In order to establish the type of potential emergencies that may occur, the hazards outlined in Table 5.1 have been identified as being potential situations that may require an emergency response they occur.

Table 5.1: Potential Hazards Identified

Hazard Type	Emergency Incident
Plant / Machinery/tools causing damage	Accident resulting in injury / power failure / loss of critical infrastructure
Spillages / Leaks	Accidental spill / leak leading to significant environmental contamination
Flooding	Accident leading to injury / damage to site infrastructure
Severe Weather	Accident leading to injury / damage to site infrastructure
Fire / Explosion	Accident leading to injury / damage to site infrastructure
Turbine Collapse	Accident leading to injury / damage to site infrastructure
Peat Stability	Excessive movement of peat on-site / onset of peat slide leading to: accident / injury / damage to site infrastructure
Landslide	Accident leading to injury / damage to site infrastructure
On-site/Construction Traffic – plant/machinery and construction vehicle movements	Traffic accident leading to injury / damage to site infrastructure
Wind Turbine Rotational Failure	Accident leading to injury / damage to site infrastructure

5.2 ROLES AND RESPONSIBILITIES

An indicative organisational chart which identifies the typical roles and associated responsibilities for the construction of the proposed project is provided in Section 2.2 of this CEMP. This will be subject to specific contractual agreements upon appointment of a Main Contractor and any additional/further appointments required in compliance with a grant of permission.

The Project Manager will have overall responsibility for environmental management and compliance during the construction works. He/she will be supported in this role by an SHEQ Officer, or Environmental Officer as appropriate, who will liaise directly with the relevant regulatory bodies and stakeholders throughout the construction phase. Additional specialist input will be included from an ecological clerk of works, archaeologist or other disciplines as required.

5.3 EMERGENCY RESPONSE PROCEDURES

Every effort will be made to prevent health and safety emergencies and environmental incidents during the construction and operational phase of the project.

The Contractor will be responsible for developing a detailed Emergency Response Plan (ERP) for the proposed construction works, to cover health and safety emergencies as well as environmental emergencies, as part of the H&S Plan.

This ERP shall be activated in the event of an emergency such as an accident, fire, spillage, collapse etc. and will provide details on who is required to be notified, first aid facilities and closest hospitals. The ERP will also include details of all personnel inducted and authorised to work on the site as well as next of kin contact details and relevant medical information.

In the event of an emergency, the SHEQ Officer and Project Manager will be notified immediately and will determine the scale of the emergency and the requirement for the assistance of emergency services. Works will cease in the area of the incident and contact will be maintained with the emergency services to direct them to the scene of the incident as required.

As part of the ERP, an evacuation drill will be carried out on a regular basis to make all personnel aware of the procedure to be followed in the event of an emergency where a full site evacuation is required. Emergency muster point(s) will be identified at suitable locations in the construction compounds and the ERP will outline the persons responsible for checking names at the safety muster points. Records will be maintained of such drills.

The ERP must include contact names and telephone numbers for the relevant local authorities (all sections/departments) including ambulance, fire brigade, An Garda Siochána and the HSA. Reporting of environmental emergencies to the local authority will be required as well as other relevant stakeholders such as IFI, NPWS or the EPA.

5.3.1 Site Evacuation and Fire Drills

A site evacuation/fire drill procedure will be developed to provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. At induction, all personnel will be made aware of the evacuation procedure. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specific intervals and maintaining records of such drills. The details of this procedure will be finalised in the Contractor's CEMP at construction stage and will include:

- Details regarding the notification of emergency situations to all those on site including use of a siren/horn to notify all personnel;
- Details of assembly point(s) and signage;
- Details of the roll call procedure to account for all personnel on site;
- Communication process between the Site Security Officer and the Site Manager during the procedure (i.e. notification of roll count etc.);
- Course of action to be undertaken by the Site Manager.

5.3.1.1 Spill Response and Control

A detailed spill response and control procedure will be developed and finalised in the Contractor's CEMP at construction stage, outlining the steps that will be followed in the event of an oil / fuel spill occurring, including:

- Identification and blocking of the source of the spill;
- Alerting personnel in the vicinity of the spill and any possible dangers;
- Elimination of any potential ignition sources in the vicinity of the spill;
- Spill containment approach and spill control materials;
- Covering or bunding off of any vulnerable areas where appropriate (i.e. drains, streams, sensitive habitats);
- Clean up using the spill control materials;
- Containment and disposal of used spill control materials;
- Communication with the ECoW – providing relevant information on the location, type and extent of the spill so that they can take appropriate action;
- ECoW actions including inspection of the site, making certain necessary measures are in place to manage the spill and prevent further spillage;
- ECoW notification to the appropriate regulatory body if necessary.

5.3.1.2 Other Environmental Incidents

Environmental incidents are not only limited to spills. Any environmental incident must be investigated and the ECoW notified immediately. If necessary, the ECoW will inform the appropriate regulatory authority depending on the nature of the incident. Details of the incident will be recorded (e.g. cause, extent, actions and remedial measures). Recommendations made to avoid reoccurrence will be recorded also. The ECoW will liaise with the Project Ecologist or Project Archaeologist regarding any incidents as required. A record of all environmental incidents will be kept on file by the ECoW and the Main Contractor. These records will be made available to the relevant authorities if required. Furthermore, the ECoW will be responsible for any outlining corrective actions required and will advise the Main Contractor as appropriate.

5.3.1.3 Excessive Peat Movement

A detailed procedure will be developed and finalised within the Contractor's CEMP at construction stage outlining the steps to be followed in the event of excessive or continuing peat movement being recorded or identified, including details on suspension of construction activities within the affected area, increasing monitoring activity at the identified location; limited construction activity beginning again only once there has been a cessation of movement and a geotechnical risk assessment having been undertaken by a geotechnical engineer.

5.3.1.4 Peat Slide

A detailed procedure will be developed and finalised within the Contractor's CEMP at construction stage outlining the steps to be followed in the event of the onset of or detachment of peat onsite, which will include details regarding, alert of peat slide, cessation of construction, diversion of resources, mitigation procedures, actions to prevent a peat slide reaching watercourses via on-land prevention measures (e.g. installation of check barrages), watercourse check barrages, stabilisation by rock infill where applicable/required. The procedure will also detail assessment requirements to be undertaken by the geotechnical engineer and stabilisation procedures implemented, as well as monitoring, as appropriate, until such time as movements have stopped.

5.3.2 Incidents / Complaints

All safety or environmental incidents associated with the project will be reported and investigated in line with the ERP. Typically, the following procedures will be followed in the event of an incident:

- Works will stop immediately where safe to do so;
- The SHEQ Officer will be contacted;
- The size of the incident will be assessed and determined if it can be controlled by site staff or if emergency services are required to attend;
- The appropriate enforcing authority will be contacted;
- The SHEQ Officer will investigate after the incident;
- The findings will be sent to the appropriate authority; and
- An action plan will be prepared to set out any modifications to working practices required to prevent a recurrence.

This section sets out a procedure to manage and resolve any complaints received from members of the public during the construction phase of the proposed project. The following measures will be adopted and refined, as necessary, taking account of any relevant planning conditions.

The following measures will be implemented to deal with complaints and the Contractor's CEMP will contain more specific details with regard to phone numbers to contact:

- Clearly display a notice board at the site entrance so that the public know whom to contact if they have a complaint or comment;
- Personnel on site, including sub-contractors are required to perform their duties in accordance with this CEMP, and in such a way as to minimise the risk of complaints from third parties;
- All complaints received regarding the construction works will be recorded and categorised (e.g. noise, property damage, traffic, dust etc.) within a central Site Complaints Log. This complaints log will include the following key details:
    - Name, address and contact details of the complainant (with the complainant's permission);
    - Brief outline of the complaint;
    - Date of Complaint;
    - Name of person receiving complaint details; and
    - Agreed timeline for response to complaint.
- All complaints will be communicated to the Project Manager and the Applicant immediately;
- All complaints will be followed up and resolved in so far as is practicable; and
- The complainant, Applicant and other stakeholders will be kept informed of the progress in resolving the complaint.

