

Environmental Impact Assessment Report

Cummeennabuddoge Wind Farm

Technical Appendix 4-1: Construction Environmental Management Plan

Cummeennabuddoge Wind (DAC)

September 2024



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1 Introduction

Gavin and Doherty Geosolutions Ltd. (GDG) was requested by Atmos Consulting to prepare a working Construction Environmental Management Plan (CEMP) pertaining to the proposed Cummeennabuddoge Wind Farm site, hereafter referred to as the 'Proposed Development'. This document sets out in outline (planning stage) the scope of construction works, construction methodologies and environmental management measures which are to be implemented and followed for the Proposed Development in order to ensure that the project is constructed in accordance with best practice and with the minimum impact on the surrounding environment. The detailed scope of construction will be developed in the immediate pre-construction stage. For the purposes of the CEMP, the Proposed Development includes the wind farm, turbine delivery route works areas and the grid connection.

Supporting documents held within this CEMP are referenced as Annex A to C.

Other relevant documents within the Appendices to the Environmental Impact Assessment Report EIAR are referenced but not reproduced herein.

1.1 CEMP Purpose and Objectives:

This document sets out the construction works and environmental management measures, which will be implemented during the construction phase of the Cummeennabuddoge Farm project.

The primary objective of this CEMP is to provide a framework for actions, responsibilities and protocols associated with environmental management with which the Appointed Contractor(s) are required to develop into a detailed CEMP to be adhered to in order to construct the project in accordance with regulatory requirements and to reduce and/or avoid any adverse environmental impacts.

The CEMP is a key construction contract document, which will ensure that all mitigation measures, which are considered necessary to protect the environment are implemented. The commitments in the EIAR will be fully complied with by the contractor. In the event that planning permission/approval is granted any condition(s) relating to a CEMP which may be attached by the Board to such a permission/approval, will be implemented in accordance with the requirements of the condition.

The CEMP will be subject to ongoing review (throughout detailed design and procurement, and the construction phase of the Proposed 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.

Accordingly, the CEMP will be a "live" document that will be continuously improved and updated throughout the construction

The version presented here sets out the fundamental work practices, construction management procedures, management responsibilities, mitigation measures and monitoring proposals that are required to be adhered to. All site personnel will be required to be familiar with the plan's requirements as related to their role on site. There will be a requirement on the Appointed Contractor(s) that details are updated with

progress, including the roles and responsibilities of those appointed on the site for the construction of the project.

The Contractor must use this document to show how best environmental management practice is proposed to be applied and will show how they are going to minimise adverse impacts to the surrounding environment and local community, as well as enhancing beneficial impacts.

2 Project Overview

2.1 Proposed Development Site

The Proposed Development is centred on Grid Reference W 19846 83148 and occupies an area of approximately 709 ha, (shown bounded by the red line on Figure 1-1a). The site lies within existing commercial forestry, located on land at Clydaghroe and Cummeenabuddoge, Clonkeen, almost entirely within County Kerry, although a proportion of the grid connection cabling and works along the turbine delivery route is proposed within County Cork.

2.2 Project Scope

The Proposed Development consists of 17 wind turbines with a maximum tip height of 200 metres (m) and an installed capacity of between 102MW and 122.4MW. The development comprises associated infrastructure including hardstandings, cabling and access roads.

The Proposed Development also consists of a 110kv grid connection to Ballyvouskill and associated works along a turbine delivery route within County Cork.

A schedule of the proposed wind turbines and their corresponding grid co-ordinates (ITM) is set out in Table 1-1 below.

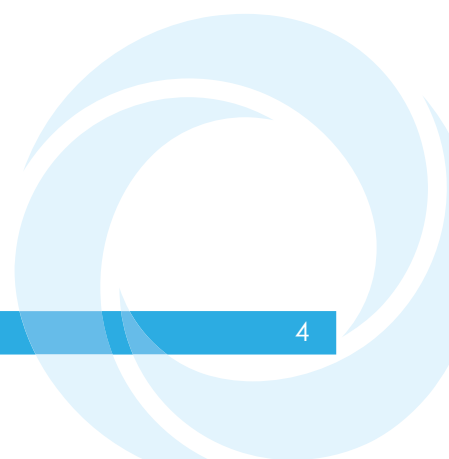
Table 1: Turbine Locations

Turbine number	ITM X	ITM Y	Grid Ref
1	521909	583645	OV2190983645
2	521820	584122	OV2182084122
3	521304	583200	OV2130483200
4	521164	583642	OV2116483642
5	521201	584214	OV2120184214
6	520493	583186	OV2049383186
7	520532	583692	OV2053283692
8	520312	584085	OV2031284085
9	519746	582997	OV1974682997
10	519828	583554	OV1982883554
11	519030	582721	OV1903082721
12	519079	583259	OV1907983259
13	518641	583554	OV1864183554
14	518274	582399	OV1827482399
15	518326	582965	OV1832682965
16	517622	581933	OV1762281933

Turbine number	ITM X	ITM Y	Grid Ref
17	517644	582502	OV1764482502

The proposed site access route starts at an existing forest entrance located off the N22 and passes through the townlands of Cummeenavrick and Glashacormick, Co. Kerry, and partially travels along existing forestry tracks. The tracks within 1.5km of the N22 are steep, climbing from an elevation of 250m OD to approximately 380m OD.

Export of electricity from the Proposed Development to the national electricity grid will be via a 110kV underground cable from the onsite substation to the existing Ballyvouskill 220/110kV substation, a distance of approximately 3.6km east of the Proposed Development.



3 Construction Works

3.1 Overview of Works

The Proposed Development comprises the following:

- 17 wind turbines and associated hardstand areas;
- The turbine dimensions are as follows:
 - a total tip height in the range of 199.5m minimum to 200m maximum inclusive;
 - hub height in the range of 118m minimum to 125.5m maximum inclusive; and
 - rotor diameter in the range of 149m minimum to 163m maximum inclusive.
- One 110kV permanent electrical substation including a control building with welfare facilities, electrical plant and equipment, security fencing, underground cabling, wastewater holding tank and ancillary structures and associated works;
- Underground electrical and communication cabling connecting the wind turbines to the proposed on site substation and associated ancillary works.
- 110kV Underground cabling between the new permanent substation and the existing 220/110kV Ballyvouskill Substation to facilitate export of electricity to the National Electricity Grid;
- One Meteorological Mast of 110m in height and associated hardstand area to be removed at the end of the operational period;
- New permanent access tracks and permanent upgrades to existing tracks, roads and site access;
- Four borrow pits;
- Six permanent peat repository areas;
- Permanent placement of peat and spoil along sections of site access roads where appropriate as part of the peat management plan for the site;
- Three temporary construction compounds;
- Site drainage;
- Keyhole forestry felling to accommodate the construction and operation of the proposed development;
- Localised temporary works along the turbine delivery route in County Cork to facilitate the delivery of turbine components (namely temporary street furniture removal and vegetation clearance). These works associated with the turbine delivery route are not being assessed as part of this EIA report,
- Upgrading of existing site entrance at the local access road adjacent to the N22, Healthy and safety signage, information signage, and direction signage; and
- All other associated site development works including necessary earthworks to facilitate the construction and operation of the Proposed Development over an operational lifespan of 35 years.

3.2 Construction Schedule

Subject to receipt of planning permission/consent and sign off of pre-commencement conditions, construction works are anticipated to commence in 2028 with a total duration estimated at approximately months. The work will proceed in four phases as

summarised in Table 3.1.

Table 2: Wind Farm Construction Schedule

Phase	Summary of Works
Phase 1 (month 1 to 3) Felling	Keyhole felling
Phase 2 (month 4 to 7) Enabling/Access Works	Construction of new access routes from existing access tracks to the turbine locations .
Phase 3 (month 8 to 17) Development (Main Site)	Establishment of site facilities, turbine foundation and turbine cabling. Delivery of turbine components & installation with cranes.
Phase 4 (month 18 to 21) Testing and Commissioning	Testing and commissioning equipment and turbines.
Phase 5 (month 22 to 24) Reinstatement and Restoration	Removal of temporary facilities and re-instatement of temporary working areas. Restoration of working areas as set out in the Schedule of Mitigation and CEMP.

3.3 Working Hours

The proposed normal hours of operations for construction activity are between 07:00 - 19:00 Monday to Saturday, with deliveries on a Saturday and during public holidays restricted to the hours of 07:00 to 14:00. During the installation phase, there may be a requirement for extended working hours as some critical elements of installation cannot be stopped once started such as concrete pouring, this will be agreed in advance with the Planning Authority.

3.4 Construction methodologies

An overview of the construction methodologies in the proposed development is outlined in the CEMP. The Construction stage contractor will comply with outline the proposed methods of construction in a detailed construction stage method statement, with reference to the methodologies outlined in this report.

The methodologies outlined here are consider following the felling phase of construction. Felling methodologies are outlined in Technical Appendix 4-2 Forestry Management Report.

3.4.1 Access track

Two types of access tracks are proposed as part of the development:

- New founded access tracks;
- Upgrade of existing access tracks.

Access track construction details are shown in Figure 4-4 of the Project Description Chapter of this EIAR.

New access track

The access tracks will be constructed using 'cut track' design, with excavation of the peat materials and founding the road on a suitable bearing strata, glacial till, weathered rock or bedrock.

New access roads will be constructed by the following methodology:

- The extent of the access road alignment and earthworks will be marked out by GPS and the extents demarked with timber stakes and flagging. The access road location and level shall be to the design outlined for the Proposed Development,
- Prior to excavation commencing monitoring posts will be placed within areas of deep peat upslope and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation,
- Peat and soft overburden materials will be excavated to a depth where a strata of a suitable strength is exposed. The excavated materials will be directly loaded onto dumpers and transported to elsewhere in the development for landscaping and reinstatement works, or brought to a peat repository area for safe storage,
- Side slopes will be excavated at slopes between 1 (V) :2(H) and 1:3(H). The stability slope will be reviewed during construction and altered accordingly should local conditions require shallower slopes,
- A suitable geotextile will be placed on the exposed bearing strata,
- A suitable graded stone material will be placed and compacted in layers not exceeding 150mm to meet the required platform thickness and elevations as outlined in the design. The stone grading and compaction specification is subject to construction design stage assessment,
- Intermediate geotextile layers will be introduced based on the construction stage Contractors specification and detail design,
- A final 5m wide capping will be carried out on completion of the civil works, to avoid any unnecessary wear of the surface and provide an even running surface,
- Drainage from the access road will be achieved by introducing a surface cross fall to allow the roadside drainage collection system to pick up the run-off,
- This collected run-off material will be collected in settlement ponds and catchment basin for suitable treatment.

Upgrade of existing access track

The use of some sections of the existing access track infrastructure is outlined as part of the Proposed Development. This track will need to be upgraded to meet the requirements of the proposed traffic volumes of the Proposed Development.

The existing track upgrades will involve the following:

- Spreading a well graded specified material over the top of the existing trackway to a width of at least 5m,
- An intermediate geogrid or geotextile layer may be added at this interface if required,

- A final 5m wide capping will be carried out on completion of the civil works, to avoid any unnecessary wear of the surface and provide an even running surface.

3.4.2 Contractor compounds

Three temporary site construction compounds will be set up upon commencement of the construction phase. The contractor compounds will consist of temporary welfare and storage facilities complete with offices, car parking and toilet facilities. The compounds will be used storage of construction materials and plant including HGVs.

The compounds will be constructed by the following methodology:

- The extent of the compound including four corners and earthworks will be marked out by GPS and the extents demarked with timber stakes and flagging. The compound location and level shall be to the design outlined for the Proposed Development,
- Prior to excavation commencing monitoring posts will be placed within areas of deep peat up and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation,
- Peat and soft overburden materials will be excavated to a depth where a strata of a suitable strength is exposed. The excavated materials will be directly loaded onto dumpers and transported to elsewhere in the development for landscaping and reinstatement works, or brought to a peat repository area for safe storage,
- Side slopes will be excavated at slopes between 1 (V) :2(H) and 1:3(H).The stability slope will be reviewed during construction and altered accordingly should local condition require shallower slopes,
- A suitable geotextile will be placed on the exposed sub-stata,
- A suitable graded stone material will be placed and compacted in layers not exceeding 150mm to meet the required platform thickness and elevations as outlined in the design. The stone grading and compaction specification is subject to construction design stage assessment,
- Drainage from the compound platforms will be achieved by introducing a surface cross fall to allow the existing roadside system to pick up the run-off,
- This collected run-off material will be collected in settlement ponds and catchment basin for suitable treatment,
- Upon completion of the construction phase the compounds will be left to revegetate naturally.

3.4.3 Turbines

17nr. gravity base-type wind turbine foundations are proposed for the Proposed Development.

Standard turbine foundation construction details are shown in Figure 4-2 of the Project Description Chapter of this EIAR.

Assessment of the ground conditions encountered in the ground investigations would suggest that much of the site is covered by a layer of peat with an average peat depth of 1.3m, with peat up to 3.5m deep within the footprint of the Proposed Development.

The material encountered beneath this peat is generally stiff or dense cohesive and granular till or weathered bedrock material. Generally, for the construction of any structure or platform foundation, such as turbine base, hardstand or substation, the removal of all soft material is required to a depth where a suitable bearing material is encountered.

During turbine construction, peat will be permanently excavated to the substrate to make room for the concrete turbine foundation, and for a working area surrounding the foundation footprint. Turbine gravity base foundations 22m in diameter are proposed with detailed foundation design being dictated by the local ground conditions, findings of the confirmatory ground investigations and the requirements of the turbine supplier. The plan area of the material to be removed will be dictated by the enabling temporary works design, allowable the excavation angle and the mean peat depths across each turbine location.

The design of the turbine base foundations is subject to further ground investigation and the detail designer's assessment.

The turbine foundation will be constructed by the following methodology:

- The extent of the turbine foundation including temporary works and ducting will be marked out by GPS and the extents demarked with timber stakes and flagging. The turbine location and level shall be to the design outlined for the Proposed Development,
- Prior to excavation commencing monitoring posts will be placed within areas of deep peat up and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation,
- Peat and soft overburden materials will be excavated to a depth where a strata of a suitable strength is exposed. The excavated materials will be directly loaded onto dumpers and transported to elsewhere in the development for landscaping and reinstatement works, or brought to a peat repository area for safe storage,
- Side slopes will be excavated at slopes between 1 (V) :2(H) and 1:3(H). The stability slope will be reviewed during construction and altered accordingly should local condition require shallower slopes,
- Pumping of ground water may be required for excavation of the turbine foundations. Pumped groundwater will to settlement features. Settlement features will be of a suitable size to treat runoff to an acceptable standard before discharging overland or discharging into proposed trackside drainage. Settlement ponds and catchment basin sizing analysis has been outlined in Technical Appendix 11-4 Surface Water Management Plan,
- A suitable geotextile or granular stone fill will be placed on the exposed sub-stata to a level and thickness satisfactory to the Construction Contractor design,
- The ground at each wind turbine location will be excavated to the underside of the base and capped off with a thin layer of concrete (75mm blinding) (subject to detail design).
- Reinforcement will be fixed, as well as any ducts and equipment by the Wind turbine Supplier. The formwork for the edges of the base will then be fixed and secured in position.

- Concrete will be poured into the formwork as per with the manufacturer's specifications.
- On stripping and removal of all formwork from the base the concrete will be inspected. Backfilling of the foundation with previously excavated material and finishing with topsoil will then be completed

3.4.4 Turbine and crane hardstands

Similar to the construction compound and access roads construction methodology all turbine crane hardstands will be required to be founded on a suitable bearing material requiring the excavation of all peat and other soft ground materials, where present. The platform will be constructed in the excavated area using a suitable specified engineered stone fill. The selected locations have been identified as they have lower depths of peat materials, among other constraints.

Crane hardstand details are shown in Figure 4-3 of the Project Description Chapter of this EIA.

The crane hardstands will be constructed by the following methodology:

- The extent of the crane hardstand including hardstand verge and earthworks will be marked out by GPS and the extents demarked with timber stakes and flagging. The hardstand location and level shall be to the design outlined for the Proposed Development,
- Prior to excavation commencing monitoring posts will be placed within areas of deep peat upslope and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation,
- Peat and soft overburden materials will be excavated to a depth where a strata of a suitable strength is exposed. The excavated materials will be directly loaded onto dumpers and transported to elsewhere in the development in landscaping reinstatement works or brought to a peat repository area for storage,
- Side slopes will be excavated at slopes between 1 (V) :2(H) and 1:3(H). The stability slope will be reviewed during construction and altered accordingly should local condition require shallower slopes,
- A suitable geotextile will be placed on the exposed sub-strata,
- A suitable graded stone material will be placed and compacted in layers not exceeding 150mm to meet the required platform thickness and elevations as outlined in the design. The stone grading and compaction specification is subject to construction design stage assessment,
- Drainage from the compound platforms will be achieved by introducing a surface cross fall to allow the existing roadside system to pick up the run-off,
- This collected run-off material will be collected in settlement ponds and catchment basin for suitable treatment,
- Crane hardstands will be used throughout the commissioning phase for turbine assembly, during maintenance and operation and decommissioning. Upon completion of the decommissioning phase the compounds will be left to revegetate naturally.

3.4.5 Borrow pits

Four on-site borrow pits are included in the Proposed Development.

Details of the borrow pits are shown in Figures 4-8a to 4-8d.

The borrow pits will be constructed by the following methodology:

- The extent of the borrow pits will be marked out by GPS and the extents demarked with timber stakes and flagging. The hardstand location and levels shall be to the design outlined for the Proposed Development,
- Prior to excavation commencing monitoring posts will be placed within areas of deep peat up and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation. The borrow pit drainage requirements are outlined in Technical Appendix 11-4 Surface Water Management Plan,
- Peat, and unusable overburden materials will be excavated to a depth where a strata of a suitable strength is exposed. The excavated materials will be directly loaded onto dumpers and transported to elsewhere in the development for landscaping and reinstatement works, or brought to a peat repository area or existing project borrow pit for safe storage,
- Side slopes in overburden materials will be excavated at slopes between 1 (V) :2(H) and 1:3(H).The stability slope will be reviewed during construction and altered accordingly should local condition require shallower slopes,
- Suitable granular overburden soil and bedrock materials will be extracted for use throughout the Proposed Development,
- Pumping of ground water may be required for excavation of the borrow pit. Pumped groundwater will to settlement features. Settlement features will be of a suitable size to treat runoff to an acceptable standard before discharging overland or discharging into proposed trackside drainage. Settlement ponds and catchment basin sizing analysis has been outlined in Technical Appendix 11-4 Surface Water Management Plan,
- When borrow pit excavation is completed, deposits of soil excavated elsewhere in the site will be placed within the excavation to aid in the revegetation and reinstatement borrow pit,
- Once works are completed at the borrow pit a perimeter fence will be installed to prevent access.

3.4.6 Peat repository areas

Six peat repositories are included within the Proposed Development. These are presented in Figure 1-2c and Figure 1-2d, and further detail shown in Figures 4-9a to 4-9f.