5.4 EMERGENCY CONTACT DETAILS

A list of emergency contacts is presented in Table 5.2 below. 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 5.2: List of Emergency Contacts

Contact	Telephone
Emergency Services – Ambulance, Fire, Gardaí	112 / 999
Local Garda Station – Glenties	074 95 51080
Local Fire Station – Glenties	074 95 51275
Local Doctor / GP Service – Lettermacaward Medical Centre	074 9544147
Local Doctor / GP Service - Dungloe Medical Centre	074 95 21099
Glenties Primary Care Centre	074 95 51330
Letterkenny University Hospital	074 91 25888
ESB Faults / Emergencies	1850 372 999
Gas Networks Ireland 24hr Emergency Line	1850 20 50 50
Site Manager / Construction Manager / Site Supervisor	TBC
Client: Cloghercor Wind Farm Limited	TBC
Ecological Clerk of Works (ECoW)	TBC
Safety, Health, Environment and Quality (SHEQ)	TBC
Project Supervisor Design Stage (PSDS)	TBC
Project Supervisor Construction Stage (PSCS)	TBC
Health and Safety Authority Ireland (HSA)	TBC
Inland Fisheries Ireland (IFI)	TBC
Project Ecologist	TBC
Project Hydrologist	TBC
Project Geotechnical Engineer / Geologist	TBC
Project Archaeologist	TBC

5.5 EMERGENCY COMMUNICATION PROCEDURE

The Contractor's CEMP will be updated with an agreed Emergency Communication Response Procedure following appointment of the Contractor.

5.6 PERSONNEL TRACKING PROCEDURE

All personnel on site will be required to undergo a site induction where they will be required to provide personal contact details (including contact information for next of kin). In the event that a member of personnel is involved in an emergency situation where serious injury has occurred and hospitalisation has followed, the Site Manager, or next in command if unavailable, will be responsible for contacting and informing the next of kin.

5.7 INDUCTION CHECKLIST

Table 5.3 below provides a list of items highlighted in the Emergency Response Procedure (ERP) which must be included in the induction or gathered from all personnel that will work on the Proposed Project during the mandatory site induction. This will be revised throughout the various stages of the project. This list will be updated and expanded on within the Contractor's CEMP.

Table 5.3: Site Induction Checklist

Emergency Response Plan – Site Induction Items TBC	Status
Site Induction (all personnel must undergo the site induction prior to commencing work on-site)	
All personnel must be made aware of site evacuation and fire drill procedures	
All personnel must be made aware of the spill response and control procedure	
All personnel must be made aware of environmental incident procedures	
All personnel must be made aware of procedures relating to peat movement and peat slides	
All personnel must be made aware of incident and complaints procedures	
All personnel must be made aware of the emergency communication procedure and Emergency Contact Details for the project	
All personnel must be made aware and have access to the Site Safety Manual	
All personnel must be made aware of the personnel tracking procedure and provide their contact details at induction	
TBC	
TBC	
TBC	

6.0 MITIGATION PROPOSALS

All mitigation measures relating to the pre-construction and construction phases of the proposed project were set out in the various sections of the EIAR, and NIS prepared as part of the planning application.

This section of the CEMP groups together all of the mitigation measures presented in the EIAR and NIS respectively. The Mitigation Measures are outlined in the table in the following pages.

By presenting the mitigation proposals in this format, it is intended to provide a review list that can be easily checked and reported on during the future phases of the project. The use of a table to present the information be further expanded upon over the course of the Proposed Project to provide a template for use during site compliance audits.

Table 6.1: Table of Mitigation Measures

Ref No.	Related to	Location	Mitigation Measure
			Pre-construction Phase
MM1	Environmental Management	EIAR Chapter 2 / CEMP Section 1.1	The CEMP will be updated prior to commencement of 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. The construction contractor will be responsible for implementing the mitigation measures specified in the EIAR and CEMP and for communicating the requirements with all staff on-site. Their implementation of the mitigation measures will be overseen by the supervising Ecological Clerk of Works (ECoW), ecologists, archaeologists and/or geotechnical engineers, as appropriate.
MM2	Health and Safety	EIAR Chapter 2 / CEMP Section 2.4	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 prior to the construction stage. A Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Safety, Health and Welfare at Work (Construction) Regulations.
MM3	Traffic Management	EIAR Chapter 2 / CEMP Section 4.1.2	A Traffic Management Plan (TMP) has been prepared for the proposed project. This will be updated ahead of construction to address the requirements of any relevant planning conditions. A confirmatory survey of road condition in advance of any works.
MM5	Biodiversity: Otter	NIS	A pre-construction otter survey will be carried out. If any new couching sites or holts are found in the vicinity (150 m) of the proposed works, or any non-breeding holts are found within 20 m of the proposed works, appropriate mitigation measures will be implemented based on Smal (2006).
MM6	Ornithology: Breeding Bird Surveys	EIAR Chapter 7	Pre-construction breeding bird surveys will be carried out. These will be carried out in the breeding season preceding the start of construction, and in every subsequent breeding season across the duration of the construction period. These surveys will include Golden Eagle surveys, Merlin surveys and moorland surveys. If nesting Golden Eagle, Merlin, or Golden Plover are found, no construction work within the following specified distances of their nest sites, or centre of territory until the breeding attempt has been completed: i.e., the young have fledged, or the nest has failed. The distances are: 1.5 km for Golden Eagle; 500 m for Merlin; and 500 m for Golden Plover.
MM7	Underground Services	EIAR Chapter 11	A confirmatory survey of all existing services will be carried out prior to construction to verify the assumptions in this report and identify the precise locations of any services. The applicant will liaise with the service provider where such services are identified. Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage.
MM8	Noise	EIAR Chapter 12 / CEMP Section 4.1.3	The Contractor will be obliged to comply with the recommendations of BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise* .

MM9	Pre-Construction Pavement Surveys	EIAR Chapter 16	The client will undertake pre-construction visual pavement surveys on the Haul Roads.
Construction Phase			
MM10	Health and Safety	EIAR Chapter 2 and Chapter 5 / CEMP Section 2.4	• The proposed Cloghercor Wind Farm will be constructed in accordance with all relevant Health and Safety Legislation. • The project will employ all of the latest and relevant guidelines and legislation terms of health and safety both for works within the wind farm site as well as for works outside the main wind farm such as those on the TDR. • The required levels of safety (e.g. during road works) will be maintained for all road users as well as pedestrians. • The wind farm site itself will not be open to the public until after the construction phase of the project. • Appropriate health and safety measures as described in the CEMP will be taken for all works areas during the construction phase in the interest of worker safety also. • Should any public health advice be in place during the construction phase (such as the recent Covid-19 public restrictions) these will be implemented on site.
Biodiversity / Ecology			
MM11	Ecological Clerk of Works (ECoW)	EIAR Chapter 6 / CEMP Section 2.3.2	A suitably qualified ECoW will be appointed by the contractor for the duration of the construction period.
MM12	Invasive Species Management	EIAR Chapter 6 / CEMP Section 4.1.6	• An Invasive Species Management Plan has been prepared as part of the EIAR (Appendix 6-6. This will be further developed into a Method Statement and fully implemented prior to and during construction. This will include a re-survey to identify any additional invasive species stands, or spread of existing invasive species stands since the previous (August 2022) survey. • All invasive species stands will be securely fenced with warning signs and access to these areas will only be permitted for designated personnel. Fencing will be a minimum of 7 m from the invasive species plants. No construction work will take place until an inspection by the ECoW has confirmed that all the relevant invasive species stands are adequately fenced. • Removal of invasive species stands identified in the EIAR, and any identified from the re-survey will use appropriate methods based on the National Roads Authority's *Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (NRA, 2010) or other relevant guidance. • Any invasive species material removed will be either buried on site at a depth of 2m, incinerated, or disposed of to an appropriately licensed landfill. • Storage of contaminated soil will only take place in designated storage areas securely fenced with warning signs. Access will only be permitted for designated personnel. • Appropriate biosecurity measures will be applied to all personnel and machinery involved in the invasive species control work.

			• A designated wash-down area will be created to effectively contain, and collect contaminated material. • To avoid the potential for the transfer of alien invasive plant species into the site, a self-contained wheel-wash system will be installed near the project site entrance (access points one and two). • No construction work will take place within, or adjacent to, areas with invasive species stands until the above measures have been implemented, and removal has been verified by inspection by the ECoW. • An Invasive Species Risk Assessment Method Statement will be provided by the contractor prior to commencement of any works.
MM13	Bats	EIAR Chapter 6	• To reduce the collision risk to bat populations, buffer zones will be established around each turbine within which all trees and other tall woody vegetation will be cleared. As a result, these buffer zones will be maintained as bog / heath type vegetation dominated by low-growing dwarf shrubs and grasses (Buffer Zones are outlined in Chapter 6 of the EIAR). • The Bat Report specifies 100 m buffer for T19 due to high risk to Leisler's Bat. For all turbines a zone of >50m around each proposed turbine (from tip of blade) will be cleared of tall vegetation (shrubs, trees, scrub etc). • The initial clearance work in each buffer zone will be completed at least six months prior to the installation of the turbines. • If any of the deciduous trees identified as Potential Bat Roosts adjacent to the stone ruins are proposed to be felled, a Phase 2 survey will be carried out. This will involve a daytime inspection of trees coupled with dusk/dawn surveys, where appropriate. • A bat box scheme will be implemented to mitigate any felling of Potential Bat Roost trees. This scheme will be implemented in a deciduous or mixed woodland at least 1 km from the proposed project area. One bat box will be provided per Potential Bat Roost tree felled. The bat boxes will be erected by a bat specialist a minimum of six months prior to tree felling. •
MM14	Biodiversity Management Plan	EIAR Chapter 6 / CEMP Section 4.1.7	A Biodiversity Management Plan will be implemented, and will include measures such as below during construction: • A 30 m wide buffer zone will be established around the Lough Aneane More lake. • Areas of lowland blanket bog and dystrophic lake habitat (three to the south of T15, and a fourth to the south of T7) will be designated as biodiversity areas. • The old forestry drains in the lowland blanket bog habitat near T7 will be filled in. These areas will be maintained as open lowland blanket bog habitat. They will be monitored, and any regenerating conifer, or invading Rhododendron will be removed. • A corridor of open grassland / heath occurs along the forest road in the northern section of the project site. This corridor will be managed to maintain and enhance the wet heath, lowland blanket bog and wet grassland habitats. • Monitoring will be carried out and the management regime will be adapted as required, based on the monitoring results. • Non-intervention buffer zones and uninterrupted setback zones will be created along streams and around lakes.

			• Drainage and cultivation operations associated with reforestation will be planned and implemented to minimise flow rates after rainfall. Standards set out in Section 3.7.1 of the Environmental Requirements for Afforestation and in the Forestry Standards Manual will apply. • General biodiversity management / enhancement measures will be implemented throughout the wind farm site where feasible and appropriate to promote plant diversity and provide floral resources for pollinators, including measures recommended by the All-Ireland Pollinator Plan's guidance of *Pollinator-friendly Management of Wind Farms* (NBDC, 2021).
Ornithology			
MM15	Breeding Bird Surveys	EIAR Chapter 7	Construction breeding bird surveys will be carried out. These will be carried out in line with the criteria outlined for pre-construction breeding bird surveys.
MM16	Golden Eagle Habitat Management Plan	EIAR Chapter 7 / NIS	A Golden Eagle Habitat Management Plan will be implemented to mitigate for the potential displacement impacts to Golden Eagles.
MM17	Tree-felling / Scrub Clearance	EIAR Chapter 7	Where possible, tree-felling and scrub clearance will not be carried out during the bird breeding season (1st March - 31st of August).
Land, Soils and Earthworks			
MM18	Permits / Licences	EIAR Chapter 8	It will be a requirement that all permits, and licences are obtained from the regulatory authorities as required by environmental law or regulation and will discharge the relevant conditions of the planning permission to commence site works, or as otherwise appropriate in advance of specific site activities. Replacement replanting of forestry in Ireland is subject to licence in compliance with the Forestry Act 2014 as amended. The consent for such replanting is covered by statutory instrument S.I. No. 191/2017 Forestry Regulations 2017. As it is proposed to fell between 69.7ha and 90.9ha of coniferous forestry for the proposed project, replant lands of the same area are required. The replacement replanting of forestry can occur anywhere in the State subject to licence.
MM19	Soils / Borrow Pits	EIAR Chapter 8 / CEMP Section 4.1.5.8	Temporary stockpiling from excavations will be avoided near sensitive receptors such as watercourses. All of the excavated soils will be reused for local landscaping or for borrow pit reinstatement.
MM20	Pollution Prevention / Spills	EIAR Chapter 8 / CEMP Section 5.3.1	The general guidance provided by the Environment Agency for England and Wales in their publication entitled 'Pollution Prevention Guideline (PPG6) Working at Construction and Demolition Sites' will be used as a baseline for this purpose. Specific guidance published by Irish regulatory agencies will be used where available. The CEMP will include an oil spill response procedure. Good site practice will be applied to ensure no fuels, oils, wastes or any other substances are stored in a manner on site in which they may spill and enter the ground. Dedicated, bunded storage areas will be used for all fuels or hazardous substances.
MM21	Earthworks	EIAR Chapter 8 / CEMP Section 2.3.6	Excavation works will be monitored by a suitably qualified and experienced geotechnical engineer or engineering geologist. Earthworks will not be scheduled to be carried out during severe weather conditions.
MM22	Land Use	EIAR Chapter 8	In order to minimise the potential impacts to land-use, the following mitigation measures are proposed:

			• Minimising areas for earthworks thereby reducing land take requirements; • Restricting areas for construction works and temporary storage to a minimum; • Retention of all existing perimeter planting and re-generating vegetation where possible and sufficiently protect in areas close to construction works; • Disturbance of existing vegetation will be minimised where possible and proposed planting will help integrate the proposed project into the current land use; • The handling, storage and re-use of excavated materials are of importance during the construction phase of the project. Stockpiles will be located away from the watercourses and drainage ditches. Topsoil and subsoils will be stored near the landscaping and in the reinstatement of borrow pit areas. Topsoil will be stockpiled no higher than 2.5m and follow the recommendations set out in the NRA Guidelines for the Management of Waste from National Road Construction Projects (NRA, 2014); • Turves will be stored turf side up and must not be allowed to dry out; • No permanent spoil or stockpiles will be left on site; • The method for restoration of excavated or disturbed areas is to encourage stabilisation and early establishment of vegetation cover, where available, vegetative sods/turves or other topsoil in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface; and • To prevent erosion and run-off and to facilitate vegetation reinstatement, any sloped embankment will be graded such that the slope angle is not too steep and that embankments match the surrounding ground profile.
MM23	Soil and Excavations Management	EIAR Chapter 8	Every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum in order to limit the effect on the geological aspects of the site: • Excavated peat will be used locally for landscaping. Landscaping areas will be sealed and levelled using the back of an excavator bucket to prevent erosion. Where possible, the upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the landscaped peat. These measures will prevent the erosion of peat in the short and long term; • Peat, overburden, and rock will be reused where possible on site to reinstate borrow pits and other excavations where appropriate; • Peat soils will be placed in the Peat repositories. The repository will be located away from sensitive receptors. On completion the peat repository surfaces will be stabilised by the establishment of natural peat land vegetation. Peat repository locations will be at the borrow pit locations; • Where mineral soils are encountered in the excavation and construction of site roads, bases, etc, this material will be stockpiled for assessment and subsequent re-use; • The management of geological materials and spoil is an important component of controlling dust and sediment and erosion control; • Excavated soils and bedrock will only be moved short distances from the point of extraction and will be used locally for landscaping; • Landscaping areas will be sealed and levelled using the back of an excavator bucket to prevent erosion;