Six peat repository areas are identified for use in the Proposed Development All six of the proposed peat repository areas may not be required for the construction of the proposed development. However in the consideration of a conservative infrastructure design the six repository areas have been developed to enable safe construction sequencing and to avoid extended transportation of generated peat and spoil

materials. These areas can be felled and constructed as required and can be limited if not required.

Placed peat thickness shall not exceed 1m. A stone berm of 1.25m height will be placed around the downhill portion of the repositories to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the stored peat material and prevent any occurrence of instabilities within the storage area.

The surface of the placed peat shall be shaped to allow efficient run-off of surface water from the peat storage areas.

The upper acrotelm layers shall be placed on the surface right way up to promote vegetation growth. This growth will aid in stabilising the stored peat material and help in preventing it from becoming saturated following heavy period of rain.

New access roads will be constructed by the following methodology:

- The extent of the peat repository area and earthworks will be marked out by GPS and the extents demarked with timber stakes and flagging. The repository location and level shall be to the design outlined for the Proposed Development,
- Confirmatory ground investigations will be carried out across the footprint of the peat repository area with further reporting and detailed assessment of the local stability conditions of the peat repository area. The details of these assessments are outlined in Appendix 10-2 Peat stability risk assessment report and Technical Appendix 10-3 Peat Management Plan.
- Prior to commencing placement of the berm and peat materials monitoring posts will be placed within areas of deep peat up and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation,
- A suitable specifies geotextile/ combi-grid layer will be placed on the insitu ground surface,
- A specified graded granular fill material will be placed on the geotextile. This will be lightly compacted and built up to a stone berm maximum height of 1.25m. The berm will remain permeable to promote drainage of any placed peat material. Perforated PVC drainage pipe work wrapped in a geotextile separator to remove fines can be added within the berm as required to enable material drainage,
- Berm slopes will be places at slopes between 1(V) :1.5(H) and 1:3(H). The stability of this berm will be reviewed during construction and altered accordingly should local conditions require shallower slopes. The geometry of the berm may be alter to suit local conditions to form stronger traps for material storage however the berm slope will not exceed 1(V):1.5(H),
- Silting ponds will be placed as required at the lower side/outfall location of the storage areas,
- Generated peat material will be placed within the peat repository areas as required. No spoil material will be placed within these areas, Material will not be placed as at height of greater than 1m,

- Upon completion of the construction phase of the project or reaching the full volume of the peat repository area further placement of peat material within the repository area will be ceased,
- If available seedlings or turb sods will be placed on the surface of the peat repository areas to promote growth and strength the placed peat materials,
- A perimeter fence will be installed to prevent access.
- Monitoring posts will be placed adjacent to the placed peat material and berm and will be monitored throughout construction, immediately following construction, and during wind farm operations,
- Inspection of the stone berm and all drainage networks throughout construction of the peat repository areas,
- Shear vane testing of the placed peat within the repository area

3.4.7 Substation

Substation platform will be required to be founded on a suitable bearing material requiring the excavation of all peat and other soft ground materials, where present. The platform will be constructed in the excavated area using a suitable specified engineered stone fill. The selected locations have been identified as they have lower depths of peat materials, with less than 1m of peat has been identified at the substation location. Following the placement of the platform, the excavated peat can be re-used to batter the platform edges and landscape the platform back into the existing topography.

Substation details are shown in Figure 4-3 of the Project Description Chapter of this EIAR.

The substation will be constructed by the following methodology:

- The extent of the substation including four corners and earthworks will be marked out by GPS and the extents demarked with timber stakes and flagging. The substation location and level shall be to the design outlined for the Proposed Development,
- Prior to excavation commencing monitoring posts will be placed within areas of deep peat up and downslope of the proposed excavation,
- The surface water drainage system, including interceptor drains upslope, will be put in place to divert clean water away from the excavation,
- Peat and soft overburden materials will be excavated to a depth where a strata of a suitable strength is exposed. The excavated materials will be directly loaded onto dumpers and transported to elsewhere in the development in landscaping reinstatement works or brought to a peat repository area for storage,
- Side slopes will be excavated at slopes between 1 (V) :2(H) and 1:3(H).The stability slope will be reviewed during construction and altered accordingly should local condition require shallower slopes,
- A suitable geotextile will be placed on the exposed sub-stata,
- A suitable graded stone material will be placed and compacted in layers not exceeding 150mm to meet the required platform thickness and elevations as outlined in the design. The stone grading and compaction specification is subject to construction design stage assessment,

- Drainage from the substation platforms will be achieved by introducing a surface cross fall to allow collection by the installed swales to pick up the run-off,
- This collected run-off material will be collected in settlement ponds and catchment basin for suitable treatment,
- Control buildings and electrical infrastructure will be constructed, installed and commissioned subject to the Contractor specifications,

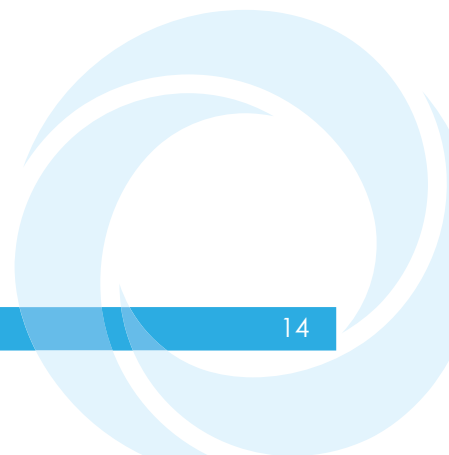
3.4.8 Grid connection

The underground grid construction methodology is outlined in Technical Appendix 4-3.

3.4.9 Reinstatement of peat material

Peat material can be alongside the access road section to aid with restoration of the peatland areas and embed the access roads into the surrounding environment where slope and ground conditions allow. Areas of potential instability have been identified in Technical Appendix 10-2 Peat Stability Risk Assessment. Limitations and rules for reuse and placement of peat are outlined in Technical Appendix 10-3 Peat Management Plan and Section 4.10 of this CEMP. The areas outlined for construction avoidance and/or additional mitigation requirements in Technical Appendix 10-3 Peat Management Plan and must be adhered to during construction of all aspects of the wind farm construction. Where permissible, side cast materials shall be placed to a maximum height of 1m and widths of a minimum 2m to 3m unless site-specific detail designs allow larger volumes of to be placed.

Particular buffer areas including construction buffers and peat stockpile restriction areas have been highlighted in Technical Appendix 10-2 Peat stability risk assessment report for this development.



4 Environmental Management of the Works

Environmental impact assessment for the proposed windfarm has identified a number of potential impacts and associated mitigation related to both the design and construction of the scheme. Where measures relate to construction works these are set out in the below sections.

4.1 Construction Site Layout and Best Practice

In planning the construction site layout the contractor will ensure that a 'good housekeeping' policy is applied at all times and as far as reasonably practicable that amongst other things:

- existing hedges, tree screens and the topography will be utilised to screen construction sites. Temporary earth mounding or other temporary screening will also be included, where appropriate, within the confines of land take for construction sites;
- site and working compounds are to be maintained and kept tidy avoiding clutter, unsightly debris/structures, mud, smoke or dust;
- in dry weather dust suppression methods such as spraying by dust suppression bowser will be employed;
- all potentially contaminating liquids will be stored in containers and/or fully bunded areas and using the necessary equipment;
- refuelling of plant machinery will be carried out at dedicated refuelling stations;
- emergency spill kits will be readily available on Site to protect against accidental release, leakage or spillage of potentially contaminative substances;
- wheel washing facilities will be maintained/cleaned frequently;
- waste will be removed at frequent intervals;
- foul effluent disposal shall be via chemical facilities with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e., there shall be no emission on site);
- any waste susceptible to spreading by wind or liable to spreading by wind or liable to cause litter will be stored in enclosed containers;
- any waste inadvertently spread off site shall be immediately collected by the contractor and disposed of securely;
- fires/burning will be prohibited at all times;
- all necessary measures will be taken to minimise the risk of fire and the contractor will comply with requirements of the local fire authority;
- storage sites, fixed plant and machinery, equipment and temporary buildings will be located to limit adverse environmental effects;
- construction lighting will be controlled so that it does not impinge into sensitive views, for example those from residential windows;
- all external lighting and illumination, associated with the construction process, will be in accordance with the guidance issued by the Institution of Lighting Engineers: "Guidance Notes for the Reduction of Light Pollution", and the CIE (International Commission on Illumination) Report: "Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations"

- construction lighting will be designed and positioned to:
 - provide the minimum light levels necessary for safe working
 - avoid disturbance to adjoining residents and occupiers
 - avoid creating dazzle or distraction for drivers using adjacent highways or the railway
 - seek to minimise light spillage or pollution
 - ensure that excess light does not fall on sensitive ecological habitats
- energy efficient options for site facilities will seek to be incorporated wherever possible these may include energy efficient light bulbs and automatic controls, which will supplement good housekeeping such as switching off equipment when not in use;
- adequate security will be exercised by the Contractor to protect the public and prevent unauthorised entry to or exit from the site. Site access gate(s) will be closed and locked when not in use and site security measures will be implemented;
- any security cameras will be located and directed so that they do not intrude into adjacent property;
- removal of all temporary construction materials from the site once work is completed.

4.2 Pollution Control

A Pollution Prevention Plan (PPP) will be prepared, implemented and monitored by the site manager as part of a full Construction Method Statement (CMS) for the project, to be developed and submitted post-consent following detailed site investigations, and agreed with the local planning authority. A PPP and CMS are required as part of the construction process and prepared by the Contractor at pre-construction stage i.e. is not a document prepared at planning stage.

Notwithstanding the foregoing, pollution prevention and control measures and commitments are included in the EIAR which will be followed by the contractor. Although this will be of particular importance during construction, it will apply to potentially polluting activities during all phases of the Proposed Development.

The detailed PPP will be produced following consultation and agreement with EPA, and all appropriate personnel working on the Proposed Development will be trained in its use.

As a minimum, the PPP will comply with Guidance for Pollution Prevention (GPP) and Pollution Prevention Guidelines (in particular GPP 21: Pollution Incident Response Planning) and best practice as advocated by CIRIA. The PPP will identify site-specific measures and incorporate a Site Emergency Response Plan (SERP), which will include emergency contact details, details of spill kits on the Proposed Development and instructions on actions in case of spillage / emergency.

To ensure best practice on site and to help avoid pollution release to watercourses and groundwater, the following Guidance for Pollution Prevention (GPP) and Pollution Prevention Guidance (PPGs) will be adhered to:

- GPP 1 Understanding Your Environmental Responsibilities - Good Environmental Practices;
- GPP 2 Above Ground Oil Storage Tanks;

- GPP 3 Use and Design of Oil Separators in Surface Water Drainage Systems;
- GPP 4 Treatment and disposal of Wastewater where there is no connection to the public foul sewer;
- GPP 5 Works and Maintenance in or near Water;
- GPP 8 Safe Storage and Disposal of Used Oils;
- GPP 20 Dewatering Underground Ducts and Chambers;
- GPP 21 Pollution Incident Response Planning;
- GPP 22 Dealing with Spills;
- GPP 26 Safe Storage of Drums and Intermediate Bulk Containers;
- PPG 6 Working at Construction and Demolition Sites;
- PPG 7 Safe Storage – The Safe Operation of Refuelling Facilities;
- PPG 18: Managing Fire Water and Major Spillages.

Key requirements for control of chemical pollution risk are identified in the above guidance and will include the following:

- Appropriate site management measures will be taken to ensure that runoff from the construction site is not contaminated by fuel or lubricant spillages. Earth spillages into any existing streams will also be avoided. There will be no discharge of trade effluent, sewage effluent or contaminated drainage into any watercourse system or ditch. Any dewatering from excavations will be via surface silt traps, check dams and settlement ponds to ensure sediment does not enter surrounding watercourses;
- Clean / dirty water separation will be maintained on site in all practicable instances; Clean water will be prevented from entering excavations and dirty water drainage swales through use of clean water diversion / cut-off ditches;
- All equipment, materials and chemicals on the Proposed Development will be stored away from any watercourse (i.e. outside of previously stated buffer zones). Chemical, fuel and oil stores will be sited on impervious bases in accordance with GPP2 and within a secured bund of 110% of the storage capacity, within the temporary storage compounds;
- Standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, well away from any watercourse or drainage ditches (i.e., out with previously stated buffer zones) and will adhere to best practice as detailed in PPG 7;
- On-site maintenance to construction plant will be avoided in all practicable instances, unless vehicles have broken down necessitating maintenance at the point of breakdown. Suitable measures in accordance with a Pollution Prevention Plan (PPP) will be put in place prior to commencement of maintenance in this instance;
- Preference shall be given to construction techniques that do not require use of cementitious materials where suitable practicable alternatives exist. When concrete / cement is used, concrete batching will not be permitted on site;
- Wet concrete operations will not be carried out within 10m of any watercourses;
- Measures to prevent discharge of alkaline wastewaters or contaminated storm water to watercourses will be set out in a detailed PPP for the Proposed Development to be approved by EPA before commencement of works;

- Wastewater spillage will be minimised by using settling tanks and recycling water.

4.3 Noise

A Noise Control Plan (NCP) will be produced that includes:

- Procedures for ensuring compliance with statutory or other identified noise control limits
- Procedures for minimising noise from construction related traffic on the existing road network
- Procedures for ensuring that all works are carried out in accordance with the principle of "Best Practicable Means"
- General induction training for site operatives, and specific training for staff having responsibility for particular aspects of controlling noise from the site.

A pre-blasting noise management programme to be prepared (in the event that blasting is required) which will identify the most sensitive receptors that could be potentially affected by blasting noise. If required, the programme must contain details of the proposed frequency of blasting, and proposed monitoring procedures.

The operator would inform the nearest residents of the proposed times of blasting and of any deviation from this programme in advance of the operations. The programme would also contain contact details which would be provided to local residents should concerns arise regarding construction and blasting activities.

In addition, each blast will be designed carefully to maximise its efficiency and to reduce the transmission of noise.

Any planned deliveries during night-time and/or other sensitive hours have the potential to wake or disturb the residents of neighbouring properties. As a result, any such events, if unavoidable, will be agreed with the local authority dealing with the development and residents will be kept informed of these activities prior to any night-time deliveries taking place.

Use of noise barriers is not considered necessary for reducing the noise impact for any of these activities as the relevant limits are predicted to be met.

4.4 Landscape & Visual

Specific mitigation measures necessary during construction, as determined from the various assessments within the EIAR with regards to construction activity / the construction phase, include;

- Retention of valued site features and limiting land clearance, vegetation removal and land occupation to the minimum necessary for the works in line with the defined plan;
- After dark, controlling construction lighting so that it does not impinge into sensitive views, for example those from residential windows;
- Ensuring the site and working compounds are maintained and kept tidy avoiding clutter, unsightly debris/structures, mud, smoke or dust;
- Restoration of borrow pits as soon as possible after sections of construction work are complete;

- Re-instatement of excavated areas of soil and surface vegetation as soon as possible after sections of work are complete;
- Ensuring work access is restricted to designated tracks and other working areas to avoid the spread of vehicle track scars across other areas;
- Ensuring that temporary warning signs and other road safety management measures are established in an orderly and well organised manner that achieves the necessary safety management objectives with minimal landscape intrusion;
- Ensuring disturbed areas and mounds of peat, topsoil or subsoil are re-graded to blend with the surrounding landform. Disturbed ground must be encouraged to regenerate with locally appropriate vegetation;
- Removal of all temporary construction materials from the site once work is completed.

4.5 Site Access & Traffic Management

Approximately 19km of new access track will be constructed, with an average 5m wide running surface. Additionally, approximately 7km of the existing track will be upgraded to the specification set out in Chapter 4 of the EIA, the upgrades allow sufficient radii for turning for the construction vehicles, abnormal loads and plant.

From the site entrance, an internal road network will service the infrastructure on site. Following construction, access roads will be maintained to provide long-term access for maintenance of the wind turbines.

Access to the site for construction traffic (and operational) will be via the existing Coillte CGA site entrance, currently used for the forestry operations, located to the west of the site (NGR W 14106 81485), off a local access road which in turn is accessed from the National Road N22.

There will be works required to facilitate the delivery of turbine components along the delivery route from the port, which include:

- Temporary street furniture dismantling;
- Vegetation clearance;
- Temporary stone placement on splinter island/verge;
- Resurfacing of footpath.

A Construction stage Traffic Management Plan (TMP) has been prepared for the project and is included as Annex A to this CEMP. This TMP document will be developed further in advance of construction.

The TMP will be further developed by the Contractor at detailed design stage to identify measures to reduce the number of construction vehicles as well as considering ways to reduce or avoid the impact of vehicles through construction programming / routing and identification of an individual with responsibilities for managing transport and access effects.

The TMP sets out measures to reduce and manage construction staff travel by private car, particularly single occupancy trips.

Prior to construction and once the Contractors have confirmed their suppliers, the TMP will be updated in consultation with Cork and Kerry County Councils and An Garda

Síochána as necessary. Measures in the updated construction stage TMP must include (but are not limited to):

- Immediately upon commencement, all deliveries, operatives and visitors to the Proposed Development Site would report to the security gate and be required to sign in and out. All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. This would be communicated to all early works contractors at their pre-start meeting;
- The main contractor would develop a Logistics Plan highlighting the access point for the project, loading bay, pedestrian / vehicular segregation, welfare, storage, security and material handling that would be enforced following full site establishment;
- The proposed access routes and haul routes to the Proposed Development Site have been designed for appropriate traffic volumes and vehicle geometries. These routes are to be constructed as per those stated in the EIAR, and protocols put in place to ensure that HGVs adhere to these routes;
- All contractors would be provided with a site induction pack containing information on delivery routes and any restrictions on routes
- The new N22 Macroom By-Pass will be used to transport all materials to the wind farm site, so as to minimise traffic through built-up areas such as Macroom, Ballymakeery and Ballyvourney;
- Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána and Cork and Kerry County Council Roads Departments to discuss the requirement for a Garda escort;
- The construction material lay down areas will be arranged by the Contractor to allow for a staggered delivery schedule throughout the day, avoiding peak and unsociable hours (i.e. before 6 am and after 10 pm) for normal loads;
- Abnormal loads are likely to travel at night and outside the normal construction times as may be required by An Garda Síochána. Due to the relatively modest distance between Ringaskiddy Port and the site of approximately 80km, the journey is achievable within a 2-3 hour timeframe. Accordingly, locations for resting will not be required. Local residents along the affected route will be notified of the timescale for abnormal load deliveries;
- Works on public roads on the turbine delivery road and grid connection will be strictly in accordance with "Guidance for the Control and Management of Traffic at Road Works – 2nd Edition 2010" as well as "Traffic Signs Manual 2010-Chapter 8-Temporary Traffic Measures and;
- Temporary construction site signage would be erected along the identified construction traffic routes to warn people of construction activities and associated construction vehicles Signs at Roadworks".
- Temporary warning signs and other road safety management measures are to be established in an orderly and well organised manner that achieves the necessary safety management objectives with minimal landscape intrusion;
- A construction traffic speed limit (for example, 25 kph) would be imposed through sensitive areas and on the wind farm site;
- An integral part of the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors would be required to give details of

proposed timing of material deliveries to the site. At this stage, they would be given a specific area for delivery;

- The CTMP and the control measures therein would be included within all trade contractor tender enquiries to ensure early understanding and acceptance / compliance with the rules that would be enforced on this project;
- Under no circumstances would HGVs be allowed to lay-up in surrounding roads. All personnel in the team would be in contact with each other and with Site Management, who in turn would have mobile and telephone contact with the subcontractors;
- All vehicles accessing the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights;
- Roads would be maintained in a clean and safe condition;
- Work access is restricted to designated tracks and other working areas to avoid the spread of vehicle track scars across other areas;
- A wheel cleaning facility will be installed at the site entrance during the construction period in order to reduce mud and debris being deposited onto the local road network;
- In addition, any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas will be employed;
- To reduce dust emissions, vehicle containers/loads of crushed stone will be covered during both entrance and egress to the site;
- Loose track material generated during the use of access tracks and the construction compound will be prevented from reaching watercourses by maintenance to surface water drainage systems installed at aggregate based hard standing areas;
- Construction plant to be checked regularly for leakages and will undergo maintenance on a regular basis
- Construction traffic to be limited to allocated areas of the Proposed Development;

4.6 Site Construction Compounds

Three temporary site construction compounds will be set up upon commencement of the construction phase. The compounds will be used as a secure storage area for construction materials and contain office spaces, meeting rooms, canteen area, a drying room, parking facilities and welfare facilities. The compounds will be constructed early in the project in order to provide site offices and accommodation for staff and for the delivery of materials. Any surface water management, bunding, waste management measures will also be put in place at the outset.