			• The upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the landscaped soils. The above measures will prevent the erosion of soil in the short and long term. Soils, overburden, and rock will be reused on site to reinstate any excavations where appropriate. To ensure slope stability, excavations will be battered back (sloped) to between 1:1.5 and 1:2 depending on depth and type of material. Permanent slopes will generally be less than 1:3. The works programme for the construction stage of the proposed project will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecasted. Works should be suspended if forecasting suggests any of the following is likely to occur: • >10mm/hr (i.e., high intensity local rainfall events); • >25mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or • >Half monthly average rainfall in any 7 days. Prior to works being suspended the following control measures should be completed: • Secure all open excavations; • Provide temporary or emergency drainage to prevent back-up of surface runoff; and • Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded. Mitigation measures will be put in place during the construction of the scheme to reduce the likelihood of an excavation collapsing. • Mitigation measures include construction of a granular berm or temporary sheet pile wall to support the soil during construction. Based on the ground investigations undertaken, together with information obtained from other sources, these provide necessary information to assess the suitability of the ground to support the proposed project. Where there is a lower factor of safety, mitigation will be implemented to reduce risk. • Excavation works will be monitored by a suitably qualified and experienced geotechnical engineer or engineering geologist. • The earthworks will not be scheduled to be carried out during severe weather conditions. Subject to landowner permission, selected private water supply wells at representative locations closest to turbine and borrow pit locations around the site will be monitored for water level and quality pre-construction and during the construction phase.
MM24	Materials and Fuel Management	EIAR Chapter 8 / CEMP Section 4.1.5.3	• Waste concrete and wash waters need to be disposed of in dedicated areas where the waste material can be neutralised and collected for appropriate disposal or reuse. • Fuel storage and any oil storage will be carried out in accordance with the Enterprise Ireland Best Practice Guide BPGCS005 Oil Storage Guidelines. • Fuel and oil storage at fixed locations will be in a fixed tank, undercover and within a steel or concrete bund.

			• An impermeable bunded refuelling area will be constructed adjacent to the fixed fuel storage areas. Double skinned plastic tanks will not be acceptable at the site for any purpose unless they are placed within fixed concrete or steel external bunds. • Each fixed fuel and oil storage bunds shall be sized to hold 110 % of the oil volume of the largest tank therein. The fixed fuel and oil storage bunds shall be blind sumped. • Rainwater pumped from each bund shall be discharged to the surface water drainage system via an oil interceptor. • In the event of a spill, the liquid contained in the bund shall be removed by a liquid waste tanker, as will be the contents of the surface water drainage system and oil interceptor. • Where refuelling is required on site away from fixed storage locations this will only be carried out utilising steel intrinsically bunded mobile fuel bowsers. At site refuelling locations, where possible, refuelling will take place within mobile bunds, but at a minimum fuel line from the bowser to the plant being fuelled will be contained by drip trays. • Generators and associated fuel tanks to be used at the site shall either be placed within bunds as per fuel storage tanks or shall be integrated units (i.e., fuel tank and generator in one unit) that are intrinsically bunded. No external tanks and associated fuel lines shall be permitted on site unless these are housed within a fixed bund with the generator. • The contractor's yard/maintenance yard shall incorporate a bund for the storage of small vehicles and oil filled equipment, such as hand portable generators, pumps, etc. Storage of small volume oils or chemicals, in barrels, IBCs, etc, will be stored in a covered bunded area. Where barrels or other containers are required at work locations these shall be stored in enclosed bunded cabinets, and drip trays shall be used where distribution of the material is required. • The main storage areas for oil filled equipment, vehicles, plant, etc, shall be impermeably surface and the discharge of surface water from these areas will be via oil interceptors. • An oil spill response plan will be developed for the construction works and appropriate containment equipment will be available at work locations in the event of a spillage. Oil spill response will form part of site personnel induction and training at the site. • All wastes generated on site will be segregated so that where possible and appropriate materials are re-used on site. Residual materials will be collected by licensed waste haulier for appropriate sorting, recycling and disposal.
MM25	Transmission Lines & Cabling	EIAR Chapter 8	Construction of internal electricity transmission lines and cables will present risks during construction. Before commencement of construction works the Contractor will draw up detailed Method Statements for the transmission line and cabling works. These method statements will be adhered to by the contractors and will be overseen by the Project Manager, Environmental Manager, and ECoW where appropriate.
MM26	Slope Stability	EIAR Chapter 8	Based on the recommendations and control measures given in the Peat Stability Assessment report (Appendix 2-9 of the EIAR) being strictly adhered to during construction and the detailed stability assessment carried out for the peat slopes which showed that the site has an acceptable margin of safety, there is a low risk of peat instability/failure at the Proposed project site. The following outlines an overview of the control measures / tasks for the construction phase: • Appointment of experienced and competent contractors;

			• Geotechnical Engineer to provide a Geotechnical Induction to all contractor supervisory staff; • Appoint a Site Geotechnical Supervisor to carry out supervision of site works as required. The Site Geotechnical Supervisor will be required to inspect that works are carried in accordance with the requirements of the PSRA, identifying new risks and ensuring all method statements for works are in place and certified; • Retain a Site Geotechnical Folder which contains all the information relevant to the geotechnical aspects of the site including but not limited to GRR, site investigation information, method statements etc.; • Contractor to develop a Method Statement for the works to be carried out in each of the PSRA areas cognisant of the required mitigating measures; • Client's Geotechnical Engineer/Site Geotechnical Supervisor to approve the method statement; • Contractor to provide tool box talks and on-site supervision prior to and during the works; • Daily sign off by supervising staff on completed works; • Implementation of emergency plan and unforeseen event plan by the contractor; • Prevent undercutting of slopes and unsupported excavations; • Maintain a managed robust drainage system; • Prevent placement of loads/overburden on marginal ground as detailed in the peat; • 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); • Ensure construction method statements are followed or where agreed modified/developed; and • Develop a Geotechnical Risk Register as part of detailed design and revise and amend throughout the construction progresses. The management of peat stability will be ongoing throughout all stages the project and will be managed through the use of a geotechnical risk register.
Water Quality Management			
MM27	Surface Water Drainage	EIAR Chapter 2 / CEMP Section 4.1.5	The surface water drainage system will require regular inspection during construction works and during operations to ensure that it is working optimally.
MM28	Pollution Prevention	EIAR Chapter 9 / CEMP Section 4.1.5	Best practice construction methods will be implemented in order to prevent water (surface water and groundwater) pollution.
MM29	Environmental Management	EIAR Chapter 9	All personnel working on the project will be responsible for the environmental control of their work and will perform their duties in accordance with the requirements and procedures of the CEMP.
			All works associated with the construction of the wind farm will be undertaken in accordance with the guidance contained within CIRIA Document C741 'Environmental Good Practice on Site' (CIRIA, 2015).

MM30	Erosion / Sediment Control	EIAR Chapter 9	• To maximise the erosion and sediment control benefits of natural vegetation soil cover, stripping of soil is to be kept to a minimum and confined to construction areas only. Where practical, construction works will be staged to minimise the extent and duration of disturbance, e.g., plan for progressive site clearance, only disturbing areas when they are scheduled for current construction work.
MM31	Groundwater	EIAR Chapter 9	• Any groundwater encountered will be managed and treated in accordance with CIRIA C750, 'Groundwater control: design and practice' (CIRIA, 2016). • Groundwater from the borrow pits will be treated in the settlement lagoons. • Subject to landowner permission, selected private water supply wells at representative locations closest to turbine and borrow pit locations around the site will be monitored for water level and quality pre-construction and during the construction phase. • To minimise any effect on the underlying subsurface strata from material spillages, all oils and solvents used during construction will be stored within specially constructed dedicated bunded areas.
MM32	Surface Water Management	EIAR Chapter 9	• The implementation of the Surface Water Management Plan will be overseen by a suitably qualified ecologist/engineer and will be regularly audited throughout the construction phase. • The assigned ecologist/engineer will be required to stop works on site if he/she is of the opinion that a mitigation measure or corrective action is not being appropriately or effectively implemented.
MM33	Forestry felling	EIAR Chapter 9	• Felling will be undertaken of a 20 m corridor along the access roads, and a 74-100m buffer around the turbines based on ecological considerations. • An additional 5 hectares of felling is proposed around the lake as part of a biodiversity management plan. • A 30 m wide buffer zone will be established around the lake. This buffer will be created by felling the existing areas of conifer plantation within the buffer zone, and by blocking drains to raise the water table. • The Felling and Reforestation Standards (2019) describe the universal standards that will apply to all felling (thinning, clearfelling) and reforestation projects on site undertaken under a felling licence issued by the Department of Agriculture, Food & the Marine. • Buffer zone guidelines for planting and felling activities are provided by the Forestry Service in the Forestry and Water Quality Guidelines (2000) and will apply to construction activities. • Construction activities will be curtailed within buffer zones. Buffer zone widths vary from 10m to 25m, depending on slope and soil erosion classification. • All works within 50 m of waterbodies kept to minimum, with all significant infrastructure (turbine foundations, borrow pits and substation) at a minimum 50 m set-back. • All associated tree felling will be undertaken using good working practices as outlined by the Forest Service in their Forestry Harvesting and Environment Guidelines (2000) and the Forestry and Water Quality Guidelines (2000). The latter guidelines deal with sensitive areas, erosion, buffer zone guidelines for aquatic zones, ground preparation and drainage, chemicals, fuel and machine oils. Brash mats will also be used to support harvesting and forwarding machinery. The brash mats reduce erosion of the surface and will be renewed as they become used and worn over time.