A bunded containment area will be provided within the compounds for the storage of lubricants, oils and site generators etc.

Upon completion of the construction phase the compounds will be decommissioned by allowing the vegetation to naturally cover the areas.

4.7 Surface Water Management

The proposed development will be constructed in cognisance of the following guidelines:

- 'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes' (NRA, 2008)
- 'River Crossings and Migratory Fish: Design Guidance' (Scottish Executive, 2000)
- 'Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters' (IFI, 2016)
- 'Control of water pollution from construction sites – Guidance for consultants and contractors' (Masters-Williams et al. 2001)
- 'Control of water pollution from linear construction projects' (Murnane et al. 2006).

Works on the site likely to cause a high risk to surface water will be programmed to avoid unfavourable prevailing ground conditions and high volumes or extended periods of seasonal rainfall. Site clearance will take place in advance of construction works.

Temporary or permanent drainage and silt management features (SuDS) will be constructed prior forestry felling and prior to earthworks (including preliminary or enabling works) proceeding to construct any linear works (tracks / hardstanding areas / cable routes), turbine bases, and other infrastructure. Drainage will be provided to temporary works and reinstated to suit the final footprint of the completed development.

Forestry / felling works shall be subject to separate felling licencing which includes ensuring mitigation of risk to watercourses due to felling and associated plant movements.

Proposed mitigation measures as set out below relate to protection of water quality flowing into the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. The mitigation measures proposed will be further detailed as this CEMP progresses throughout the development process and Surface Water Management Plan (SWMP) held in EIAR Appendix 11-4 and will include:

- Avoidance of sensitive aquatic areas where possible by implementing a 60m construction zone buffer to significant watercourses (catchment $>0.25\text{km}^2$).
- Avoidance of sensitive aquatic areas where possible by implementing a 10m construction zone buffer to minor watercourses (catchment $<0.25\text{km}^2$).
- For locations where works will be undertaken within water protection buffer zones, double silt fences will be installed around the watercourse to prevent sediment/silt infiltration into the watercourse.
- Specific mitigation measures, incorporated into the design of the development and through implementation of best practice methodologies will be employed where work inside buffer zones is proposed.
- Temporary crossings will be bridging platforms / Bailey Bridges (that themselves require no in-channel work), permanent crossings will be bottomless / clear-span crossings. No in-stream works are required as part of the Proposed Development. This will enable free flow of water within channels, and maintain unobstructed passage for fish and / or macroinvertebrates.

- There will be no crossing of rivers or streams by machinery during the construction phase, other than by constructed access routes, and all machinery must remain within the works corridor and utilise designated access routes.
- There will be no direct dewatering to watercourses during the construction phase. All outflows from drainage associated with construction will be by diffuse overland drainage at appropriate locations and through settlement ponds.
- Cement leachate, hydrocarbon oils and other toxic poisonous materials will require full containment and will not be permitted to discharge to any waters, and control measures to be place will include:-
 - Appropriate bunded storage area for storage of fuels/oils, with onsite storage of hydrocarbons to be kept to a minimum
 - Mobile double skinned fuel bowser will be used for re-fuelling on-site
 - No refuelling will be permitted at works locations within the appropriate hydrological buffer
 - Spill kits will be readily available to deal with any accidental spillage
 - There will be a Site Emergency Response Plan (SERP) for the construction phase to deal with accidental spillages
 - Ready-mixed concrete will be brought to site, with no batching of wet-cement products occurring on site
 - Cement and concrete will be kept out with buffer zone to avoid contamination of watercourses
 - Where possible pre-cast products will be installed, including all watercourse crossings
 - Use of wet-cement products within the hydrological buffer will be avoided, insofar as possible
 - Lined cement washout ponds will be used for chute cleaning, with minimal use of water take will imported onto the site
 - No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be permitted.

The works programme for the initial construction stage of the development will also take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of peat/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will be proportionate to the rainfall forecast.

Using threshold rainfall values will allow the control of in the event of forecasting of an impending high rainfall intensity event. Works will be suspended if forecasting suggests either of the following is likely to occur:

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

Prior to works being suspended the following control measures shall 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.

The SWMP and management of surface water on site will include several measures, including those below, to ensure no pollution/siltation of sensitive receptors, particularly SAC Qualifying Interests are affected, these will include.

- Wastewater emanating on-site (sewage, wastewater from site office) will be taken off-site for disposal/treatment at controlled facilities. To this effect, welfare facilities for construction site workers will include self-contained port-a-loos with an integrated waste holding tank. No water will be sourced on the site, nor will any wastewater be discharged to the site.
- Runoff from excavations will NOT be pumped directly to watercourses. Where dewatering of excavations is required, water shall be pumped to the head of a treatment train (swale, basin, or detention pond) to receive full treatment prior to re-entry to the natural drainage system
- Infiltration interception drains for upslope 'clean' water collection and dispersion
- Flow attenuation and filtration check dams to reduce velocities, with consideration given to gradient with drains to determine spacing requirements
- Settlements ponds and buffered outfalls to control and store development runoff to allow settlement prior to discharge at greenfield runoff rates. No outflow will be permitted directly into natural watercourses.

A peat management plan has been developed (EIAR Appendix 10-3) detailing soil/peat deposition areas to avoid impacting on water quality including:-

- Proposed spoil deposition areas will be located outside the 60m stream buffer zone
- Spoil shall be placed in such a manner to ensure no ponding of surface water on top of spoil heaps. Temporary spoil will be graded to ensure that all direct precipitation will run directly off the surface
- Temporary spoil deposition areas will be designed to ensure that natural flow paths (drainage channels) are not altered or blocked by deposited spoil; and
- Spoil heaps in the vicinity of watercourses would be surrounded on the low side with silt fences to trap fine sediment in runoff.
- Deposition areas will be sealed with a digger bucket and vegetated as soon possible to reduce sediment entrainment in runoff.
- In order to avoid run-off of silt-laden water impacting upon water quality within surface water features adjacent to the works corridor, reinstatement works including measures to re-vegetate disturbed areas through re-seeding and/or placement of saved turves will be undertaken immediately after construction works
- During construction, turves will be stored separately from spoil (soil/rock). Separate storage of turves will ensure vegetation is not significantly damaged and that turves can be replaced as a top-mat to facilitate rapid re-instatement of the surface vegetation, thereby significantly reducing the likelihood of soil erosion and the likelihood of silt laden surface waters affecting water quality
- To ensure control measures are implemented appropriately, an Ecological Clerk of Works (ECoW) and Environmental Manager will be employed for the duration of the construction works

4.7.1 Water quality monitoring

A Water Quality Monitoring and Response Plan (WQMRP) has been prepared (EIAR Appendix 11-3) and will be implemented to monitor effects on the surface water quality regime during the infrastructure construction, operational and decommissioning phases of the Proposed Development, in order to:

- Provide early indication of potential deterioration of water quality that may be attributable to on-site works (i.e., pre-construction felling, construction activities) as to initiate any necessary response measures;
- Demonstrate that the mitigation measures and construction-phase surface water management plan is performing as designed;
- Provide validation that the in-place mitigation measures are not having an adverse effect upon the environment; and
- Indicate the need for additional mitigation measures to prevent, reduce or remove any effects on the water environment.

Water monitoring will consist of physicochemical monitoring. The extent, duration and frequency of the monitoring will be proportionate to the type and level of activity, and perceived risks.

Analysis of water quality data, including continuous monitoring (by field logger) of critical parameters during the felling phase and construction phase shall be undertaken by an appropriately qualified hydrologist / consultant with expertise in analysis of water quality. High frequency snapshot water quality monitoring will be undertaken by a suitably qualified Environmental Consultant / Environmental Clerk of Works (ECoW) at watercourses within, and downstream of, the Site during all construction phases in tandem with the continuous monitoring regime.

The WQMRP (Technical Appendix 11-3) will be implemented to gather further baseline data (for 12 months prior to the commencement of pre-construction felling) and to monitor effects on the surface water quality during the felling, the infrastructure construction, operational (12 months post-construction) and decommissioning phases of the Proposed Development. The plan will ensure that:

- EQS standards and established thresholds are not exceeded during the felling and construction phase, with high frequency snapshot monitoring of ambient physical chemical water quality indicators, and continuous monitoring of key parameters (including Turbidity, Ammonium Nitrogen and Molybdate Reactive Phosphorous). Exceedances shall initiate a response plan which will require all work (felling / earthworks / civil works) to cease on the site. Works shall only recommence when monitoring has determined that specific water quality parameters have returned to acceptable levels.

Sondes shall be set to record water quality data at specified intervals (e.g., every 15 minutes). Data shall be uploaded via telemetry to the cloud or a similar system that allows real-time access and monitoring at specified agreed intervals (e.g., hourly).

Typical monitoring equipment shall comprise:

- In situ Aquatroll with Rugged Dissolved Oxygen (RDO®) / Temperature / Conductivity Turbidity probes, or equivalent;
- DropletSens™ Ammonium Probe or equivalent;
- DropletSens™ Phosphate Probe or equivalent.

Equipment shall be calibrated prior to installation, installed and maintained in accordance with manufacturers recommendations, with periodic recalibration and replacement of filters etc to suit those recommendations.

A warning system shall be implemented whereby exceedance of an agreed trigger level (refer to Section 4.3 of the WQMRP Technical Appendix 11-3) shall notify the Site Environmental Manager / Environmental Consultant / ECoW to initiate a response plan i.e., cessation of felling or construction works.

Continuous monitoring shall be supplemented by discrete monitoring of 'snapshot' locations throughout all construction phases. 'Snapshot' monitoring will be composed of insitu measurement by hand probe and laboratory sampling and testing. All measurements are to be undertaken by a suitably trained and experienced scientist or engineer. Surface water quality parameters for testing are outlined in Table 3: Surface Water Quality Parameters

Table 3: Surface Water Quality Parameters

Continuous Monitoring	
pH	Turbidity (NTU)
Dissolved Oxygen (DO)	Ammonium (NH ₄) (mg/l)
Temperature (°C)	Nitrate (mg/l N)
Electrical Conductivity (µS/cm)	Dissolved (ortho-)phosphate (PO ₄ -P) (mg/l)
Field Analysis	
pH	Dissolved Oxygen (DO)
Temperature (°C)	Total Dissolved Solids
Turbidity (NTU)	Ammonium (NH ₄)
Electrical Conductivity (µS/cm)	Nitrate
Laboratory Analysis	
Alkalinity (mg/l CaCO ₃)	Turbidity (NTU)
Molybdate Reactive Phosphorus (MRP) (mg/l P)	Nitrate (mg/l N)
Ammoniacal Nitrogen (mg/l NH ₃) Ammonia	Nitrite (mg/l N)
Ammonium (NH ₄)	Total Oxidized Nitrogen (TON) (mg/l N)
Biological Oxygen Demand (BOD) (mg/l)	Total Aluminium (mg/l Al)
Chemical Oxygen Demand (COD) (mg/l)	Total Iron (mg/l Fe)
Total Suspended Solids (TSS) (mg/l)	TPH (mg/l)

Monitoring results shall be compared against the legislative limits / water quality target levels outlined in Section 11.3.17 of Chapter 11 Hydrology, and detailed in Technical Appendix 11-2: Water Quality Assessment and Technical Appendix 11-3: Water Quality Monitoring and Response Plan, as well as future pre-commencement baseline water quality data that is planned to be gathered as part of the WQMRP.

The monitoring would be informed by available existing water quality baseline data and baseline monitoring rounds undertaken prior to the commencement of the construction phase.

It is intended that the water monitoring extent, duration and frequency will be agreed with the local planning authority (in consultation with the EPA) post-consent and will nominally consist of physicochemical and biological monitoring. The WQMRP (Technical Appendix 11-3) outlines a requirement for a 12 month pre-construction baseline monitoring period, monitoring throughout the construction duration and a 12 month post post-construction monitoring period.

Review of measured chemical parameters in relation to relevant EQS, results of the 12 month pre-construction baseline chemical data and expected natural chemical ranges is to be undertaken by the ECoW. The established project threshold will make reference to the parameters outlined in Section 4.3 of the WQMRP Technical Appendix 11-3.

Any significant adverse deviation will trigger a reactive measure to seek to remedy the pollution identified:

- The nature of the observation shall be recorded;
- The Applicant / Developer shall undertake to identify the source of pollution and put in place sufficient temporary or permanent mitigation to reduce / remove the source of pollution; and
- The Applicant / Developer shall undertake additional assessment at the location where pollution / non-conformance has been identified at an agreed frequency until source of the pollution can be demonstrated to be removed.

Any significant pollution recorded will be notified to EPA and the Applicant / Developer will engage with the EPA Pollution Prevention team to resolve the pollution issue.

The WQMRP (EIAR Appendix 11-3) will be updated as required to address agreed triggers and intervention measures agreed as part of any consultation.

4.8 Site Drainage

A site drainage system will be constructed on the site so as to attenuate run-off, guard against soil erosion and safeguard downstream water quality. The drainage system will be implemented along all internal site access roads, storage areas, crane hardstand areas and site construction temporary compounds.

The drainage system will be excavated and constructed in conjunction with the road and crane hardstand construction.

The concepts and details pertaining to the drainage are included in the Surface Water Management Plan. The following gives an outline of drainage management arrangements:

- The surface water run-off drainage system will be implemented along all internal access routes, to separate and collect 'dirty water' run-off from the roadway and to intercept clean over land surface water flows from crossing internal roadways;
- To achieve separation, clean water drains will be positioned on the upslope and dirty water drains positioned on the downslope of roadsides, with road surfaces sloped towards dirty drains;

- Clean water will be piped under both the access roads and downslope collection drains to avoid contamination. Piping the clean water under the service road allows the clean water to follow the course it would have taken before construction thus mimicking the existing surface water over land flow pattern of the site and thus not altering the natural existing hydrological regime on site;
- Deep excavations within bedrock and potentially into the associated bedrock aquifer are anticipated in the borrow pit areas, and dewatering below the bedrock aquifer groundwater table may become necessary;
- Groundwater (e.g. in excavations in peat and below) or rainfall runoff collected in excavations will be discharged via settlement ponds or filter strips prior to entry to the receiving water environment.

Temporary drainage and silt management features (Sustainable Drainage System) will be constructed prior to earthworks (including preliminary or enabling works) proceeding to construct any linear works (tracks / hardstanding areas / cable routes), turbine bases, and other infrastructure. Drainage will be provided to temporary works and reinstated to suit the final footprint of the completed development.

Temporary drainage measures in particular will be employed in enabling works to facilitate widening of existing tracks and diversion of minor watercourses where specifically proposed.

Temporary measures will include:

- Temporary silt fences erected in areas where risk of pollution to watercourses has been identified e.g. watercourse crossing locations and areas where tracks or other infrastructure lie within watercourse buffer zones;
- Upslope cut-off drainage channels approximately parallel to the proposed track alignment installed in advance of any excavated cuttings for the track or turbine hardstanding areas;
- Watercourses, drains, natural flow paths and cut-off drain outlet locations will be identified and charted, in order to ensure that piped crossings can be installed in advance of or adjacent to the track construction;
- Settlement ponds will be constructed in advance of commencing excavations for foundations and at any other locations identified as required at detailed design stage;
- The use of flocculant is generally discouraged where possible in favour of using conventional settlement techniques to remove suspended solids, due to the preference to avoid introducing artificial chemicals to the surface water environment. Where flocculant is required on a temporary basis it will be installed at settlement lagoons;
- Trackside drainage swales will be installed in parallel with track construction. Note that this may require that drainage swales are reformed on an ongoing basis as temporary track alignments are modified to their eventual finished design level;
- Cable installation will be undertaken in accordance with the Underground Cable Construction Methodology (EIAR Appendix 4-3);
- Due consideration will be given to the prevailing ground conditions and season when programming the execution of cable trench excavations in order to ensure works are undertaken during periods with low rainfall and elevated shallow

groundwater levels in order to reduce the likelihood of runoff entering the excavations;

- Excavation of cable trenches will be carried out over short distances, with frequent backfilling of trenches to minimise opportunity for the ingress of water into open trenches, temporary silt traps will be provided in longer trench runs and on steeper slopes and spoil will be stored in line with a Peat Management Plan to plan prepared, implemented and monitored by the site manager as part of the CMS.

Suitable prevention measures will be in place at all times to prevent the conveyance of silts to receiving watercourses.

All SuDS and additional pollution prevention measures installed will be subject to a regular maintenance regime for the life of the construction phase in order to maintain functionality of all features. This will comprise:

- All check dams and settlement basins to be checked weekly in dry weather and daily during periods of heavy rainfall via a walkover survey during the construction phase;
- Maintenance of access road and other hard standing surfaces;
- Replacement of filtration features;
- Removal of silt build-up from settlement and filtration features.

Any settlement lagoons or filter strips associated with excavation dewatering will be regularly inspected, particularly after periods of heavy rainfall and prior to periods of forecast heavy rainfall. Maintenance (to clear blockages or remove silt) will be carried out in periods of dry weather where practicable.

4.9 Watercourse Crossings

Surface water will be managed during the construction process. Tracks are intended to be aligned such there is no requirement to alter natural watercourses, and minimise the number of water courses. A total of 13 watercourse crossings will be required for the proposed access tracks, including 8 new bottomless culvert or clear span crossing structures, 5 existing crossings as part of the existing tracks and 1 additional drainage culvert crossing on the grid route.

Prior to construction confirmatory inspections by the relevant bodies (Fisheries Ireland and OPW) of each proposed watercourse crossing location will be carried out by the project civil/structural engineer and the project environmental manager.

Where the crossing of an existing natural or artificial drainage / stream channel is unavoidable, a suitable crossing design has been developed and is outlined in the Figures 4-10a to 4-10h. Crossings of the existing major watercourses will be in the form of precast concrete bottomless culverts or clear span bridges as outlined in Figures 4-10a to 4-10h. All crossings will cater for a minimum 1 in 200 year return rainfall event. The invert of the pipe is submerged approximately 1 / 4 of its diameter below the original drainage bed. Where natural gradients allow, a nominal back fall in the pipe will be incorporated to prevent scour and promote the settling of natural material along the invert of the pipe. An example of a permanent drain crossing is illustrated in Figure 4.5 below. All construction method statements for crossings will be approved by Inland Fisheries Ireland.

The following procedures apply to the general construction activities either within the watercourses or in defined watercourse buffer zones:

- Due consideration will be given to the prevailing ground and weather conditions when programming the execution of the works in order to ensure that in-channel works are undertaken during periods of predicted low flow and low rainfall in order to minimise contact with water;
- Ensure that roadside drains do not discharge directly into watercourses, but rather through a riparian buffer area of intact vegetation as denoted on design drawings.

Construction of watercourse crossings will be programmed to coincide with periods of predicted low flow in the affected channel (determined by rainfall and would generally coincide with summer months) and adhere to working period restrictions imposed. Construction will be strictly as per the design for each identified watercourse crossing and will fully implement all SuDS and additional mitigating measures proposed at the detailed design stage. The proposed mitigation will include:

- Installation of silt fences parallel to the watercourse channel in the vicinity of the proposed crossing;
- Installation of small cut-off drains to prevent natural surface runoff entering area of construction activity;
- Installation of filtration or other silt entraining features within the watercourse channel immediately downstream of the works location;
- Use of over pumping where deemed appropriate.

4.10 Peat Management

An estimated 426,677m³ of peat will require to be excavated to facilitate development. Excavated peat will be reused for the backfilling, landscaping and restoration around wind farm infrastructure such as turbines and hardstands.

This Peat Management Plan (PMP) report provided in Technical Appendix 10-3 outlines the guidance for the safe handling and storage of peat material only. Excavation of some mineral soil material will likely be required as part of the construction of the Proposed Development. The findings of the ground investigations outlined in the EIAR Technical Appendix 10-1 Geotechnical Interpretive Report outline suggest that the peat material is generally underlain by weathered bedrock or relatively thin layers of granular glacial till material (<1m) over bedrock. The preliminary assessment of the suitability of this glacial till and weathered rock material is outlined in Section 3.5 of Technical Appendix 10-1, suggesting it may be suitable for reuse within the construction of the Proposed Development. This is subject to further testing and the findings of the design stage confirmatory ground investigations and earthwork specifications. Where required excavated glacial till or weathered bedrock material shall be used within the Proposed Development where appropriate.

A Peat Management Plan (PMP) is provided in Technical Appendix 10-3 of the EIAR and should be referred to for full procedures.

The PMP has been prepared with consideration of industry best practice relating to wind farm construction and peatlands. This best practice includes:

- Draft Revised Wind Energy Development Guidelines. Department of Housing, Planning and Local Government (2019);

- Good practice during wind farm construction. A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland (2015);
- Scottish Government, Guidance on Developments on Peatland – Site Surveys (2014);
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste, Scottish Renewables and SEPA (2012); and
- Floating Roads on Peat, Scottish Natural Heritage (2011).

Many of the publications listed above have been developed by the Scottish Regulators which are considered to be best practice in Ireland and are therefore appropriate for refer to within this PMP.

The PMP and compliance with it shall not relieve the developer of its obligations to undertake detailed confirmatory ground investigations or geotechnical design prior to construction or any obligations relating to other aspects of the environment.

The PMP should be referred to for:

- A review of peat conditions on-site;
- Preliminary road construction types;
- Methodologies for the construction of each type of access road and road construction details;
- Preliminary methodologies for the excavation of turbine bases, hardstands and compounds;
- Summary of borrow pits on-site and typical detail drawings;
- Guidelines for handling and storing of excavated peat;
- Recommendations for good construction practice.

A construction stage peat management plan will be required to be carried out and updated throughout the construction stage as further information is collected. This construction stage peat management plan will be in line with all the principles in the planning stage peat management plan outlined in Technical Appendix 10-3 including maintaining safety buffer areas and peat restriction areas as outlined in Technical Appendix 10-2 Peat Stability Risk Assessment (PSRA).

4.10.1 Peat Stability management

Particular restricted areas have been identified as part of the EIAR, Technical Appendix 10-2 Peat Stability Risk Assessment (PSRA) and should be referred to for full details.

These consist of:

- Safety buffer areas – No development or construction activities shall be carried out in these areas including plant movements, peat or overburden excavation or reinstatement or placement of peat or any overburden materials
- Peat stockpile restriction areas– areas that are not restricted for construction activity but must not be used for stockpiling of peat or any overburden materials. The development footprint may occur within these areas but peat placement and reinstatement is not permitted within these buffers.

As set out in the PSRA the development of the safety zones is a semi-automated approach which combines the developed polygon areas of the Scottish Executive

(2017) factor of safety (FoS) results, areas of risk identified during the site walkovers and potential risk areas identified from the examination of peat depths and site topography. These are composed of a combination of areas with a stability Factor of Safety.

Safety Buffer areas are set out in Appendix A.3 of the PSRA. Areas included in the safety buffer zone include:

- Many linear areas adjacent to watercourses, caused by the steep eroded stream banks,
- Areas of deep peat adjacent to steep slopes where there is a risk of propagated peat slide,
- An area of deep saturated peat north of T4, adjacent to a steep drop in elevation and a watercourse identified during the walkover.

Peat stockpile restriction areas are locations where the proposed wind farm layout encounters an area where a stability risk has been encountered with the addition of a 1m surcharge only and is otherwise considered stable in its natural state. The risk at these locations can be examined by looking at the geometry of the local slope and the proposed construction methodology, and the hazards can be mitigated with restricted peat and spoil storage and the limiting of plant operations within the area. The stockpile restriction areas are set out in Appendix A.4 of the PSRA.

The stability of the proposed peat repository areas is assessed in Appendix L of Technical Appendix 10-2 Peat Stability Risk Assessment (PSRA). This report outlines the considerations and loading conditions of the peat repository area (PRA) berm and placed excavated peat materials. The analysis examines the bearing, sliding and global stability of the proposed berm structure and peat placement. The findings of this analysis shall be examined by the construction stage contractor and considered in their construction stage stability analysis. This analysis is based on the current ground investigations and confirmatory ground investigations, site observations and subsequent analysis will be required by the construction stage design team.

Detail design stage ground investigations shall include;

- Further peat probe testing across the PRA footprint area, with particular close spacing on the footprint of the proposed stone berm,
- Trial pit locations to characterise the nature of the peat material,
- Shear vane testing in peat and underlying glacial till material to quantify the peat and overburden strength parameters.

Construction and post construction monitoring shall include;

- Monitoring posts in adjacent peat material, regularly inspected throughout construction, immediately following construction, and during wind farm operations,
- Inspection of the stone berm and all drainage networks throughout construction of the peat repository areas,
- Shear vane testing of the placed peat within the repository area,

Future updates to the CEMP will incorporate the PSRA and PMP measures to ensure risk of construction related slope failure is minimised.

The construction stage contractor shall conduct a construction stage PSRA, considering the findings of the confirmatory ground investigations and observations made during subsequent site visits and felling operations. This document will incorporate the findings of the planning stage PSRA in Technical Appendix 10-2.

4.11 Borrow pit excavations

Four borrow areas are proposed for the development.

- Temporary drainage will be installed prior to opening of borrow pits by installation of cutoff drainage and bunds formed from cutoff ditch excavation to the top of the cut slope, prior to commencement of clearing of overburden. The approach to drainage ensures that clean runoff flowing toward or over the borrow pit
- Settlement features will be installed at the low point or adjacent to borrow pits, and internal drainage (or pumping) of accumulated water on the borrow pit floor shall discharge to settlement features. Settlement features treat runoff to an acceptable standard before discharging overland or discharging into proposed trackside drainage.
- Dust suppression techniques during construction works are to be implemented as necessary,
- Excavation works will be monitored by a qualified geotechnical engineer,
- Rock cutting stability assessments will be carried out following the confirmatory ground investigations to ensure the stability of the proposed designed borrow pits
- All overburden and bedrock cuttings are to be inspected by a qualified geotechnical engineer on a weekly basis and follow periods of extreme weather throughout the construction phase,
- The earthworks will not be scheduled to take place during severe weather conditions if they present a risk to materials management or stability.
- Restoration of borrow pits will occur as soon as possible after sections of construction work are complete.

4.12 Soil disturbance

4.12.1 Soil Erosion

To reduce risk of erosion:

- Excavations will be constructed and backfilled as quickly as possible;
- Excavations will pause during and immediately following periods of high rainfall if they present a risk to materials management or stability;
- Excavated soil and rock will be stored appropriately to reduce sedimentation in runoff, with bunding and silt fences, for example, as required;
- No stockpiles outside of the designated peat storage areas will be left on-site after the construction phase has ended.

4.12.2 Soil Compaction

In order to avoid unnecessary compaction of soils:

- Prior to commencement of earthworks, the work corridor will be delineated and plant will be required to stay inside the designated boundary. This will limit damage to peat and soils outside of designated areas,
- Excavations are to be conducted from access tracks when possible.

4.12.3 Contaminated Soils/Waste

There are no known areas of significant soil contamination on the site, however should any suspect materials be encountered, these must be assessed and disposed of in accordance with the Waste Management Plan (WMP) provided as Annex B of this document, which sets out procedures relating to site-generated construction waste and the storage and disposal of waste.

4.13 Ecological Works

4.13.1 Habitat Management

Incidental losses of habitat will be reduced by minimising the footprint of the construction activity. This will be achieved by following the requirements of the Habitat Management Plan (EIAR Appendix 8-4) including:

- operating machinery and storing materials within the footprint of permanent construction features wherever practicable.
- appropriate training of the site staff and fencing / signage to ensure that vehicles and their operators do not inadvertently stray onto adjacent habitat areas.

The proposed habitat measures are summarised below.

- Reinstatement of habitats - will be undertaken as soon as practicable after each stage of the project is completed.
- Areas of the Proposed Development will be reinstated in accordance with planning condition requirements.
- Best practice techniques for vegetation and habitat reinstatement will be adopted and implemented on areas subject to disturbance during construction as soon as is practicable.
- Reusing peat removed for access tracks on adjacent verges to prevent mitigate indirect drying effects. The methodology used for reinstatement will be agreed with An Bord Pleanála and implemented by measures set out within the PMP.

4.13.2 Fauna (including Kerry Slug)

- Excavations/holes will be covered at the end of each working day, or a wooden plank placed inside to allow faunal species to escape, should they enter the hole.
- Any temporarily exposed open pipe system will be capped in such a way as to prevent wildlife gaining access.
- No in-channel obstructions (floodlighting, fencing or diversions) will be permitted within watercourses unless specifically authorised in writing by the relevant authority (to be managed by ECoW).
- Measures shall be implemented to reduce the potential for construction impacts to bats, e.g., downward-directed artificial lighting will be used to shine light to the

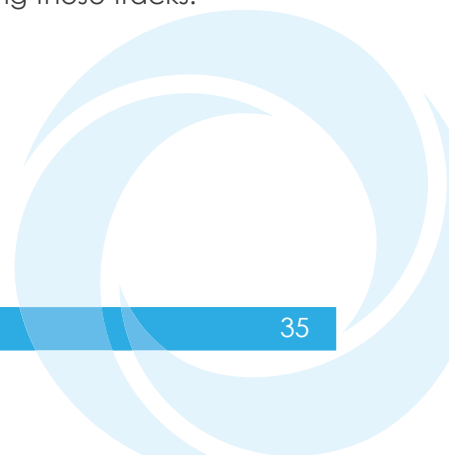
working area only and reduce 'light leakage' that may temporarily affect bat flightlines.

- Should an unforeseen protected species be discovered on Site all work in that area would stop immediately and the ECoW would be contacted. Increased buffer areas may be required in these locations.
- Final Kerry slug surveys will be carried out a maximum of 24 hours before the habitat being cleared. Areas will only be entered once translocation surveys are complete, and it is confirmed as safe to proceed by the ECoW.
- The contractor appointed to construct the wind farm will ensure that there will be no use of machinery outside of the footprint of the Proposed Development to prevent accidental death of Kerry Slug in areas that have not been surveyed or where slugs have not been translocated.
- The contractor appointed for the construction phase will be responsible for ensuring that no machinery is allowed to enter lands outside of the development footprint to prevent damage to suitable Kerry Slug habitat outside of the Proposed Development.

4.13.3 Ornithology

During construction, surveys and checks will be carried out to enable any protected or sensitive breeding or roosting to be identified within the Proposed Development and measures put in place to protect them.

- Where possible, vegetation clearance will be undertaken out with the breeding season (mid-March – August inclusive) which would protect active nests.
- However, if vegetation is required to be removed within the breeding season it would be searched by a suitably qualified ecologist no more than 24 hours before removal to check for the presence of nests.
- Should any nests be identified, a no-disturbance buffer will be put in place by the ECoW within which no works will occur unless supervised by the ECoW. This buffer should typically be no less than 5m and will remain in place until the nest is no longer in use;
- During the breeding season, a programme of ongoing surveys and checks will be carried out across the site to check for the presence of breeding birds. These must focus on areas where construction is occurring, but also for Hen harrier, survey for any Hen harrier activity which may indicate the presence of breeding across the Proposed Development
- Should any breeding Hen harrier be identified then in line with published guidance on disturbance distances (Ruddock, 2007) a buffer of 500-750m must be established within which no access will occur until the nest is no longer active.
- The exception to this is use of access tracks, which can be used if the ECoW judges that their ongoing use is not likely to lead to disturbance on the nest, which is likely to have established in the knowledge that vehicles are using those tracks.



5 Emergency response plan

5.1 Environmental emergency response

Two types of key environmental emergency scenarios and the require response plans are examined as part of the CEMP at the Proposed Development:

- Peat movement and/ or Peat slide,
- Hydrocarbon or contaminant spills.

The Construction stage Contractor will be required to outline a detailed emergence response plan directly relevant to their construction works methodologies, sequence of works, plant and machinery, and personnel.

5.1.1 Excessive peat movement and peat slide

Technical Appendix 10-3 Peat Management Plan outlines the contingency and emergence response procedures in the case of excessive peat movement or onset of a peat landslide.

Where excessive movement has been observed in the installed monitoring outlined in the following measures will be taken;

- All construction activities will be suspended in the area,
- The Construction Site Manager will be notified,
- The Contractors Geotechnical Engineer shall carry out an assessment of the peat instability including drainage. The Contractors Geotechnical Engineer shall compile a report outlining the surveys undertaken, the potential cause of the instability, assessment of any increased risk caused by the instability, and the further measures required to manage this risk,
- An increased monitoring regime shall be specified including increase in number of monitoring post lines, decrease on monitoring post spacing and an increase in the frequency of monitoring post observations,
- Should no further movement be detected, construction activities will be recommenced while maintaining the increased monitoring regime,
- Should further excessive movement be detected, the Contractors design and project geotechnical engineer will need to be informed and the design of further reinstatement works will be required such as excavation of the disturbed material, installation of a granular berms or similar.

If the scenario of a landslide, bog burst or peat slide occurring at the site the following steps shall be carried out by the contractor:

- All members of the project will be alerted immediately or as it is safe to do so;
- The Construction Site Manager will be notified;
- All site works will be ceased, and all available resources will be used for the management and mitigation of the risks posed by the event;
- All project members including Project Manager, Client and Developer, and Client's Technical Authority will be notified within 1 hour of the event;
- The key initial activity will be to prevent displaced materials from reaching any watercourses or sensitive environments. Given the terrain of the Proposed Development Site, the key risk is the development of a propagation landslide or

slip within topographic valleys and watercourses. Where possible, check barrage structures on land or within these topographic valley and watercourses shall be constructed to aid prevent further run out of the disturbed peat or spoil material;

- Construction Site Manager, the Contractors Geotechnical Engineer and the Clients Technical Authority will carry out an inspection of the instability event and ensure the necessary measures are in place to contain the displaced debris, ensuring that no further failures or movements will occur, and an appropriate clean up methodology is underway;
- The triggers of the event will be identified, and a site-wide assessment will be carried out to assess these risks at other areas of the site;
- The Construction site Manager will notify the appropriate regulatory body such as Kerry County Council, and the Environmental Protection Agency (EPA), if deemed necessary.

Use of check barrages

Check barrages are permeable granular structures constructed within the path of a landslide to prevent the further downhill or downstream movement of the disturbed material. Typically, these will be constructed of locally generated stone material, often of large sizing. The large material sizing will allow water to pass through the check barrage material, avoiding a build-up in hydrostatic pressure while containing the debris within the slide. Check barrage will typically be a dam structure between 1 and 1.5m high, with slopes between 1(V):1.5(H) or 2(H), and constructed across the full section of topographic valley and/or water course.

Potential check barrage locations are outlined in Appendix D of Technical Appendix 10-3 Peat Management Plan. The potential check barrage locations have been positioned in areas accessible from existing and proposed access roads within topographic valleys and watercourses which could be a route for a propagating landslide towards the Clydagh River and associated sensitive environments. The check barrage is an emergency preventative measure only to restrict or reduce the movement of displaced material downslope and away from a watercourse. Further assessment and reinstatement works will likely be required should a landslide occur, and engagement and reporting of the incident will be required by all parties involved in the project. Should the check barrage no longer be required it may be removed and the area reinstated.

The use of check barrages is only proposed for use in the unlikely event of a large landslide event. The proposed locations are only indicative, targeting potential topographic channels but will vary depending on the location and nature of the slide event. The Construction stage Contractor will need to include an assessment of potential check barrage locations and methodology for their construction within the emergency procedures in their associated Construction Stage Method Statement documentation.

5.1.2 Spill control

Oil/Fuel spillages are one of the main environmental risks that will exist on the site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident:

- Stop all works in the area of the spillage;
- Stop the source of the spill and raise the alarm to anyone working in the vicinity of the spill;
- Immediately contact the Construction Site Manager giving information of the spillage including location, type, volume of spilled material and extent of the spillage;
- Construction Site Manager will carry out an inspection and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring;
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill;
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats;
- If possible, clean up as much as possible using the spill control materials;
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited;
- The Construction site Manager will notify the appropriate regulatory body such as Kerry County Council, and the Environmental Protection Agency (EPA), if deemed necessary.

5.1.3 Other Environmental Incidents

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Construction Site Manager must be immediately notified.
- If necessary, the Construction Site Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures that were used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site (pSPA or cSAC), the Construction Site Manager will liaise with the Project Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the Construction Site Manager will liaise with the Project Archaeologist.
- A record of all environmental incidents will be kept on file by the Construction Site Manager and the Contractor. These records will be made available to the relevant authorities such as Kerry County Council, EPA if required.