			• As part of felling works, temporary water crossings include forest drains, roadside drains, relevant watercourses and aquatic watercourses. Measures should be adhered to as per the 2019 Standards for Felling and Reforestation.
MM34	Sediment Traps	EIAR Chapter 9	Sediment traps are to be constructed and maintained in line with the requirements of the *Forestry Schemes Manual (2011),* the *Forest Road Manual and Forest Drainage Engineering – A Design Manual.*
MM35	Forest Drains	EIAR Chapter 9	Crossing of drains during felling and extraction and restrict machine activity to brashed extraction racks and forwarding routes will be minimised. Where a drain crossing is needed, based on the size of the forest drain one of the following methods will be selected that prevents the breakdown and erosion of drain sides: • For larger drains , deploy a heavy-duty plastic culvert lengthways into the channel and cover with brash material. The culvert must be of a diameter approximating the depth of the drain, to avoid any unnecessary undulation along the extraction route; • Where required, a solution for smaller drains is to temporarily lay log sections lengthways into the channel and overlay with brash. Again, select logs that approximate the depth of the channel to be crossed.
MM36	Aquatic Zones & Larger Relevant Watercourses	EIAR Chapter 9	• Minimise the crossing of aquatic zones and streams during felling and extraction by choosing alternative routes which avoid the streams/aquatic zones where possible; • Direct crossing over the stream bed is not permitted. If you must cross an aquatic zone or streams install a temporary crossing point. When installing and removing the temporary crossing, ensure that no work is carried out within the aquatic zone, and that the stream bed and bankside remain undisturbed; • Avoid crossing points in hollows where surface water gravitates towards, or in areas of the site more prone to sediment release, as indicated by terrain classification; • Ensure the feature is crossed at a right angle to the flow of water; • Where needed, any necessary crossing shall be via an appropriate structure that spans proud of the flow of water and prevents the breakdown and erosion of the banks; • Typical solutions include the laying down of a bridge comprising logs overlaid with geotextile and brash to intercept soil falling off wheels; • Alternatively, utilise prefabricated concrete drop-in bridging.
MM37	Concrete Management	EIAR Chapter 2 and Chapter 9 / CEMP Section 4.1.5.9	• 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; • After concrete is poured at a construction site, the chutes of ready mixed concrete trucks must be washed out to remove the remaining concrete before it hardens. • Only the chute of the delivery truck will be cleaned, Concrete trucks will be washed out fully at the batching plant, where facilities are already in place. • Wash out of the main concrete bottle will not be permitted on site; wash out is restricted only to chute of the delivery truck ,using the smallest volume of water necessary, before leaving the site. Wash down and washout of the concrete transporting vehicles will take place at the batching plant / appropriate facility offsite where facilities are already in place;

			• The small volume of water generated from concrete chute washout will be directed to and collected and retained (all concrete washout water and solids) in leak proof containers or impermeable lined wash out pits / containment areas, so that the wash material does not reach the soil surface and then migrate to surface waters or into the ground water. • The collected concrete washout water and solids will be emptied on a regular basis. These residual liquids and solids will be disposed of off-site at an appropriate waste facility. Washout will be undertaken at the construction compounds. • Main concrete pours will be planned weeks in advance, and refined in the days leading up to the pour. • Disposing of surplus concrete after completion of a pour will be off-site at the concrete production facility.
MM38	Fuels & Chemicals (inc. refuelling)	EIAR Chapter 2 and Chapter 9 / CEMP Section 4.1.5.3	• Fuels and chemicals will be stored within bunded areas as appropriate to guard against potential accidental spills or leakages. The bund area will have a volume of at least 110 % of the volume of such materials stored. • Any easily manoeuvrable road-going vehicles will be refuelled off-site. • For certain vehicles which are less mobile, refuelling may need to occur elsewhere on site. This will be carried out using a double skinned bunded mobile tank which can be moved around the site and bunded bowser, towed behind a jeep (or similar) and stored in the construction compound when not in use. • Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area of the site, away from surface water gullies or drains. • All on-site refuelling will be carried out by trained competent personnel. Only designated trained and competent operatives will be authorised to refuel plant on site. • No refuelling will take place within 50 m of any stream. • A spill kit will be stored with the bowser and the person operating the bowser will be trained in their use. When not in use this will be stored in the designated area of the construction compounds; • Spill kits and hydrocarbon absorbent packs will be stored in this area and operators will be fully trained in the use of this equipment. • Mobile measures such as drip trays and fuel absorbent mats kept with all plant and bowsers and will be used at all times during all refuelling • A spill kit will be stored with the bowser at all times and the person operating the bowser will be trained in their use. • In the event of an accidental fuel spill, the source of the spill will be fixed, fuel will be contained and cleaned as quickly as possible using the spill kits. • All equipment and machinery will have regular checking for leakages and quality of performance and will carry spill kits. • Any servicing of vehicles will be confined to designated and suitably protected areas such as construction compounds. • Additional drip trays and spill kits will be kept available onsite and stored in each construction compound, and at the on-site substation in case of emergency to ensure that any spills from vehicles are contained and removed off site by a licensed waste management contractor. • The incident will be reported to the site manager and ECoW, and appropriate remediation will be carried out.

MM39	Pre-emptive Site Drainage Management / Erosion & Sediment Controls	EIAR Chapter 9 / CEMP Section 4.1.5	The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities: • General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates; • MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale; • 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events; • Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and, • Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event. Works will be suspended if the following is likely to occur: • >10mm/hr (i.e., high intensity local rainfall events); • >25mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, • >half monthly average rainfall in any 7 days. Prior to works being suspended the following control measures will be completed: • Secure all open excavations; • Provide temporary or emergency drainage to prevent back-up of surface runoff; and, • Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded; and • Provide cover to material storage areas i.e., adequate tarpaulin over stockpile areas if material cannot be reinstated prior to suspension.
MM40	Watercourses	EIAR Chapter 9 / CEMP Section 4.1.5	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"*, that is, 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.
			Runoff will be maintained at Greenfield (pre-development) runoff rates. The layout of the development has been designed to collect surface water runoff from hardstanding areas within the development and discharge to associated surface water attenuation lagoons adjacent to the proposed infrastructure. It will then be managed by gravity flow at Greenfield runoff rates.