The Construction Site Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Contractor as appropriate.

6 Communication

6.1 Meetings

In accordance with best practice, the contractor will hold Site Progress Meetings during their works.

Issues relating to environmental design, mitigation and implementation in general, and implementation of the CEMP in particular, will be an agenda item at these progress meetings.

6.2 Sub-contractors and the Supply Chain

The contractor must demonstrate how they aim to ensure that all sub-contractors are aware of and buy into project environmental management.

They must show how the selection, control and review of performance of sub-contractors are to be managed. The contractor must also ensure that all sub contractors understand the external communications strategy and maintain effective methods of communication.

6.3 Training

The contractor shall identify (and record attendance at) any training they propose to carry out related to environmental issues including making staff aware of issues relating to matters such as flooding, ecology, amenity and pollution control.

Training may include: named persons responsible for environmental training, including site induction, toolbox talks, specific technical training.

6.4 Environmental Records

The contractor must demonstrate what records are to be kept as part of this environmental management process.

This information must also identify where the documents are to be kept, and who will be responsible for maintaining them. This documentation must include: training, monitoring, project reviews minutes of meetings method statements, procedures consents/licences etc.

6.5 Decommissioning

Details of the decommissioning phase of the project are set out in the Decommissioning Plan held in Annex C.

7 On Site Organisational Structure

An example of an Organisational Structure for the Appointed Contractor(s)'s Project Team is included below. This structure will be defined by the Appointed Contractor(s) and will include the names of the assigned personnel with the appropriate responsibility and reporting structure reflected.

The Appointed Contractor(s) will be required to finalise the Organisational Structure for the project to oversee the updating of this CEMP and the implementation of the detailed CEMP, and to outline the specific responsibilities for the roles required.

7.1 Duties and Responsibilities

The general role of key people on site implementing the CEMP will be:

- The Project Manager - liaises with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor(s)'s project team.
- The Construction Site Manager - ensures that this CEMP is developed, implemented and maintained. Manages site works where there is a risk of environmental damage and manages the construction personnel and general works.

Other roles relevant to the environmental management of the construction phase will be outlined as follows

- Project Archaeologist (report to the Construction Site Manager)
- Project Ecological Clerk of Works (report to the Construction Site Manager)

The roles and responsibilities outlined below are indicative and will be updated on the appointment of the main contractor(s). Details of the personnel and their responsibilities must be added to the CEMP. An outline of potential roles is provided below but will require revision.

7.2 Project Manager

A Project Manager is to be appointed on behalf of the main Contractor(s) to manage and oversee the entire project. The Project Manager is responsible for:

- implementing of the Construction and Environmental Management Plan (CEMP)
- implementing the Health and Safety Plan
- management of the construction project
- liaison with the client/developer
- liaison with the Project Team
- assigning duties and responsibilities in relation to the CEMP
- production of construction schedule
- materials procurement
- maintaining a site project diary

7.3 Construction Site Manager

The Construction Site Manager manages all the works to construct the project, on behalf of the main contractor(s). The Construction Site Manager reports to the Project Manager. In relation to the CEMP, the Construction Site Manager is responsible for the following, which are outlined in detail in the sub-sections below:

General matters

Site-Specific Method Statements

Third Party Consultation

Licensing

Waste Management Documentation

Legislation

Specialist Environmental Contractors

Environmental Induction Training and Environmental Tool Box Talks

Environmental Incidents/Spillages

Site environmental inspections

7.3.1 General

- Being familiar with the project environmental commitments and requirements
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from the Project Manager, to the ECoW and other relevant parties in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required
- Liaising with the Design team and providing information on environmental management to the designers during the course of the construction phase
- Programming and planning of excavation works and communicating this schedule to the ECoW and other relevant parties
- Ensuring that adequate resources are provided to design and install any environmental interventions
- Liaising with the wider Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor(s)'s project staff
- Ensuring that the ECoW performs regular and frequent environmental site inspections.
- Being familiar with baseline data gathered for the various environmental assessments and during pre-construction surveys
- Implementing, in conjunction with the ECoW, the environmental procedures of the CEMP
- Liaising with the Project Manager to ensure that the control measures set out in the Schedule of Environmental Mitigation are implemented
- Liaising with the client/developer in relation to environmental issues

7.3.2 Site-Specific Method Statements

- Preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage. These site-specific Method statements must incorporate relevant Environmental Control Measures and take account of relevant Environmental Control Measure Sheets
- Reviewing and updating site-specific Method Statements for all Works activities where Environmental Control Measure and Environmental Control Sheets have been altered, and
- Coordinating activities where third party agreement is required in relation to site-specific Method Statements, Environmental Control Measures and/or Environmental Control Measure Sheets.

7.3.3 Third Party Consultation

- Overseeing, ensuring coordination and playing a lead role in third party consultations required statutorily, contractually and in order to fulfil best practice requirements
- Ensuring that the minutes of meetings, action lists, formal communications, etc., are well documented and that the consultation certificates are issued to the Design Engineer as required
- Liaising with all prescribed bodies during site visits, inspections and consultations
- Where new Environmental Control Measures are agreed as a result of third party consultation, ensuring that the CEMP is developed into a detailed CEMP and thereafter amended accordingly
- Where new Environmental Control Measures are agreed as a result of third party consultation, the Environmental Manager must liaise with the Construction Manager in updating relevant site specific Method Statements, and
- Where required, liaising with the Construction Manager in agreeing site-specific Method Statements with third parties.

7.3.4 Licensing

- Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licences, certificates, planning permissions, etc
- Liaising with the designated licence holders with respect to licences granted pursuant to the Wildlife Act, 1976, as amended (if required)
- Bringing to the attention of the Project, Design and Construction Team any timing and legal constraints that may be imposed on the carrying out of certain tasks.

7.3.5 Waste Management Documentation

- Holding copies of all permits and licences provided by waste contractors
- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc., have appropriate authorisation, and
- Gathering and holding documentation with the respect to waste disposal.

7.3.6 Legislation

- Keeping up to date with changes in environmental legislation that may affect environmental management during the construction phase
- Advising the Construction Manager of these changes, and
- Reviewing and amending the CEMP in light of these changes and bringing the changes to the attention of the main contractor(s)'s senior management and subcontractors.

7.3.7 Specialist Environmental Contractors

- Identifying requirements for specialist environmental contractors (including ecologists, geotechnical engineers, waste contractors and spill clean-up specialists) before commencement of the project

- Procuring the services of specialist environmental contractors and liaising with them with respect to site access and report production
- Ensuring that the specialist environmental contractors are competent and have sufficient expertise to co-ordinate and manage environmental issues, and
- Co-ordinating the activities of all specialist environmental contractors on environmental matters arising out of the contract.

7.3.8 Environmental Induction Training and Environmental Tool Box Talks

- Ensuring that Environmental Induction Training is carried out for all the main contractor(s)'s site personnel. The induction training may be carried out in conjunction with Safety Induction Training,
- Providing toolbox talks on Environmental Control Measures associated with Site-specific Method Statements to those who will undertake the work.

7.3.9 Environmental Incidents/Spillages

- Prepare and be in readiness to implement at all times a Site Emergency Response Plan.
- Notifying the relevant statutory authority of environmental incidents, and
- Carrying out an investigation and producing a report regarding environmental incidents. The report of the incident and details of remedial actions taken should be made available to the relevant authority, the Design Engineer and the Construction Manager.

7.3.10 Site environmental inspections

- Carrying out regular documented inspections of the site to ensure that work is being carried out in accordance with the Environmental Control Measures and relevant site-specific Method Statements,
- Carrying out a daily inspection of the bunded areas and site drainage system.
- Appending copies of the inspection reports to the CEMP.
- Liaising with the Construction Manager to organise any repairs or maintenance required following the daily inspection of the site.

7.4 Other Relevant Roles

7.4.1 Project Archaeologist

A suitably qualified archaeologist working under licence as issued by the minister (DCHG) under section 26 of the National Monuments Acts (1994-2014) is to be appointed by the Developer or the Contractor(s) and is responsible for:

- liaison with the Environmental Manager/Construction Manager
- liaison with the Project Manager/client/developer
- monitoring of groundworks associated with the development
- In the event of archaeological features, finds and/or deposits being encountered during the monitoring:

- Ensuring that all relevant authorities are notified immediately.
- Ensuring reservation in-situ or preservation by record (excavation) may be required.

Where groundworks have a direct effect on the Cummeennabuddoge/Clydaghroe townland boundary (CH057), creating a full descriptive, photographic and survey record of the CH site prior to the removal of any components

- Compiling a report on completion of the monitoring and sending to the Local Authority and National Monuments Service.

7.4.2 Project ECoW

Works will be overseen by an Ecological Clerk of Works (ECoW) and appointed by the Developer or the Contractor(s). The ECoW is responsible for:

- undertaking regular Site inspections and overseeing all sensitive habitat removal and works at watercourse crossings
- ensuring implementation of biodiversity /habitat mitigation measures
- being present during construction to undertake regular Site inspections
- overseeing the ornithological monitoring programme to ensure that impacts on birds are managed to as low as reasonably possible and wildlife legislation is complied with
- overseeing micro-siting from an environmental perspective (within planning restrictions)

The ECoW will have the authority to stop works where significant effects are considered likely to occur, and to instigate control/mitigation measures to rectify noncompliance.

7.4.3 All site personnel

The site personnel appointed by the Contractor(s) are responsible for:

- adhering to the relevant Environmental Control Measures and relevant site-specific Method Statements
- adhering to the Health and Safety Plan
- reporting immediately to the Construction Site Manager any incidents where there has been a breach of agreed procedures including: o a spillage of a potentially environmentally harmful substance o an unauthorised discharge to ground, water or air, damage to a protected habitat, etc.

7.5 Contacts

The below details must be included in updates to the CEMP when confirmed.

7.5.1 Main Contractor(s) Contacts

Position Title:	Name	Phone	Email:

7.5.2 Employer Contacts

Organisation:	Position:	Name:	Phone:	Email:

7.5.3 Third Party Contacts

Organisation:	Position:	Name:	Phone:	Email:

8 Environmental Commitments

8.1 Environmental Management Plans (EMP)

A number of environmental management plans (EMP) have been prepared at the current project stage or will be prepared ahead of construction for managing the impacts of Construction Activities associated with the wind farm development project. These plans are to be implemented by the Appointed Project Manager and/or Project Contractor(s) as relevant.

Once appointed, it is the Contractor(s)'s responsibility, to update and add (where required) project specific control measures relevant to the environmental management plans and procedures. The Appointed Contractor(s) will ensure that plans/procedures are communicated to all site staff, including subcontractors, through induction, training and at relevant meetings.

Table 4: Plans for managing impacts of Construction Activities

Ref:	Procedure:	EIAR Appendix	CEMP Annex
Pre-Existing Plans (EIAR Technical Appendices)			
SWMP	Surface Water Management Plan	11-4	
WQMRP	Water Quality Monitoring and Response Plan	11-3	
FMP	Forestry Management Plan	4-2	
PMP	Peat Management Plan	10-3	
PSRA	Peat Stability Risk Assessment	10-2	
UCCM	Underground Cable Construction Methodology	4-3	
Pre-Existing Plans (CEMP Annexes)			
CTMP	Construction Traffic Management Plan		A
WMP	Waste Management Plan		B
DP	Decommissioning Plan		C
To Be Prepared by Main Contractor/Site Manager			
CMS	Construction Method Statement		
PPP	Pollution Prevention Plan		

Ref:	Procedure:	EIAR Appendix	CEMP Annex
SERP	Site Emergency Response Plan		
PMP	Construction stage Peat Management Plan		
PSRA	Construction stage Peat Stability Risk Assessment		
NMP	Noise Management Plan		

9 Auditing, Monitoring and Response

The Monitoring Schedule for construction stage will also provide for the checking of equipment, materials storage and transfer areas and specific environmental controls.

A Preliminary Monitoring Schedule is provided below and will be finalised pending appointment of the Contractor(s). The Contractor(s)'s developed Site Checklists must have the following information included at a minimum:

Table 5: Preliminary Monitoring Schedule - Construction Phase

Aspect	Monitoring Required	Frequency	Note	Responsibility
Kerry Slug	Pre-translocation Surveys	As required	No more than 24 hrs before any habitat removal	ECoW
Breeding Birds	During construction	Frequency to be agreed		ECoW
	Pre-clearance	As required	No more than 24 hrs before any vegetation removal during breeding season	ECoW
Plant	Condition checks	Daily		Construction Site Manager
Slope Stability	Inspections of cut slopes and excavations	As outlined in Section 10.2 of Technical Appendix 10-2		Geotechnical Engineer
Water	Sediment & Erosion Controls (Drainage Performance)	At least weekly during the construction phase as well as during and after significant rainfall events		Construction Site Manager
Water	Water quality monitoring	Continuous logging by field logger	Chemical and biological parameters to be agreed	Construction Site Manager
Waste	Material and Waste Storage	Daily		Construction Site Manager
Fuels	Fuel & Oil Storage inspection	Daily		Construction Site Manager
Archaeology	Archaeological Monitoring	As Required	Monitor ground works & excavations	Archaeologist

The Contractor(s) will assign an on-site Construction / Environmental Manager to monitor the construction activities on a day to day basis. The duties will include completing the required checklists and coordinating with the relevant personnel (e.g.

Project ECoW, Project Archaeologist as required) ensuring all environmental monitoring is carried out.

9.1 Environmental Performance Indicators

The appointed Project Contractor(s) will outline the key performance indicators for the site in gauging successful site management in the prevention of pollution and the protection of the environment.

Environmental performance indicators will include:

- Number of environmental accidents/incidents logged
- Breach of procedure and corrective actions
- Number of environmental complaints received
- Results of monthly water quality monitoring
- Results of noise and vibration monitoring, and
- Results of site audits.

The performance indicators will be communicated to all relevant personnel and sub-contractors. The review periods for analysing site performance indicators must also be specified.

9.2 Response Procedure/Corrective Action

In the event of an environmental incident, or breach of procedure, or where a complaint is received, the contributing factors are to be investigated and remedial action taken as necessary. The Main Contractor(s) will ensure that the following response actions will take place:

- The Project Manager must be informed of any incident, breach of procedure and/or complaint received and details must be recorded in the incident/complaint register
- The Project Manager is to conduct/co-ordinate an investigation to determine the potential influence that could have led to the non-compliance.
- The Project Manager is to notify and liaise with the appropriate site personnel where required, e.g. Site Construction / Environmental Manager, Project ECoW, Project Archaeologist
- If necessary, the Project Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Incident / Complaints Form which is to record information such as the cause, extent, actions and remedial measures used following the incident/complaint. The form will also include any recommendations made to avoid reoccurrence of the incident.
- The Project Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor(s) as appropriate.
- The Project Manager is to ensure that the relevant environmental management plans/procedures are revised and updated as necessary.

10 Summary

This CEMP provides the information which will form the basis for the preparation of the final Contractor(s) developed Plan at the construction stage of the project which will implement conditions attached to any planning permission granted for the project. The requirement on the Contractor(s) to update these details has been explained, and there is a particular requirement for an update to the roles and responsibilities of those appointed on the site for the construction of the project.

Environmental Impact Assessment Report

Cummeennabuddoge Wind Farm

Technical Appendix 4-1: Annex A - Traffic Management Plan

Cummeennabuddoge Wind (DAC)

September 2024



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Executive Summary

This Traffic Management Plan (TMP) has been prepared as part of the wider Construction Environmental Management Plan.

The following measures have been identified in order to enhance road safety and minimise harmful environmental effects. The TMP addresses the routing of construction traffic, emergency measures, consents, and the enforcement of the plan. This TMP shall be further developed by the appointed Contractor.

Communication & Stakeholder Engagement - The contractor shall ensure that close communication with the relevant local authorities and the emergency services shall be maintained throughout the construction phase. The contractor shall also ensure that the local community is informed in advance of implementing traffic management measures.

Site Access & Egress - All construction traffic will access the site via the existing Coillte CGA site entrance (old N22 road alignment layby) taken directly from the N22 at Cummeenavrick, approximately 7.4km north of Ballyvourney. Adequate visibility splays shall be provided at access and egress points. Traffic Management Operatives (TMOs) shall be used for the control of traffic during access / egress operations at the wind farm site access location during the peak construction activities.

Consents - Several key consents, licenses, permissions, and notifications will be required for the proposed development including planning permission, permits for transporting abnormal loads, and permission for works outside of standard construction.

Traffic Management Signage - The contractor shall liaise with the relevant local authority for the erection of signage. Temporary signage shall be erected, indicating the site access route and access / egress points for contractors and associated suppliers. General information signage is also to be erected to inform road users and local communities of the nature and locations of the works, including project contact details.

Routing of Construction Traffic - Proposed haul routes are identified in this TMP, primarily utilising the N22. The contractor shall update the TMP with finalised haul routes at construction stage. Project construction HGV traffic will be directed away from communities and sensitive receptors.

Timings of Material Deliveries to Site - The timing of the delivery of materials to site will be co-ordinated and will be staggered in such a way that construction activities and delivery activities do not occur during peak traffic flows or run concurrently. Traffic movements will be limited to 07:00 - 19:00 Monday to Friday and 07:00 - 12:00 Saturday. HGV movements will be restricted during peak road network hours (including morning school hours) from 08.30 - 09.30 and 17.00 - 18.00 Monday to Friday.

Traffic Management Speed Limit - A speed limit of 25 kmph will be implemented on the site.

Road Cleaning - Wheel wash equipment will be used on site to minimise mud and stones being transferred from site to the public road network. Regular visual surveys of the road network in the vicinity of the sites will also be carried out. Where identified / required, the Contractor shall carry out road sweeping operations.

Enforcement of Traffic Management Plan - The TMP and the control measures therein shall be outlined in the induction process for all visitors to the site. All contractors shall be

provided with a site induction pack containing information on delivery routes and any restrictions on routes. This information will also be provided within all trade contractor tender enquiries. Regular inspections and spot checks will be carried out to ensure that all project staff and material supplies follow the agreed measures adopted in the TMP.

1 Introduction

Gavin and Doherty Geosolutions were requested by Atmos Consulting to prepare a Traffic Management Plan (TMP) as part of the wider Construction Environmental Management Plan (CEMP) for the proposed Cummeennabuddoge Windfarm which is located in the townlands of Cummeennabuddoge and Clydaghroe, Co. Kerry. The study area has been based on the location of the Proposed Development Site access point and the public road routes that will be used to reach the access point. A comprehensive desk-based study has been undertaken to understand the surrounding road network.

All general construction traffic (HGVs, abnormal loads, cars, and Light Goods Vehicles (LGVs)) will access the site via the existing Coillte CGA site entrance (old N22 road alignment layby) taken directly from the N22 at Cummeenavrick, approximately 7.4km north of Ballyvourney. The study area is therefore defined as follows:

- N22 south of Killarney to its junction with the N40;
- N40 Jct 1 to Jct 9; and
- N28 to the Ringaskiddy Port.

This TMP forms an appendix to the site Construction Environmental Management Plan (CEMP) and is a live document which will be required to be updated during the pre-construction and construction phases of the project.