			During the ground clearance of the proposed project, the contractor will implement water control measures to limit the effect on water quality using standards measures as set out in the Forestry Felling Report – Appendix 2-5. Brash will be used along harvesting and extraction routes for soil protection. The forwarder will be loaded to the manufacturer's maximum specification and no more to avoid overloading and unnecessary soil compaction.
			Suspended solid (silt) removal features will be implemented in accordance with CIRIA C697 SuDS Manual, and CIRIA C648 *Control of water pollution from linear construction projects*.
			All temporary and permanent drainage from the site shall be designed to have as a minimum three stages of treatment, as defined in the SuDS Manual. Management of runoff will include the following: • Filtration of water through filter media (sand / stone check dam, silt fence); • Detention / settlement in settlement ponds or behind check dam in swales; and • Conveyance of shallow depths of water in vegetated swale.
MM41	Interceptor Drains	EIAR Chapter 9 / CEMP Section 4.1.5	• Interceptor drains/diversion ditches will be installed ahead of the main earthworks activities to minimise the effects of collected water on the stripped/exposed soils once earthworks commence. • This drainage will integrate into the existing forestry drainage. • These drainage ditches will be installed on the upgradient boundary of the areas affected by the access track earthworks operations and installed ahead of the main track construction operations commencing. • They will generally follow the natural flow of the ground. • The interceptor drains will intercept any storm water surface run-off and collect it to the existing low points in the ground, allowing the clean water flows to be transferred independently through the works without mixing with the construction drainage. • It will then be directed to areas where it can be redistributed over the ground by means of a level spreader.
MM42	Swales	EIAR Chapter 9 / CEMP Section 4.1.5	• Swales along access tracks are to be installed in advance of the main construction phase. • On sections of track where there is significant longitudinal gradient, regular surface water interception channels will be employed – these will typically be at 10-20m intervals to collect any surface water that is discharging as sheet flow along the track and discharge the flow into the trackside swale. Drainage details are included in the CEMP and Drawings 10798-2060 to 2065. • Given the steep longitudinal gradients on some sections of access track, regular check dams will be employed within the trackside swale on these sections to reduce the flow velocity and provide settlement opportunity. • Check dams will have a minimum 0.2m freeboard (from top of check dam) to top of swale level, to prevent overtopping of flows onto the access track. • All check dams, etc to be checked at least once weekly via a walkover survey during the full period of construction. • All excess silts to be removed and disposed of appropriately. • Where check dams have become fully blocked with silt, they will be replaced. • Swales will be re-vegetated by hydro-seeding with indigenous seed mix as soon as is practicable following excavation.
MM43	Settlement Ponds / Lagoons	EIAR Chapter 9 / CEMP Section 4.1.5	Settlement ponds will be located downstream of road swale sections and at turbine/hardstand locations. The following shall apply to construction of settlement ponds at the site: • Pond depths generally to be excavated to less than 2m; • Side slopes to be shallow, nominally at a 1 in 3 side slope (maximum); and

			• Material excavated from the settlement pond should be compacted around the edge of the pond.
			• Interceptor drains will be installed up-gradient of all proposed infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. Drainage details are included in this CEMP and Drawings 10798- 2060 to 2065.
			• Settlement lagoons will be installed concurrently with the formation of the road and will be fenced off for safety. They will be located as close to the source of sediment as possible and as far as possible from the buffer zones of existing streams. The minimum buffer zone width will be 50 m. • Settlement lagoons will be regularly cleaned/maintained to provide effective and successful operation throughout the works. Outfalls and drainage ditches will be cleaned, when required, starting up stream with the outfalls blocked temporarily prior to cleaning.
			The sediments/silt in the settlement lagoons will be cleaned regularly and removed via the contractor and deposited at suitable locations on site, away from streams. Machine access is required to excavate the accumulated sediment. Control measures include: • Regular inspection and maintenance of settlement lagoons and drains; • Settlement lagoon maintenance and/or cleaning will not take place during periods of extended heavy rain; • Settlement lagoons will be fenced off for safety; • Settlement lagoons will where practicable be constructed on even ground and not on sloping ground and discharge into vegetation areas to aid filtration and dispersion; and • The settlement lagoons will be monitored closely over the construction timeframe to ensure that they are operating effectively.
			• The surface water management system will be visually inspected on a daily basis during construction works to ensure that it is working optimally. The frequency of inspection will be increased at settlement ponds adjacent to areas where earthworks are being carried out and during excavations at T10 to T12. • Where issues arise, construction works will be stopped immediately, and the source of the issue will be investigated. • Records of all maintenance and monitoring activities associated with the surface water network will be retained by the Contractor on-site, including results of any discharge testing requirements.
			Traffic on site will be kept to a minimum. Only the proposed onsite access track will be used for project-related traffic.
MM44	Temporary Facilities	EIAR Chapter 9	Temporary on-site toilet facilities (chemical toilets) will be used. These will be sealed with no discharge to the surface water or groundwater environment adjacent to the site.
MM45	Surface Water Flow / Watercourse Crossings	EIAR Chapter 9	• Installation of clear-span design bridge or bottomless culverts will take place during dry periods to reduce the risk of sediment entering the watercourse. Smaller forestry drains and streams will be crossed using normal culverts. • A number of ephemeral drainage features (drains) are also present on site. Culverting of these will only take place during dry weather periods. • Culverts will be installed to conform, to the natural slope and alignment of the drainage line. Culverts will be buried at an appropriate depth below the channel bed and the original bed material placed at the bottom of the culvert.

MM46	Surface Water Flow / Watercourse Crossings	EIAR Chapter 9	• Embedded culverts will be buried to a depth of 0.3m or 20% of their height (whichever is greatest) below the bed. • Crossing construction will be carried out, in so far as is practical, with minimal disturbance to the drain bed and banks. If they have to be disturbed, all practicable measures including location of stockpiles away from drainage ditches will be taken to prevent soils from entering any water. • Any culverting works at drains will take place only during dry periods when the drains are dry/stagnant. Silt traps will be placed on the downgradient side of the crossing.
MM47	Surface Water Flow / Watercourse Crossings	EIAR Chapter 9	• Cement and raw concrete will not be spilled into watercourses. • No batching of wet-cement products will occur on site. • Ready-mixed supply of wet concrete products and emplacement of pre-cast elements will take place. • Pre-cast elements for bridge, culverts and concrete works will be used. • During the delivery of concrete on site, only the chute will be cleaned on-site, using the smallest volume of water practicable. • Chute cleaning will be undertaken at lined cement washout lagoons. • These lagoons will be cleaned out by a licensed waste contractor. • No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. • Weather forecasting will be used to plan dry days for pouring concrete. • The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event.
MM48	Surface Water Flow / Watercourse Crossings	EIAR Chapter 9	• A setback distance of 10m to 20m from any stream will be kept clear of brash as far as practicable, to avoid felling of trees into streams and removal of them or any other accidental blockages that may occur. • Where practicable, crossings should be adequately elevated with low approaches such that water drains away from the crossing point. • Earth embankments constructed for bridge approaches will be protected against erosion e.g., by re-vegetation or rock surfacing etc.
MM49	Substation	EIAR Chapter 9	• The mitigation strategies for the substation foundations follow similar procedures to the excavations for turbine and hardstanding foundations. All works will be monitored by a suitably qualified and experienced engineer. • Where existing drainage ditches need to be realigned (e.g., around substation), the new swale will match the profile of the existing ditch in relation to side-slope profile and the material at the base of the channel.

MM50	Turbine Delivery Route (TDR) & Grid Connection Route	EIAR Chapter 9	• Silt fencing will be erected at the location of stream crossings along the grid connection route. Silt curtains and floating booms will also be used where deemed to be appropriate and this will be assessed separately at each individual location. • No refuelling of machinery will take place within 50m of a stream. Excavated material will not be stockpiled or side-cast within 50m of a stream. • Appropriate steps will be taken to prevent soil/dirt generated during the temporary upgrade works to the TDR from being transported on the public road. • Silt fences will be located at the toe of the slope to reduce sediment transport. • Road sweeping vehicles will be used to ensure that the public road network remains free of soil/dirt from the location of the TDR works and grid connection when required. • Where existing drainage ditches need to be realigned, new drainage ditches will match the profile of existing drains in relation to width, with shallower side slope profile and material at base of channel will reused. Within the site development area, culverts will be assessed to ensure no barriers to fish migration occur. Where barriers occur, such culverts will be improved to increase fisheries potential under advise from the ECoW.