1.1 Objectives

The key objectives of the TMP are as follows:

- Describe the access arrangements for the Proposed Development. Outline the road safety measures to be implemented at the access point to the site during the construction phase;
- Identify and describe the mitigation measures proposed to address potential significant environmental effects; and
- Identify to all parties the importance of adhering to the relevant guidance documentations for the proposed works

The TMP also addresses issues including consent, licenses and permissions, routing of construction traffic, temporary traffic measures, enforcement of the Traffic Management Plan and emergency procedures during construction.

1.2 Implementation

Key to the implementation of the final TMP is the dedication of an on-site construction manager (nominated by the contractor) who will regularly liaise with and update the employer's resident engineer (RE) and associated team on all environmental and construction programming issues relating to the site.

On finalisation of the plan, the contractors shall adopt the plan and associated monitoring measures. The contents of the plan shall also be communicated to all site personnel and shall form part of the site induction procedure. All deliveries, operatives and visitors to the Proposed Development Site shall report to the security gate. All site personnel are charged with following good practice and encouraged to provide feedback and suggestions for improvements.

2 Existing Road Network

All general construction traffic (HGVs, abnormal loads, cars, and Light Goods Vehicles (LGVs)) will access the site via the existing Coillte CGA site entrance (old N22 road alignment layby) taken directly from the N22 at Cummeenavrick, approximately 7.4km north of Ballyvourney. Having reviewed the road network in the area around the Proposed Development, the study area has been defined as follows:

- N22 south of Killarney to its junction with the N40;
- N40 Jct 1 to Jct 9; and
- N28 to the Ringaskiddy Port.

Table 2-1 below summarises the roads to be impacted by the proposed development.

Table 2-1: Study Area Baseline Traffic Flows

Counter Location	TII Road Link Design Category	Source	TII Capacity (AADT)	Base AADT	Base HGV	Percentage HGV
1. N22 Islandmore (north of Site entrance)	Type 1 Single (7.3m) Carriageway	TII (2019)	11,600	8,831	415	4.7%
2. N22 Ballyvourney (south of Site entrance)	Type 3 Dual (7.0m + 3.5m) Divided 2+1 lanes	TII (2019)	14,000	7,258	385	5.3%
3. N40 Cork South Ring Road (between Jct 1 & Jct 2)	Wide Motorway Divided 2+2 Lane (2X7.5m)	TII (2019)	55,500	43,036	1,463	3.4%
4. N28 Ringaskiddy (at Raffeen Bridge)	Type 1 Single (7.3m) Carriageway	TII (2019)	11,600	9,451	567	6.0%

2.1 N22

The N22 is a national primary road connecting Tralee to Cork. There are multiple settlements along the route including Killarney, Farranfore, Macroom, and Ballincollig. The access point for the Proposed Development is approximately 7.4km north of Ballyvourney.

The road is a mixture of single carriageway, dual carriageway, and 2+1 overtaking/climbing sections. The speed limit is 80-100kph except through major junctions or villages where the speed reduces to 50-60kph. The road is generally rural in nature with a narrow hard shoulder and grass verges either side of the road and a width of approximately 12m. The most easterly 11km section of road is full dual carriageway as it bypasses Ballincollig.

The Macroom to Baile Bhuirne Bypass has been completed in 2023 and will allow general construction and abnormal load vehicles to bypass the villages of Ballymakeery and Ballyvourney, the urban area of Macroom and multiple individual residential accesses.

All construction traffic will use the N22 as the access point to the Proposed Development is taken from the road. All abnormal loads will use the N22 between the N40 and the Site access. Other deliveries of materials may also come from the north or south along the N22.

2.2 N40

The N40, or South Cork Ring Road, is a national primary road linking the N22 at Ballincollig to the N25 at the Dunkettle Interchange. There are several major junctions along the route including junctions with the N71, N27, and N28.

The road is dual carriageway with grade separated junctions and the speed limit is 100kph. The road is generally urban in nature with merge and diverge sections and a narrow hard shoulder.

All abnormal loads will use the N40 between Junction 9 for the N28 and where it joins the N22. Other deliveries of materials may also come from the east and use the N40.

2.3 N28

The N28 is a national primary road connecting the Port at Ringaskiddy to the N40 South Cork Ring Road. Two settlements lie at the southern end of the route, Ringaskiddy and Shanbally.

For the majority of its length, the road is single carriageway and 100kph speed limit except for sections through settlements where the speed limit reduces to 50kph. There is a southbound overtaking lane from the exit from the N40 to the slips with the R609 and a short northbound overtaking lane at the L6477. The road is generally rural in nature with grass verges either side of the road and a width of approximately 12m, except where it passes through settlements.

All abnormal loads will use the N28 between the Port and the N40. It is unlikely any other construction traffic would utilise the N28.

3 Construction Stage Traffic Management Plan

3.1 Introduction

The Traffic Management Plan (TMP) is part of the wider Construction Environmental Management Plan (CEMP) which will be a key construction document. The CEMP will ensure that all mitigation measures, which are considered necessary to protect the surrounding environment are implemented. The commitments in the EIAR will be fully complied with by the contractor. In the event that planning permission/approval is granted, any condition(s) relating to a CEMP which may be attached by the Board to such a permission/approval, will be implemented in accordance with the requirements of the condition. The final CEMP itself will be subject to ongoing review (throughout the construction phase of the Proposed 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. Accordingly, the final CEMP will be a “live” document that will be continuously improved and updated throughout the construction.

The main contractor shall also develop a logistics plan highlighting the access point for the project, loading bay, pedestrian / vehicular segregation, welfare, storage, security, and material handling that will be enforced following full site establishment.

The final TMP shall address the following issues:

- Cumulative effects and communication
- Site Access & Egress;
- Traffic Management Signage;
- Routing of Construction Traffic;
- Timings of Material Deliveries to Site;
- Traffic Management Speed Limits;
- Road Cleaning;
- Road Condition;
- Road Closures;
- Enforcement of Traffic Management Plan
- Details of Working Hours and Days;
- Details of Emergency plan; and
- Construction Practice;

These items are explained in detail in the remainder of this section of the report.

3.2 Cumulative Effects and Communication

An application for a wind farm of up to 14 turbines was submitted to An Bord Pleanála in September 2022. The site is located approximately 11km south-west of the Proposed Development Site, and south of the N22. The turbine components are to be delivered through Ringaskiddy and take the same route to the N22 proposed in this chapter, making a 180 degree turn at the layby of the N22 before ultimately heading southbound on the N22 to the site. The anticipated year of construction is stated to be 2025, with

months 6 to 11 seeing the highest volume of predicted HGV traffic (approximately 790 – 970 vehicle movements per month, or 44 daily HGV trips).

It is not anticipated that the peak construction months of Gortyrahilly and the Proposed Development would coincide, the construction periods for both developments are likely to occur entirely separately. Gortyrahilly is estimated to start in 2025 and the Proposed Development estimated to start in 2028. This indicates there will be no significant cumulative impact along the N22. Close communication will be required with TMPs associated with the two developments.

The contractor shall ensure that close communication with the relevant local authorities and the emergency services shall be maintained throughout the construction phase. Such communications shall include:

- Submissions of proposed traffic management measures for comment and approval;
- Ongoing reporting relating to the condition of the road network and updates to construction programming; and
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic in order to implement alternative measures to avoid such conflicts.

The contractor shall also ensure that the local community is informed in advance of implementing traffic management measures. Newspaper adverts and delivering leaflets to houses shall be used to communicate such information. Contact information will be provided for members of the public to obtain additional information and to provide additional knowledge on local events, sports fixtures etc. which may conflict with proposed traffic management measures.

This process would be used to ensure that peak traffic-generating activities do not coincide and would flag whether construction HGV traffic is reaching unacceptable levels and allow action to be taken accordingly to minimise effects.

3.3 Site Access & Egress

All general construction traffic (HGVs, abnormal loads, cars, and Light Goods Vehicles (LGVs)) will access the site via the existing Coillte CGA site entrance (old N22 road alignment layby) taken directly from the N22 at Cummeenavrick, approximately 7.4km north of Ballyvourney. The south layby junction will be used as opposed to the north layby junction.

Visibility splays of a 2.4m setback over a length of 160m in both directions shall be provided and maintained in accordance with the TII guidelines. The works to provide this visibility splay will be required to be undertaken in advance of all other activities on the site utilising this access in order to ensure a safe working access for all construction vehicles on the Wind Farm.

The Contractors shall be required to utilise a safe system of traffic management, including the use of Traffic Management Operatives (TMOs) for the control of traffic during access / egress operations at the wind farm site access location during the peak construction activities. All visitors to the site will be required to take part in site induction training and will report to the security gate upon arrival at the site.

3.4 Consents

The following key consents, licenses, permissions and notifications will be required for the proposed development. The list is non-exhaustive and will be added to as required through planning compliance and stakeholder engagement.

- Permits will be required for the abnormal loads that will be required for the delivery of the turbine components and transformer to the site.
- Planning permission and compliance with the associated planning requirements.
- Road opening licences for any works in public roadways.
- Road closures and diversions.
- Approval of temporary traffic management plans.
- Permission for works outside of standard construction operation hours agreed with Cork and/or Kerry County Council.
- Permission from the Motorway Maintenance and Renewal Contractor (MMaRC) / Public Private Partnership Contractor (PPP) on the relevant national roads.

3.5 Traffic Management Signage

The principal contractor shall undertake consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements. Such signage shall be installed prior to works commencing on site.

Clear construction warning signs will be placed on the public road network to provide advance warning to road users to the presence of the construction site and slower moving vehicles making turning manoeuvres. Warning signs will also provide warning of the works access / egress locations. All permanent road signs contrary to the proposed roadworks will be covered for the duration of the works and uncovered on removal of the temporary traffic management measures. All signage shall be provided in accordance with the Department of Transport's Traffic Signs Manual, August 2019- Chapter 8 – Temporary Traffic Measures and Signs for Roadworks.

In summary, the contractor will be required to ensure that the following elements are implemented:

- Provide temporary signage indicating the site access route and access / egress points for contractors and associated suppliers.
- Consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements.
- Provide general information signage to inform road users and local communities of the nature and locations of the works, including project contact details.

3.6 Routing of Construction Traffic

The proposed haul routes are identified and discussed in detail in Section 0 of this document. These have been identified based on review of existing quarry sources, and principal road networks. The haul routes utilise the national and regional road network as much as possible. All construction traffic to the wind farm site will arrive via the N22.

The use of local roads will be minimised as much as possible, particularly to avoid / minimise the encountering of narrow road widths, poor visibility and unsuitable bearing capacities.

Project construction HGV traffic will be directed away from communities and sensitive receptors. For example, HGV traffic must avoid dense residential areas, urban centres and schools where possible to minimise the effect on these communities.

Delivery of construction materials such as concrete, fencing materials and landscaping elements are envisaged to utilise one of the existing haul routes. These materials will be sourced by the relevant Contractors. The Contractors shall be required, in the further development of the TMP, to confirm the specific sources and proposed haul routes for all material supplies.

All contractors will be provided with a site induction pack prior to commencing work on site, which will contain information on delivery routes and any restrictions on routes.

3.7 Temporary Traffic Measures

The logistics and details around each temporary traffic measure shall be developed by the Contractors in consultation with the Roads Authority, An Garda Síochána and other Emergency services, before being submitted to the Roads Authority for formal approval prior to any works taking place.

Measures to remove queuing of construction traffic on the adjoining road network including turning space and queuing of convoy HGVs will be provided within the site.

No parking shall be permitted along the access route for unloading or activities that result in blockages of access routes. Such vehicles will be immediately requested to move to avoid impeding the works and traffic on the road network. In order to prevent any obstructions on the surrounding roads, all personnel in the team shall be in contact with each other and with Site management, who in turn would have telephone contact with the subcontractors.

The maximum length of the active traffic management area for any proposed shuttle system shall be 500m. In order to minimise traffic delays, it may be necessary to limit the works site to shorter lengths if queuing delays are encountered.

It is not envisaged that there will be any requirement for traffic lane closures. However, should the need arise, this will be controlled by an active traffic management system (Stop and Go system). An Garda Síochána shall be consulted prior to the implementation of the active traffic management system. The operation of a manual Stop and Go system will be undertaken by trained personnel, wearing suitable high visibility garments. The operators of this type of system will be in verbal contact and preferably inter-visible. At these locations queue lengths will be estimated initially with onsite measurements to determine the necessary warning distance for approaching drivers. The signage shall be adjusted as necessary when the actual impact on traffic flows is established.

The optimum traffic lane width shall be 3.3m, with a minimum width of 3.0m. Reduction of the temporary traffic lane width below these parameters may result in the requirement for marshalling of larger vehicles or alternatively implementing a diversion route for traffic, which shall be approved by the Road Authority following consultation with the Road Authority, An Garda Síochána and other emergency services.

Where roadworks impede dwelling access onto the road network, the residents shall be instructed on how to egress the property at times when a shuttle system is in operation. If required the Contractor shall provide a TMO at complex accesses.

Consideration shall be given to the possibility of removing the traffic management measures in order to deal with issues such as abnormally high traffic volumes, emergency access, poor weather conditions or period where work is not in progress.

If the night-time or weekend Temporary Traffic Management (TTM) measures varies from daytime plan, a separate TTM will be prepared to be approved by the Roads Authority.

3.8 Timings of Deliveries to Site

The following measures will be implemented in order to minimise disruption to the local community:

- Traffic movements will be limited to 07:00 - 19:00 Monday to Friday and 07:00 – 12:00 Saturday, unless otherwise agreed in writing with Cork and /or Kerry County Council.
- HGV movements will be restricted during peak road network hours (including morning school hours) from 08.30 – 09.30 and 17.00 - 18.00 Monday to Friday, unless otherwise agreed in writing with Cork and /or Kerry County Council.
- HGV deliveries shall avoid passing schools at opening and closing times where it is reasonably practicable. Deliveries are restricted between the hours of 08:00 and 09:00hrs, the school morning peak and peak traffic on the road network.
- The Contractors shall liaise with the management of other construction projects and the local authority to co-ordinate deliveries.
- The Contractors shall schedule deliveries in such a way that construction activities and delivery activities do not occur during peak traffic flows or run concurrently. For example, the pouring of concrete on the same day as other large material deliveries should be avoided.
- HGV deliveries to the Development site will be suspended on the days of any major events that have the potential to cause larger than normal traffic volumes on the existing road network, in the vicinity of the works. For example, sporting events, funerals etc.

The scheduling of material deliveries is required in order to facilitate the implementation of traffic management activities at the site and the works zones within the site. It will also impact on the offsite works locations for the abnormal loads advanced works. All contractors will be required to give details of proposed timing of material deliveries to the site during the progress meetings held with all trade contractors. A convoy system shall be employed for HGVs departing the proposed Development to reduce the frequency of isolated HGV movements on the public road network as much as practicable.

3.9 Abnormal Loads

A number of abnormal loads for turbine components will be transported to site during the construction stage as detailed in Section 0. It is planned to transport these loads in convoys during nighttime. A maximum of 3 turbines (i.e., all tower, nacelle and blades) will be delivered to site per month. The convoys are expected to have 3 or 5 no. abnormal loads per convoy with deliveries over a maximum of 9 days or a minimum of 6 days.

The Contractor shall ensure that the haulage of these abnormal loads is carried out in conjunction with An Gardaí Síochána and the Roads Authorities. All necessary permissions and licences from the local authorities and Gardaí will be obtained by the Contractor.

3.10 Traffic Management Speed Limits

A speed limit of 25 kmph shall be implemented within the windfarm site. Adherence to posted / legal speed limits will be emphasised to all staff / suppliers and contractors during site induction training.

The contractor shall liaise with the relevant Roads Authority for the purpose of obtaining temporary speed limits along public roads if required.

3.11 Road Cleaning

Wheel wash equipment will be used on site to minimise mud and stones being transferred from site to the public road network.

Activities generating dust will be minimised where practical during windy conditions. Loads will be covered on arrival and departure from site, where required.

Regular visual surveys of the road network in the vicinity of the sites will be carried out. Where identified / required, the Contractor shall carry out road sweeping operations, employing a suction sweeper to remove any project related dirt and material deposited on the road network by construction / delivery vehicles.

3.12 Road Condition Survey

A pre-condition survey of roads on approach to the site will be carried out prior to construction commencement to record the condition of the road.

A post construction survey will be carried out after works are completed.

Impacts on the road condition as a result of the proposed Development will be identified, discussed with the road authority and proposals developed for the impact to be rectified and the road condition returned at least to its original condition.

The timing of these surveys will be agreed with Cork and/or Kerry County Council.

3.13 Road Closures

It is not anticipated that any full road closures will be required as the cable route does not follow existing or proposed tracks or roads.

3.14 Enforcement of Traffic Management Plan

All project staff and material suppliers will be required to adhere to the TMP. The contents of the TMP will be outlined during the site induction procedure. The contractor shall agree and implement monitoring measures to confirm the effectiveness of the TMP. Regular inspections / spot checks will also be carried out to ensure that all project staff and material supplies follow the agreed measures adopted in the TMP. The TMP and the control measures therein shall be included within all trade contractor tender enquiries to ensure early understanding and acceptance / compliance with the rules to be enforced on this project.

3.15 Details of Emergency plan

The contractor shall ensure that unobstructed access is provided to all emergency vehicles along all routes and site accesses.

The contractor shall provide contact details of the contractor's personnel responsible for construction traffic management to the local authorities and emergency services.

In the case of an emergency the following procedure shall be followed:

- Emergency Services will be contacted immediately by dialling 999 or 112;
- Exact details of the emergency / incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner;
- The emergency will then be reported to the Site Team Supervisors and the Safety Officer;
- All construction traffic shall be notified of the incident (where such occurs off site);
- Where required, appointed site first aiders will attend the emergency immediately; and
- The Safety Officer will ensure that the emergency services have responded and are on the way to the site.

3.16 Construction Practice

The TMP will also include provision by the contractor for details of intended construction, including:

- Traffic Management Co-ordinator – a competent traffic management co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management.
- Delivery Programme – a programme of deliveries will be submitted to Cork and/or Kerry County Council in advance of the delivery of the turbine components to site.
- Information to locals – local residents in the area will be informed of any upcoming traffic related matters, e.g., temporary lane/road closures (if required) or any night deliveries of turbine components, via letter drops and posters in public places. Information will include the contact details of the Developer's representative (Community Liaison Officer), who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.
- Liaison with Local Authorities – liaison with An Garda Síochána, Cork and/or Kerry County Councils and other Local Authorities, including the roads and transport section, through which the delivery route traverses during the delivery phase of the abnormal loads, wherein an escort for all convoys may be required.
- Temporary Alterations – implementation of temporary alterations to road network at critical junctions.
- Travel plan for construction workers – a travel plan for construction staff and subcontractor construction staff. Temporary traffic signs – As part of the traffic management measures, temporary traffic signs will be put in place.
- Traffic Management Operatives (TMOs) will be present at all site access points during peak delivery times.

- Delivery Times of Large Turbine Components – The Turbine Supply Contractor will include the option to deliver the larger wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.
- All vehicles using or while operating within the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights. The Traffic Management Plan (TMP) will be updated by the Contractors (on appointment) and agreed with the Planning Authorities prior to commencement of development in the event of a grant of permission.

4 Operational Phase

During the operational phase of the windfarm, the traffic generated will generally be for routine maintenance only. Should a turbine component need to be replaced, the mitigation measures outlined previously for the construction phase are to be followed. Access to the site will continue to be from the N22. The site will continue to be accessed for forestry purposes. All vehicles using the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights.

Signage on the windfarm site will be maintained throughout the operational period. A speed limit of 25kmph will continue to be applied on site.

The site accesses for construction have been designed as new or upgraded in accordance with the TII DN-GEO-03060. Therefore, adequate visibility splays are available from the accesses in both directions. Hedgerows and vegetation will need to be trimmed periodically in order to maintain the required visibility.

5 Decommissioning Phase

Following the decommissioning of the proposed windfarm at the end of the 35-year design life, the site will be decommissioned fully.

The wind turbines will be disassembled and all above ground turbine components will be separated and removed off-site for recycling. The turbine blades will be cut into manageable length and therefore there is no requirement to re-use the turbine supply route for removing them from the site. The turbine foundations will remain in place. They will be allowed to revegetate. The site roadways will continue to be used for forestry and recreational purposes.

The traffic management of the decommissioning phase will be advised by the road conditions at the time of decommissioning. It is not possible to predict the changes to the public road infrastructure and policies in the next 30-40 years.

6 Conclusion

This Traffic Management Plan (TMP) will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development. The TMP shall be further developed through the detailed design and construction phases with ongoing consultation with local authorities and other stakeholders.

This TMP shall be used by the appointed contractor as a basis for the preparation of a final TMP and shall detail, at a minimum, the items detailed in this TMP and any subsequent requirements of the local authorities.

The employer shall be responsible for ensuring that the contractor manages the construction activities in accordance with this TMP and shall ensure that any conditions of planning are incorporated into the final TMP prepared by the appointed works contractor.

Environmental Impact Assessment Report

Cummeennabuddoge Wind Farm

Technical Appendix 4-1: Annex B - Waste Management Plan

Cummeennabuddoge Wind (DAC)

September 2024



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Appendix 1: List of Licenced Waste Facilities

1 Introduction

1.1 Scope and Requirements

The WMP is a key construction contract document, which will ensure that all mitigation measures, which are considered necessary to protect the environment are implemented. The commitments in the EIAR will be fully complied with by the contractor.

In the event that planning permission/approval is granted any condition(s) relating to a WMP which may be attached by the Board to such a permission/approval, will be implemented in accordance with the requirements of the condition.

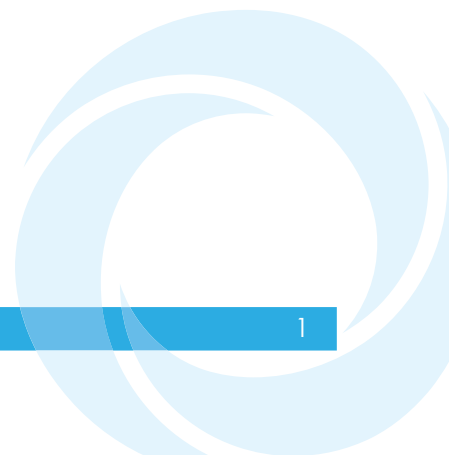
The final WMP itself will be subject to ongoing review (throughout the construction phase of the Proposed Development), through regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation.

Accordingly, the final WMP will be a “live” document that will be continuously improved and updated throughout the construction.

The Contractor is required to develop and adapt this document in line with the activities of the project being undertaken for the Development. The contractor will approve this Plan (and any future amendments of the document) with the Ecological Clerk of Works (ECoW) prior to any work commencing.

The information in this document forms an annex to the Construction Environmental Management Plan (CEMP).

The general methods and principles detailed within this document will be adhered to by the contractor as they are committed to reduce the resources it uses in the construction work of the Development.



2 Waste Prevention & Waste Regulations

In 2012, the Department of the Environment, Community and Local Government published the Waste Management Policy in Ireland (DoECLG, 2012). One of its guiding principles is to minimise waste.

The Waste Hierarchy (Directive 2008/98/EC) which contractors are obligated to follow is shown below (European Commission, 2008).



The Waste Hierarchy: (Source: EC1):

The waste management hierarchy applies to all waste, including hazardous waste. The top of the hierarchy indicates that the priority should be in preventing waste being produced in the first place. Measures which will be taken in order to achieve this are as follows:

The Contractor will:

- Ensure that the disposal and recovery of waste does not present a risk to water, air, soil, plants and animals;
- Not allow waste disposal to constitute a public nuisance through excessive noise levels or unpleasant odours, or to degrade places of special natural interest;
- Prohibit the dumping or uncontrolled disposal of waste;
- Maintain this Waste Management Plan as a live document and revise as and when required;
- Ensure that waste treatment operations are licensed;
- Require waste collection to be carried out by licensed waste contractors

- Keep records provided by waste contractors of all waste removed from site;
- Ensure that the waste which cannot be prevented, re-used, recycled or recovered is disposed of without causing environmental pollution;
- Ensure all workers on-site at the Proposed Development will be fully briefed with the Waste Management Plan. All site visitors will be briefed on appropriate waste storage and disposal units; and
- Ensure littering on site is not tolerated. All personnel have a Duty of Care to challenge others noted littering on site.

The EU Integrated Pollution Prevention and Control Directive (Directive 2010/75/EU) provides for a permit system for activities including waste management. In adherence with this Directive the Contractor must:

- Be in possession of a waste permit for waste disposal; and
- Be prepared at all times for inspection from the ECoW regarding monitoring of waste activities.

2.1 Benefits of Waste Prevention

The contractor will prevent waste through implementing reduction and effectively managing resources from the design stage, to construction, to the completion of the construction of the project. This will ensure that:

- Legal obligations are met;
- Waste production is minimised;
- Build costs are minimised;
- A framework for continuous assessment and best practice is implemented; and
- Carbon emissions and negative environmental impacts of and from waste materials are reduced.

2.2 Further Reference Documentation

The following guidance documents have been used to develop this WMP:

- Waste Management Act 1996-2008;
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, Department of Environment, Heritage & Local Government, July 2006; and
- EU Directive: Article 4 of Waste Framework Directive (Directive 2008/98/EC).

3 Waste Management Plan

A Waste Management Plan involves the following stages:

- Planning;
- Implementation;
- Monitor; and
- Review.

3.1 Planning

The planning stage of the Proposed Development has considered the nature of the site, design of the wind farm, environmental considerations and construction methods to minimise the quantity of waste produced on site during construction.

For more information on design considerations see Chapter 3: Design Evolution and Consideration of Alternatives.

For more information on quantities of waste produced as a result of the Proposed Development see Chapter 16: Material Assets (incl. Telecommunications and Aviation).

3.2 Implementation

This Waste Management Plan will include:

- An inventory of waste type expected to be produced in the course of the Proposed Development;
- A statement showing how the contractor will minimise each type of waste to be produced prior to any activity generating this waste; and
- Procedures for identification of the waste management actions proposed for each different waste type, including re-using, recycling, recovery and disposal (in accordance with the waste hierarchy priorities).

3.3 Monitoring

3.3.1 Waste Inventory

A waste inventory will be maintained and kept up to date. It will include an inventory of all waste materials leaving the site for disposal and the name of the licensed operator and intended disposal facility. The Waste Inventory Spreadsheet can be found in Appendix A of this Waste Management Plan, the initial inventory has been added, this will be updated further by the Contractor.

3.3.2 Monitoring and Site Waste Management Plan

The contractor will appoint a person to implement and monitor the Waste Management Plan. This will be the Ecological Clerk of Works.

As stated, the Waste Management Plan will include an inventory of the types and estimates of the waste to be produced on site. The appointed person will ensure that a Site Waste Audit is carried out every six months.

All stores on site of oil, fuel, chemicals etc will be regularly checked (in particular in extreme weather conditions) for evidence of leaks or spills.

Records of all visual checks will be maintained and be available for inspection on request. Waste Management will be a regular item on team meetings as required by Technical Appendix 4-1 CEMP. Waste Management Practices will be revised at these meetings. A waste audit will be carried out every six months

3.4 Review

Upon completion of construction works but before the end of the defects correction period, a Waste Management Review will be undertaken. The aim of this is to identify project progress, measure compliance with licenses and to consider lessons learnt.

A Waste Management Review will be carried out at the end of construction.

4 Anticipated Construction Waste Streams

The anticipated quantities and types of waste produced by the Proposed Development has been assessed in Chapter 16: Material Assets. Management practises for these identified waste streams are found below:

4.1 Waste from Staff Facilities

Staff facility waste generation will be composed of the typical waste generated in an office environment, such as left-over food and sandwich wrappers. This is a non-hazardous waste.

4.1.1 Sanitary Waste

Sanitary waste will be collected in self-contained port-a-loo units. This is a non-hazardous waste. There will be no on-site treatment of sanitary waste permitted.

4.2 Chemicals, Fuel and Oils

Oil waste and diesel are classified as hazardous waste. There is no expected chemical/fuel/oil waste other than from absorbent materials containing small amounts of residual oil used to clean up small incidental spillages and residual amounts in containers.

4.3 Packaging

Packaging will be brought on site and can include cardboard, wood and plastics used to package turbine components. This waste is non-hazardous.

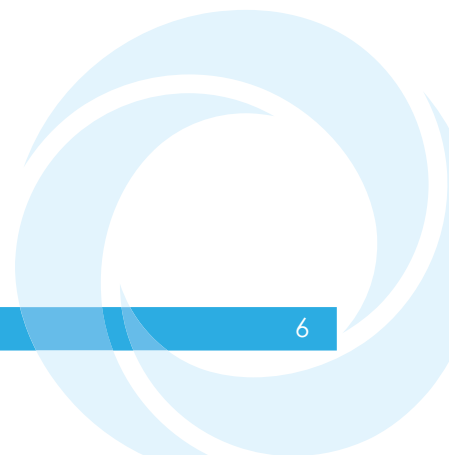
4.4 Waste Metals

Waste Metal resulting from concrete reinforcement in the turbine bases will have commercial value and will be re-used or recycled with an appropriately licensed waste contractor. This waste is non-hazardous.

4.5 Excavated Materials

Excavated materials will be required for habitat and ecological restoration, reprofiling and backfilling. There is no surplus excavated material that will require removal from within the site boundary.

As such, excavated materials are not classified as waste, as per the Waste Management Act 1996 (as amended). For more information see Technical Appendix 10-3 Peat Management Plan.



5 Waste Management Principles

5.1 General Principles

- The Contractor will abide by the waste hierarchy as shown in Section 2;
- Waste will be stored a minimum of 65m from nearby watercourses or drains at the Site;
- Waste storage and disposal will be carried out in a way which prevents pollution in compliance with legislation;
- All waste which requires disposal will be transported off-site to a licensed disposal site. The nearest licenced waste facility is over 28km to the east of the Site in Coolcaslagh (Civic Amenity Services). A list of other waste facilities within the vicinity of the Development has been included in Appendix B. Duty of care waste control dockets must be produced and filed on site with each load. These MUST detail:
 - An adequate description of the waste;
 - Where the waste came from;
 - The appropriate code from the List of Wastes Regulations for the waste (commonly referred to as the European Waste Codes);
 - Information on the quantity and nature of the waste and how it is contained;
 - Names and addresses of the transferor at Cummeennabuddoge Wind Farm (the person currently in control of the waste) and the transferee (usually either a registered waste carrier or a waste management licence holder (waste manager);
 - Where applicable, indicate that the Waste Hierarchy has been complied with;
 - The place, date and time of transfer of the waste. If using a season ticket, the period for which it is valid (i.e., valid from dd/mm/yyyy to dd/mm/yyyy);
- Only trained operatives will handle hazardous substances. All stored hazardous waste will be clearly labelled. All hazardous waste will be stored in a designated location within the contractor compound. The hazardous waste will be stored in a manner which will prevent their escape into the environment;
- Waste storage areas will be clearly located and signed. Key waste streams will be separated;
- All waste will be transported from site at appropriate frequency by a registered waste contractor to prevent over-filling of waste containers;
- Frequency of Checks. The contractor will ensure that all storage facilities are checked on a weekly basis.

5.2 General Waste Generated at Staff Facilities

All such waste will be stored in appropriate containers to prevent un-intentional release due to wind, rain and wild animals that often tear apart rubbish bags. Provision for separation of waste streams will be provided.

For instance, separate containment will be provided for food waste, recyclable paper, plastic and cardboard and glass.

5.2.1 Sanitary Waste

The self-contained port-a-loo units will be managed and serviced regularly (by removal of the contents by tanker to a designated sewage treatment plant via the site access tracks such as Millstreet Wastewater Treatment Plant. The port-a-loo units themselves will be removed off site at the end of the construction phase.

5.3 Chemicals, Fuels & Oils

All storage containers of over 200 litres will have a secondary containment of 110% capacity to ensure that any leaking oil is contained and does not enter the aquatic environment.

A Chemical and Waste Inventory will be kept. This inventory will include:

- List of all substances stored on-site (volume and description);
- Procedures and location details for storage of all materials listed;
- Waste disposal records, including copies of all Waste Transfer Notes detailing disposal routes and waste carriers used;
- Any tap or valve permanently fixed to the mobile unit through which oil can be discharged to the open or when delivered through a flexible pipe which is fitted permanently to the mobile unit, will be fitted with a lock and locked shut when not in use;
- Sight gauges will be fitted with a valve or tap, which will be shut when not in use. Sight gauge tubes, if used will be well supported and fitted with a valve; and
- Mobile units must have secondary containment when in use on site.

Where mobile bowzers are used on site guidelines will be followed so that:

- Any flexible pipe, tap or valve will be fitted with a lock where it leaves the container and be locked shut when not in use;
- Flexible delivery pipes will be fitted with manually operated pumps or a valve at the delivery end that closes automatically when not in use. Where possible, a nozzle designed to dispense oil is used; and
- The pump or valve will have a lock and be locked shut when not in use.

5.4 Packaging

In accordance with the waste hierarchy, packaging will be returned to the originator ahead of re-use or recycling. Where this is not possible, waste will be separated as appropriate and safely stored on Site in anticipation of recycling.

5.5 Waste Metals

Waste metal will be re-used or recycled with an appropriately licensed waste contractor.

5.6 Pest Control

Responsible rodenticide use will be practiced on site, and rodenticide will only be used if required. Pest control will be undertaken only by trained professionals and covered

baits will be used to prevent risks to non-target species. Additional best practice methods include:

- Good house-keeping and proper waste management practices will ensure there are no food sources available to vermin;
- Rodenticide baits will only be used for as long as is necessary to achieve satisfactory control;
- A record of all bait points and the amount of bait laid will be maintained during the treatment. Activity will be noted at each bait point, including any missing or disturbed baits, as the treatment progresses;
- By carefully recording the sites of all bait points, responsible users of rodenticides will return to these sites at the end of the treatment and remove uneaten bait so that it does not become available to wildlife;
- Regular searches for rodent bodies will be carried out, both during and after the treatment period. Bodies may be found for several days after rats have eaten the bait and rats may die up to 100 metres or more away from the baited site;
- Any rodent bodies will be removed from the site and disposed of safely using the methods recommended on the label;
- Bait stations will be appropriate to the prevailing circumstances. They will provide access to the bait by rodents, while reducing the risks of non-target access and interference by unauthorised persons. They will protect the bait from contamination by dust or rain. Their design, construction and placement will be such that interference is minimised; and
- On completion of the treatment, records will be updated to signify that the infestation is controlled and that, as far as reasonably practical, all steps have been taken to ensure that the Site is now free of rodenticide bait.

6 References

Department of the Environment, Community and Local Government (2012). Waste Management Policy. Available at: **Error! Hyperlink reference not valid.** [Accessed 01/11/2023]

European Commission (2008).

EU Directive: Article 4 of Waste Framework Directive (Directive 2008/98/EC). Available at: https://ec.europa.eu/environment/topics/waste-and-recycling/waste-framework-directive_en [Accessed 03/05/2022]

Waste Management Act (1996). Available at:

<https://www.irishstatutebook.ie/eli/1996/act/10/section/1/enacted/en/html#sec1>

[Accessed: 01/11/2023]

Appendix A. Waste Inventory

The contractor will prepare and append a waste inventory to this document, it will be updated regularly.

Appendix B. Licenced Facilities

Table 1: Licensed Waste Facilities - County Kerry

Authorisation Reference	Name	Trading As	Address
WFP-KY-15-0007-03	Killarney Waste Disposal Unlimited Company		Sheans East, Killarney, Co. Kerry
WFP-KY-17-0006-02	Eugene McCarthy	Brendan Cronin Plant Hire	Deerpark, Killarney, Co. Kerry
WFP-KY-20-0006-01	Liebherr Container Cranes Ltd	Liebherr Container Cranes Ltd	Knoppoge, Killarney, Co. Kerry
WFP-KY-20-0004-01	ML Lynch Civil Engineering Ltd		Brewsterfield, Headford, Killarney, Co. Kerry
WFP-KY-20-0008-01	Jimmy O'Mahony		Gortanahaneboy East, Rathmore, Co. Kerry
WFP-KY-20-0001-01	Healy Rae Plant Hire Ltd		Coologes, Kilgarvan, Co. Kerry
COR-KY-11-0008-03	Brian Bruton		Dromdoohig More, Killarney, Co. Kerry
WFP-KY-18-0007-02	Kenmare Plant Hire Ltd		Claddanure West, Kenmare, Co. Kerry
WFP-KY-18-0001-02	Higgins Waste & Recycling Services Ltd		Knockanacuig, The Kerries, Tralee, Co. Kerry, V92 Y519
WFP/L/2022/50/R5/T1	McDonnell Farms Biogas Ltd	GreenGas AD Plant	Dunmoylan, Shanagolden, Co. Limerick, V94 VE0H

Environmental Impact Assessment Report

Cummeennabuddoge Wind Farm

Technical Appendix 4-1: Annex C - Decommissioning Plan

Cummeennabuddoge Wind (DAC)

September 2024



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1 Decommissioning Plan

1.1 Introduction

This Decommissioning Plan has been prepared for the proposed Cummeennabuddoge windfarm and associated infrastructure (the Proposed Development). This document is prepared alongside as part of the Environmental Impact Assessment (EIA) Report as part of the application for Consent to An Bord Pleanála.

This Plan provides the environmental management framework to be adhered to during the decommissioning phase of the Proposed Development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.

As noted in the NatureScot (formerly Scottish Natural Heritage) report Research and Guidance on Restoration and Decommissioning of Onshore Windfarms (SNH, 2013) reinstatement proposals for a wind farm are made approximately 30 years in advance, so within the lifespan of the wind farm.

Due to the efficiency of modern-day turbines, it is estimated that their lifespan will be 35 years. The technological advances and preferred approaches to reinstatement are likely to change in the intervening decades.