MM51	Horizontal Directional Drilling (HDD)	EIAR Chapter 9 / CEMP Section 4.1.5.6	• There will be no storage of material/equipment or overnight parking of machinery inside the 50m buffer zone. • Before any ground works are undertaken, double silt fencing will be placed upslope of the stream channel along the 50m buffer zone boundary. • Additional silt fencing or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards the stream. • Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered. • The area around the bentonite (clay) batching, pumping and recycling plant will be bunded using terram and sandbags in order to contain any spillages. • Drilling fluid returns will be contained within a sealed tank/sump to prevent migration from the works area. • Spills of drilling fluid will be cleaned up immediately and stored in an adequately sized skip before being taken off-site to an appropriate licenced facility. • If rainfall events occur during the works, there will be a requirement to collect and treat small volumes of surface water from areas of disturbed ground (i.e., soil and subsoil exposures created during site preparation works). This will be completed using a shallow swale and sump down slope of the disturbed ground. Water will be pumped to a proposed distribution area at least 50m from the stream. • The discharge of water onto vegetated ground at the percolation area will be via a silt bag which will filter any remaining sediment from the pumped water. • Any sediment laden water from the works area will not be discharged directly to a stream or drain. • Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. All necessary preventative measures will be implemented to ensure no entrained sediment, or deleterious matter is discharged to the watercourse. • If high levels of silt or other contamination is noted in the pumped water or the treatment systems, all construction works will be stopped. No works will recommence until the issue is resolved and the cause of the elevated source is remedied. • On completion of the works, the ground surface disturbed during the site preparation works and at the entry and exit pits will be carefully reinstated and re-seeded at the earliest opportunity to prevent soil erosion. • The silt fencing upslope of the river will be left in place and maintained until the disturbed ground has re-vegetated. • There will be no refuelling allowed within 50m of the stream crossing. • All plant will be checked for purpose of use prior to mobilisation at the watercourse crossing. • The drilling fluid/bentonite will be non-toxic and naturally biodegradable (i.e., Clear Bore Drilling Fluid or similar will be used). • The area around the drilling fluid batching, pumping and recycling plants will be bunded using terram and/or sandbags to contain any potential spillage. • Adequately sized skips will be used where temporary storage of arisings are required. • The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourses. This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur, then drilling will be immediately stopped. • Any frac-out material will be contained and removed off-site. • The drilling location will be reviewed, before re-commencing with a higher viscosity drilling fluid mix.

Noise & Vibration			
MM52	Noise	EIAR Chapter 12 / CEMP Section 4.1.3	The contract documents shall specify that the Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures when deemed necessary to comply with the recommendations of BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise*. The following list of measures will be considered, where necessary, to ensure compliance with the relevant construction noise criteria: • No plant used on site will be permitted to cause an on-going public nuisance due to noise. • The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. • All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. • Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. • Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. • Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen. • During the construction programme, supervision of the works will include ensuring compliance with the limits detailed in Table 13. 13 using methods outlined in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise. • 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 18:00hrs Mondays to Saturdays. However, to ensure that optimal use is made of good weather period or at critical periods within the programme (i.e., concrete pours) or to accommodate delivery of large turbine component along public routes it could be necessary on occasion to work outside of these hours. Where rock breaking is employed, the following are examples of measures that will be considered, 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. • Erect acoustic screen between compressor or generator and noise sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured. • Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation. Further guidance will be obtained from the recommendations contained within BS 5228: Part 1 and the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1988 in relation to blasting operations. The methods used to minimise effects may consist of some or all the following: • Restriction of hours within which blasting can be conducted (e.g., 09:00 – 18:00hrs). • A publicity campaign undertaken before any work and blasting starts (e.g., 24 hours written notification). • 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 by external bodies for verification of results. • Trial blasts in less sensitive areas to assist in blast designs and identify potential zones of influence.
MM53	Vibration	EIAR Chapter 12 / CEMP Section 4.1.3	As blasting is required, the following mitigation measures will be employed to control the impact during blasts: • Trial blasts will be undertaken to obtain scaled distance analysis. • Ensuring appropriate burden to avoid over or under confinement of the charge. • Accurate setting out and drilling. • Appropriate charging. • Appropriate stemming with appropriate material such as sized gravel or stone chipping. • Delay detonation to ensure small maximum instantaneous charges. • Decked charges and in-hole delays. • Blast monitoring to enable adjustment of subsequent charges. • Good blast design to maximise efficiency and reduce vibration. • Avoid using exposed detonating cord on the surface.
Air Quality / Dust			
MM54	Dust Suppression and Exhaust Emissions Management	EIAR Chapter 2 and Chapter 14 / CEMP Section 4.1.4	• Provision of dust suppression measures (e.g. sweeps/covers/water bowsers) will be used on stockpiles and the road surface during periods of extended dry weather. • Silty or oily water will not be used for dust suppression. Water for dust suppression will be taken from settling ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and site compounds. • Water bowser movements will be carefully monitored, to avoid increased runoff. • The extent of work areas will be minimised. • Stockpiling of excavated materials will be limited to the volumes required to practically meet the construction schedule. • Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level. • Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found. • Traffic coming to site will only use the specified haul routes. A wheel wash will be provided near the main site entrance and used to (will prevent the transfer of dust from vehicles used during the construction works on to public roads. • A road sweeper will be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed project. • Onsite borrow pits will be used to minimise quantities of stone material being brought to site. • Best practice (including industry recognised dust suppression techniques/equipment) will be used to minimise the potential for dust production during the extraction of rock from the borrow pits and excavations elsewhere. • Vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction. Vehicles will not be left running unnecessarily and low emission fuels will be used where possible.

			• During the construction phase of the proposed project, all contractors will ensure that machinery used on site is properly maintained and is switched off when not in use to avoid unnecessary exhaust emissions from construction traffic.
MM55	Wheel Washing / Road Sweeper	EIAR Chapter 2 / CEMP Section 4.1.9	To avoid the potential for the transfer of alien invasive plant species into the site, a self-contained wheel-wash system will be installed near the project site entrance (access points one and two). A road sweeper will be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed project.
Traffic Management			
MM56	Haul Routes	EIAR Chapter 16	Mitigation measures on the haul roads and cable route includes: • Selection of a viable route with the lowest impact on the road network. • Avoidance where possible of sensitive receptors and urban settings o The site access route encourages the use of the strategic infrastructure in the area while avoiding the local road and potential sensitive receptors. o Turbine delivery route along national and regional roads with largest capacity to accommodate the vehicles. o The typical construction traffic haul roads are principally along the national and regional road network, avoiding the local primary and secondary roads. o Restricting HGV movements during peak sensitive times on the road networks (i.e. at school times) o The grid connection route will be laid primarily in forestry and peatlands, avoiding works within the public road with the exception of a single local road crossing. • To mitigate traffic on the national road network, a number of possible routes have been investigated as possible sources of material for delivery. • To mitigate the impact of the AIL delivery on the road network, the advanced works are to be undertaken (i.e. hardstanding, making signs demountable, utility diversions etc). The hardstanding works areas will be temporary in nature and removed once the final turbine is delivered to site.
MM57	Traffic Impact	EIAR Chapter 16	To mitigate traffic impact, liaison with local authorities and the community in advance of foundation pours, as well as minimising other works/deliveries, will be undertaken.
MM58	Abnormal Loads (AIL)	EIAR Chapter 16	• To mitigate the impact of the AIL deliveries these deliveries will be undertaken under garda and traffic management escort during off-peak (i.e. night-time) hours. • The arrangement of the appropriate abnormal load licenses will be obtained by the appointed contractor in a timely fashion on procurement of the AIL. • The appointed contractor will liaise with the relevant road's authorities and an Garda Síochána on the delivery schedule for the AILs.
MM59	Trench Reinstatement	EIAR Chapter 16	• To mitigate the impact of the cable laid within the public road (at the single local road crossing) the reinstatement works will be backfilled and reinstated as soon as practicable. • The reinstatement works will be undertaken in accordance with the "Purple Book" best guidance and practices.

			• The proposed reinstatement and construction details and phasing will be agreed with associated Local Authorities Municipal District Office in advance of the works. • The Contractor will be responsible for arranging for the required road opening licenses.
MM60	Post-Construction Pavement Surveys	EIAR Chapter 16	The client will undertake post-construction visual pavement surveys on the Haul Roads. Where the surveys conclude that damage on the roadway is attributable to the Construction Phase of the proposed project, the applicant will fund the appropriate reinstatement works to bring the road back to pre-construction condition as a minimum, details for which will be agreed with the Roads Authorities.
MM61	Traffic Management Plan (TMP)	EIAR Chapter 16 / CEMP Section 4.1.2	The successful completion of this project will require significant co-ordination and planning and a comprehensive set of mitigation measures will be put in place before and during the construction stage of the project in order to minimise the effects of the additional traffic generated by the proposed project. The Traffic Management Plan (TMP) proposed for the Cloghercor Wind Farm is included in Appendix 2-7. Note, the TMP has been included as a separate document. Any changes which may arise from the planning process and in the detailed construction programme can be incorporated. The following mitigation has been incorporated into the TMP: • Haul route selection to avoid sensitive receptors. • Widened approaches to the site accesses within the development to facilitate queuing of construction vehicles off the public road. • Traffic Management Operatives (TMOs) will be provided by the principle contractor in accordance with their Traffic Management Plan at the site accesses during peak construction traffic activities, refer to the TMP. • A wheel wash will be provided within the site. • A one way system in and out of the site will be in place for materials deliveries to avoid conflict between delivery vehicles and ensure the efficient flow of materials and vehicles. • Passing bays on the internal access track to facilitate safe passing of vehicles within the site, vehicles travelling in a forward direction (reducing higher risk reversing manoeuvres).
MM62	Project Delays	EIAR Chapter 16	To avoid delays to the project programme all required road opening licenses, agreements with the Local Authorities and an Garda Síochána to facilitate movement of abnormal loads shall be sought by the appointed Contractor in a timely manner.
Waste Management			
MM63	Waste Management	EIAR Chapter 11 / CEMP Section 4.1.8	• Segregation of waste will be carried out on site to maximise the potential for waste recycling and minimise any potential for impacts on waste services. • A licensed commercial waste collector will be used to remove any waste that does occur on site to one of the local waste processing facilities within Donegal.
MM64	Wastewater Management	EIAR Chapter 11	• Wastewater from the staff welfare facilities will be managed by means of a sealed storage tank, with all wastewater being tankered off-site as required by a permitted waste collector to a wastewater treatment plant. It is proposed to use low volume flush toilets (such as those in commonly used port-a loos) and low volume sink faucets to significantly reduce the volume of waste water produced. • The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying.

			• A confirmatory survey of all existing services will be carried out prior to construction to verify and identify the precise locations of any services. • The applicant will liaise with the service provider where such services are identified. • Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage. • Segregation of waste will be carried out on site to maximise the potential for waste recycling and minimise any potential for impacts on waste services. • A licensed commercial waste collector will be used to remove any waste that does occur on site to a local waste processing facilities within Donegal.

7.0 MONITORING PROPOSALS

All monitoring proposals relating to the pre-construction and construction phases of the proposed project were set out in various sections of the EIAR, and NIS prepared as part of the planning application.

This section of the CEMP groups together all of the monitoring proposals presented in the EIAR and NIS. The monitoring proposals are presented in tabular format on the following pages. By presenting the monitoring proposals in this format, it is intended to provide an easy to audit list that can be checked and reported on during the course of the proposed project. This table can be further developed upon and used as a reporting template for site compliance audits across project phases.

Table 7.1: Table of Monitoring Proposals

Ref No.	Related to	Location	Monitoring Measure
Pre-construction Phase			
	Water Quality	EIAR Chapter 9	It is recommended that local surface water features in the immediate vicinity of the site boundary are monitored pre-construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed project.
	Bats	EIAR Chapter 6	If more than three years pass between the pre-construction surveys and the construction of the wind turbines, it may be necessary to repeat the pre-construction surveys (EUROBATS, 2014). Full details of the Bat Monitoring Programme are included in Appendix 6-4 of the EIAR.
	Other Fauna	EIAR Chapter 6	A pre-construction protected species survey of the infrastructure buffer will be carried out.
Construction Phase			
	Floating New Road	EIAR Chapter 2	Monitoring posts will be installed prior to construction to monitor movement of soils in the area around the construction.
	Dust	EIAR Chapter 2	Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.
	Water Quality	EIAR Chapter 9	It is recommended that local surface water features in the immediate vicinity of the site boundary are monitored pre-construction and during construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed project. Inspections of silt control measures are critical after prolonged or intense rainfall while maintenance will ensure maximum effectiveness of the proposed measures. A programme of inspection and maintenance will be designed, and dedicated construction personnel assigned to manage this programme. A checklist of the inspection and maintenance control measures will be developed, and records kept. During the construction phase, field testing and laboratory analysis of a range of parameters will be undertaken at adjacent watercourses, specifically following heavy rainfall events (i.e., weekly, monthly and event based as appropriate). Regular visual inspections of all watercourses (flow conditions, discolouration, collection of debris, fish in distress or floating), presented in a monthly report on water quality, is advised by an independent, suitably qualified Ecological Clerk of Works (ECoW) with particular emphasis placed on: • Watercourses downstream of site activities; • At times when heavy traffic is frequenting the site; • During and after periods of heavy or prolonged rainfall and during winter months; • During fish migration and spawning periods; and • Watercourse crossings to ensure that the existing mitigation measures are effective in preventing any sediment reaching streams.

	Archaeological Monitoring	EIAR Chapter 15	Excavations associated with construction works, namely topsoil stripping, will be monitored by a suitably qualified archaeologist. In the event that archaeological deposits are discovered, work in the area will cease immediately and the archaeologist will liaise with the National Monuments Service of the DHLGH and the National Museum of Ireland. A suitably qualified cultural heritage consultancy/consultant will be appointed to oversee the effective implementation of the archaeological mitigation measures prescribed in this chapter (Chapter 15 (Archaeology & Cultural Heritage) of the EIAR) for the construction phase of the proposed project. The National Monuments Act, as amended requires that, in the event of the discovery of archaeological finds or remains that the relevant authorities, the National Monuments Service of the DHLGH and the National Museum of Ireland, should be notified immediately. Allowance will be made for full archaeological excavation, in consultation with the National Monuments Service of the DHLGHG, in the event that archaeological remains are found during the construction phase.
	Excavation Works	EIAR Chapter 8	Excavation works will be monitored by a suitably qualified and experienced geotechnical engineer or engineering geologist. The earthworks will not be scheduled to be carried out during severe weather conditions.
	Private Water Supply Wells	EIAR Chapter 8	Selected private water supply wells at representative locations closest to turbine and borrow pit locations around the site will be monitored for water level and quality pre-construction and during the construction phase
	Settlement Lagoons	EIAR Chapter 9	The settlement lagoons will be monitored closely over the construction timeframe to ensure that they are operating effectively.
	Surface Water Management System	EIAR Chapter 9	The surface water management system will be visually inspected on a daily basis during construction works to ensure that it is working optimally. The frequency of inspection will be increased at settlement ponds adjacent to areas where earthworks are being carried out and during excavations at T10 to T12. Where issues arise, construction works will be stopped immediately, and the source of the issue will be investigated. Records of all maintenance and monitoring activities associated with the surface water network will be retained by the Contractor on-site, including results of any discharge testing requirements.
	Substation Foundations	EIAR Chapter 9	All works will be monitored by a suitably qualified and experienced engineer.
	Directional Drilling	EIAR Chapter 9	Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase. The drilling process / pressure will be constantly monitored to detect any possible leaks or breakouts into the surrounding geology or local watercourse. This will be gauged by observation and by monitoring the pumping rates and pressures. If any signs of breakout occur, then drilling will be immediately stopped.
	Noise	EIAR Chapter 12	Monitoring activity in relation to noise and vibration will include: • Monitoring typical levels of noise and vibration during critical periods and at sensitive properties; • The use of independent monitoring by external bodies for verification of results; • Blast monitoring to enable adjustment of subsequent charges.

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