In this respect, this Decommissioning Plan will be reviewed and updated prior to the commencement of decommissioning works towards the end of the anticipated operational life of the Proposed Development. It will take into account the relevant conditions of the Consent and current health and safety standards at the time in accordance with the approach set out and principles established by this document.

1.1.1 Scope of the Decommissioning Plan

This plan for the decommissioning of the Proposed Development includes the connection to the electricity grid. For the purpose of this plan 'The Site' refers to the full extent of the Proposed Development including the red line boundary, site access, turbines and infrastructure, and the grid route to Ballyvouskill.

The Decommissioning Plan outlines the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner.

The report is divided into seven sections, as outlined below:

- **Section 1.1** provides a brief introduction to the scope of the report.
- **Section 1.2** outlines the Site and Project details, including the targets and objectives of this plan along with providing an overview of works methodologies that will be adopted throughout decommissioning.
- **Section 1.3** sets out details of the environmental controls to be implemented on Site including the mechanisms for implementation. A waste management plan is also included in this section.
- **Section 1.4** outlines the environmental management implementation procedures, including roles and responsibilities on the Site.

- **Section 1.5** outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of Site health and safety and environmental protection.
- **Section 1.6** sets out a programme for the timing of the works.
- **Section 1.7** consists of a summary table of all mitigation measures to be adhered to during the decommissioning phase.
- **Section 1.8** outlines the proposals for reviewing compliance with the provisions of this report.

1.2 Site and Project Details

1.2.1 Site Location and Description

The Proposed Development Site is centred on Grid Reference W 19846 83148 and occupies an area of approximately 765Ha (shown bounded by the red line on Figure 1-1a). The site lies within existing commercial forestry, located on land at Clydaghroe and Cummeenabuddoge, Clonkeen, almost entirely within County Kerry, although a proportion of the grid connection cabling and works along the turbine delivery route is proposed within County Cork.

The Proposed Development consists of 17 wind turbines with a maximum tip height of 200 metres (m) and total overall installed capacity ranging from a minimum of 102MW up to a maximum 122.4MW. The development also comprises associated infrastructure including hardstandings, cabling and access roads.

The proposed access route passes from the N22 through the townlands of Cummeenavrick and Glashacormick, Co. Kerry, and travels along existing forestry tracks. The tracks within 1.5km of the N22 are steep, climbing from an elevation of 250m OD to approximately 380m OD.

Export of electricity from the Proposed Development to the national electricity grid will be via a 110kV underground cable from the onsite substation to the existing Ballyvouskill 220/110kV substation, a distance of approximately 3.3km east of the Proposed Development.

1.2.2 Description of the Decommissioning

Decommissioning works are expected to consist of the following:

- Removal of 17 turbines;
- Removal of the permanent meteorological mast;
- Removal of all associated underground electrical and communications cabling connecting the wind turbines to the wind farm substation. Ducting will remain in-situ.

All other elements of the proposed development will remain in-situ. The site access roads and associated drainage systems will serve ongoing forestry activity in the area. All other hard surfaced areas such as the turbine hardstands, will be allowed to revegetate naturally.

Based on the experience of the project team monitoring operational wind farm sites throughout the country, the approach of allowing these areas to revegetate naturally has proven to be very successful.

Cranes of similar size to those used during construction will disassemble each turbine using the same crane hardstands. The towers, blades and all above ground components will be removed from site and reused, recycled, or disposed of in a suitably licensed facility. The financial costs of decommissioning, at current material values, will be more than met by the recycling value of the turbine components.

Turbines will be cut on site as to fit on articulated trucks, therefore allowing the use of the civil construction delivery route for the removal.

The following elements are included in the decommissioning phase:

- Decommissioning works will be limited to action necessary to remove the wind farm structures, i.e., removal of turbines, cabling and monitoring mast;
- Existing hardstands will be utilised to act as a temporary compound for the appointed Contractor;
- Roads and associated drainage systems will remain in place to serve ongoing forestry and agricultural activity. Hardstanding areas will be allowed to revegetate naturally; and
- Soil disturbance will be avoided.

1.2.3 Targets and Objectives

This Decommissioning Plan has considered environmental issues as listed in Section 4.3 below.

The key targets are as follows:

- Ensure decommissioning works and activities are completed in accordance with mitigation and best practise approach presented in the CEMP and EIA Reports and associated planning documentation;
- Ensure decommissioning works and activities have minimal effect/disturbance to local landowners and the local community. This will relate to transport, particularly of material off Site with noise and dust also affecting receptor at time of decommissioning to a lesser extent;
- Ensure decommissioning works and activities have a minimal impact on the natural environment. Disturbance to habitats will be avoided and the use of existing infrastructure and drainage will ensure silt does not enter waterways;
- Adopt a sustainable approach to decommissioning. This means comparing alternative methods for turbine disassembly and taking the approach with the least impact on the natural environment; and
- Provide toolbox talks, environmental training and awareness of sensitive receptors and waste management within the Site for all project personnel.

The key Site objectives are as follows:

- Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and have emergency measures in place, in

accordance with the Water Quality Management Plan. Similar mitigation measures to the construction phase will be implemented;

- Avoidance of vandalism;
- Keeping all watercourses free from obstruction and debris;
- Sustainable drainage system/drainage design principles will be maintained and monitored to ensure efficiency;
- Keep effects of decommissioning works to a minimum on the local environment, namely watercourses and wildlife through to use of defences such as buffers and silt fences;
- Correct fuel storage and refuelling procedures to be followed;
- Good waste management and housekeeping to be implemented;
- Air and noise pollution prevention to be implemented; and
- Monitoring of the works and any adverse effects that it may have on the environment.

Further details on the above are discussed in Section 4.3 onwards.

1.2.4 Decommissioning Methodologies Overview

An experienced Contractor will be appointed to undertake the decommissioning of the Proposed Development. The Contractor will comply with the mitigation measures of the CEMP prepared for the construction phase as updated and adjusted to allow for the specific decommissioning activities. An overview of the decommissioning methodologies is provided below.

Decommissioning Methodology

The proposed decommissioning methodology is summarised under the following main headings:

- Wind Turbines
- Turbine Foundations; and
- Underground Cabling

Wind Turbines

Prior to any works being undertaken on wind turbines, they will be disconnected from the grid by the site operator in conjunction with ESB Networks and EirGrid. The dismantling and removal of wind turbines of this scale is a specialist operation which will be undertaken by the turbine supplier or competent subcontractor. Turbine dismantling will be undertaken in reverse order to the construction methodology.

Cranes will be brought to Site and installed using the existing hard stand areas. The dismantling of turbines will be bound by the same safety considerations as will be the case during construction in terms of weather conditions. Works will not be undertaken during adverse weather conditions and in particular, not during high winds.

The turbine blades will be cut on Site and removed in articulated trucks.

The transport of disassembled turbines from the Site will be undertaken in accordance with a Transport Management Plan. The Transport Management Plan will provide for all necessary safety measures, including a convoy and Garda escort as required, of-peak turning/reversing movements and any necessary safety controls.

The Met mast will also be removed as its purpose will cease once the turbines have been dismantled and removed. In addition, the Met Mast is solely a requirement of the operational phase to satisfy EirGrid's requirements.

Turbine Foundations

On the dismantling of the turbines, it is not intended to remove the concrete foundations from the ground. It is considered that their removal will be the least preferred options in terms of the potential effects on the environment.

The above ground turbine plinths will be removed and hardcore from the hardstands will be used to cover the plinth area. The hardcore covering turbine foundations will be allowed to revegetate naturally.

Underground Cabling

The cabling on Site will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it onto a cable drum. This will be undertaken at each of the joint bays/pull along the cable.

The ground above original pulling pits/joint bays will be excavated to access the cable ducts using a mechanical excavator and will be fully re-instated once the cables are removed. Excavated material will be temporarily stockpiled adjacent to the site of excavation at a height less than 1m and at 25m distance from any watercourse.

The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible with no environmental impact.

The onsite substation and associated grid connection will remain in place as it will be under the ownership of the ESB and will form a permanent part of the national electricity grid.

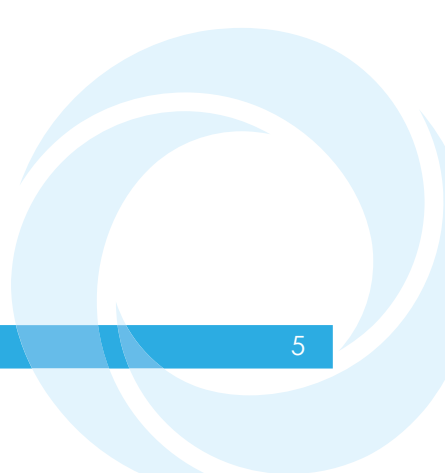
Transport Route Accommodation Works

Turbines will be cut at the hardstand locations on Site so as to fit on articulated trucks, therefore allowing the use of the civil construction delivery route for removal.

1.3 Environmental Controls

The following sections give an overview of the drainage design, dust and noise control measures, a waste management plan for the Site and the implementation of the environmental management procedures for the site. Based on the nature and extent of the decommissioning works these are the key On-Site controls that are applicable at decommissioning.

Associated mitigation measures are described in Section 4.7.



1.3.1 Site Drainage

The site drainage features for the Site during its construction and operation are outlined in the EIA and Surface Water Management Plan which accompany the application. This document has been prepared on a preliminary (outline) basis and will be further developed and expanded following the appointment of the Contractors for the main construction/decommissioning works.

Some items of this plan can only be finalised with appropriate input from the Contractors who will actually carry out the main construction/decommissioning works. This plan identifies, for the incoming contractors, the key planning, environmental and contract document constraints that must be adhered to in order to deliver optimum environmental reassurance for the Site.

As stated in Section 4.2.2 above, the drainage system will serve ongoing activity in the area.

When the final Decommissioning Plan is prepared prior to decommissioning and presented as a standalone document, all drainage management measures, which will include maintenance of the operational drainage measures, will be included in that document.

However, it should be noted that by the time decommissioning is undertaken after the planned 35-year lifespan of the Proposed Development, the areas within the Site will have revegetated substantially resulting in a drainage pattern similar to what existed prior to any construction.

It is not anticipated that the decommissioning phase will interrupt this drainage regime in any way with the works proposed. As an additional measure, areas where freshly placed soil material, as part of excavation works, will be surrounded with silt fencing if deemed necessary until the area has naturally revegetated, e.g., near joint bays.

1.3.2 Refuelling; Fuel and Hazardous Materials Storage

The plant and equipment used during the decommissioning will require refuelling during the works. Appropriate management of fuels will be required to ensure that incidents relating to refuelling are avoided. The following mitigation measures, which are the same as those proposed for the construction phase, are proposed to avoid release of hydrocarbons at the Site:

- Road-going vehicles will be refuelled off-site wherever possible;
- On-site refuelling will be carried out at a designated refuelling area at the temporary decommissioning compound at the Site. Existing hardstands will be utilised to act as a temporary compound for the appointed Contractor. Machinery such as cranes will be refuelled directly by a mobile fuel truck that will come to the Site as required. Drip trays will be used in such circumstances;
- Only designated trained and competent operatives will be authorised to refuel plant on Site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;
- Fuel volumes stored on Site will be minimised. The fuel storage areas will be bunded to 110% of the storage volume;
- The plant will be regularly inspected for leaks and fitness for purpose;

- An emergency plan for the decommissioning phase to deal with accidental spillages will be developed. Spill kits will be available to deal with an accidental spillage in and outside the refuelling area; and
- A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.

1.3.3 Dust Control

See Chapter 12: Air and Climate for further information and the dust assessment.

Dust is unlikely to be generated in significant amounts from on-site activities during decommissioning. The extent of dust generation will depend on the type of activity undertaken, the proximity of activities to receptors and the nature of the dust, i.e., soil, and the weather.

In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Site traffic movements also have the potential to generate dust as they travel along the haul road.

Proposed measures, which are the same as those proposed for the construction phase, to control dust include:

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately in order to prevent damage/leakage, and to prevent dust emission; and
- Avoid explosive blasting, using appropriate manual or mechanical alternatives whenever practicable.
- Use water-assisted dust sweepers(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaces haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving to site where reasonable practicable);
-

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager;
- Display the head or regional office contact information;
- Record all dust and air quality complaints, identify causes, take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on or off site, and the action taken to resolve the situation in the log book;
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the Proposed Development boundary, with cleaning to be provided if necessary;
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barrier and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on site keep them covered;
- Cover, seed or fence stockpiles to prevent wind whipping;
- Ensure all vehicles switch off engines when stationary – no idling vehicles;
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost a maximum speed limit of 15mph and 10mph on unsurfaced access tracks and work areas;
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, for example suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the Proposed Development for effective dust/particulate matter suppression, using non-potable water where possible and appropriate;
- Use enclosed chutes, conveyors and covered skips;
-
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- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate;
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods; and
- Avoid bonfires and burning of waste materials.

1.3.4 Noise Control

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

Proposed measures, which are the same as those proposed for the construction phase, to control noise include:

- Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts;
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used on-site will be modern equipment and will comply with the S.I. No. 359/1996 – European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations;
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works;
- Compressors will be of the “sound reduced” 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;
- Machines, which are used intermittently, will be shut down during those periods when they are not in use;
- Training will be provided by the Site Manager to drivers to ensure smooth machinery operating/driving and to minimise unnecessary noise generation; and
- Local areas of the haul road will be condition monitored and maintained, if necessary.

1.3.5 Invasive Species Management

Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the Site to identify invasive species where any excavation will be required. An Invasive Species Management Plan will be implemented if invasive species are identified.

1.3.6 Traffic Management

A Traffic Management Plan will be prepared in advance of any decommissioning works. The traffic management arrangements for the removal of turbines although similar to those that will be implemented for construction materials delivery (to a lesser extent) as outlined in the EIA, will be agreed in advance of decommissioning with the competent authority.

The Traffic Management Plan for the decommissioning phase will also include provisions for the removal of underground cables from the ducts within the Site. Cables in public roads will be left in-situ as they will be the responsibility of the ESB.

Turbine tower, blades and any other oversized components will be cut up and transported out of the site during the decommissioning phase. The turbine nacelle will be disassembled and transported out of the site on HGVs therefore abnormal loads will not be required.

1.3.7 Waste Management Plan

The Waste Management Plan will be developed based on the construction phase plan produced as part of the EIA Report updated to reflect the legislation and best practice in force at the time. The key principles are likely to be similar to those in force at present as outlined below.

Legislation

The Waste Management Act 1996 as amended requires that any waste related activity has to have all necessary licenses and authorisations.

It will be the duty of the Waste Manager on the Site of the Cummeenabuddoge Wind Farm to ensure that all contractors hired to remove waste from Site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility.

The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations. Waste removal-related traffic during the decommissioning phase, will be similar or less than those anticipated and assessed for the construction phase.

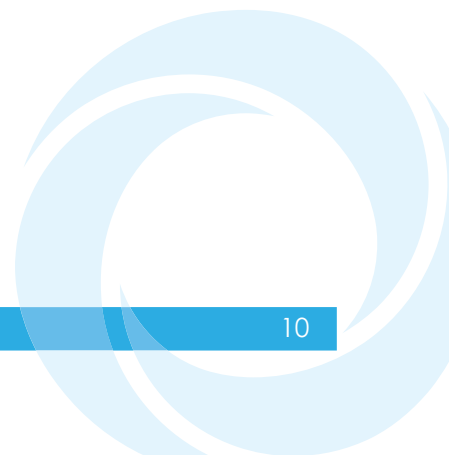
The Department of the Environment provides a document entitled "Best Practise Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (2006). No demolition will take place on the Site.

Waste Management Hierarchy

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

1. **Prevention and Minimisation**

The primary aim of the Waste Management Plan will be to prevent and thereby reduce the amount of waste generated.



2. Reuse of Waste

No material is likely to be reused on site during the decommissioning phase. Materials such as cabling will be reused off-site.

3. Recycling of Waste

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

4. Disposal of Waste to Landfill

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

Waste Arising from Decommissioning

The relevant components will be removed from site for re-use, recycling or waste disposal. Any structural elements that are not suitable for recycling will be disposed of in an appropriate manner. All lubrication fluids will be drained down and put aside for appropriate collection, storage, transport and disposal. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licensed contractor.

The waste types arising from the decommissioning of the Proposed Development are outlined in Table 4-1 below.

Table 1-1: Waste Types Arising during the Decommissioning Phase

Material Type	Example	EWC Code
Cables	Electrical wiring	17 04 11
Metals	Copper, aluminium, lead, and iron	17 04 07
Fibreglass	Turbine blade components	10 11 03
Hydrocarbons	Oils and lubricants drained from the turbines	13 01 01, 13 02 04

Reuse

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

- Electrical wiring can be reused on similar wind energy projects; and
- Elements of the turbine components can be reused but this will be determined by the condition that they are in.

Recycling

If a certain type of material cannot be reused, then recycling is the most suitable option. The opportunity for recycling during decommissioning will be limited and restricted to components of the wind turbines and met mast.

All wastes will be sorted and segregated on-site during the time of decommissioning. The anticipated volume of all waste material to be generated at the Proposed Development is low which provides the justification for adopting small containers as a method of waste storage.

Implementation

Roles and Responsibilities

An Ecological Clerk of Works will have responsibility for overseeing and the implementation of the objectives of the Decommissioning plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to.

The person nominated will have sufficient authority so that they can ensure everyone working on the decommissioning adheres to the management plan.

Training

All employees working on site during the decommissioning phase of the project will be trained in materials management and thereby, will be able to:

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

Record Keeping

The Waste Management Plan will provide systems that will enable all arisings and movements of construction waste to be recorded. This system will enable the contractors to measure and record the quantity of waste being generated. The Waste Management Plan can then be adapted with changes that are seen through record keeping.

Waste Management Plan Conclusion

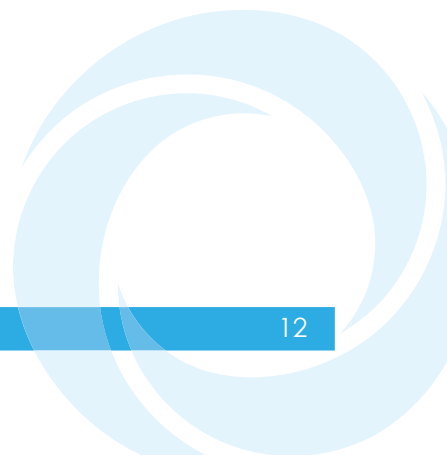
The Waste Management Plan will be properly adhered to by all staff involved in the project and will be outlined within the induction process for all site personnel. Reuse of certain types of decommissioning wastes will cut down on the cost and requirement of raw materials at other sites therefore further minimising waste levels going to landfill. This Waste Management Plan outlines the main objectives that are to be adhered to.

1.4 Environmental Management Implementation

1.4.1 Roles and Responsibilities

The Site Manager and Environmental Clerk of Works (ECoW) will be key members of the Contractors team.

In general, the ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Subcontractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with the Kerry County Council and other statutory bodies as required.



A suitably qualified and experienced ecologist and any other suitably qualified and experienced professionals such as engineers and geotechnical experts will further advise the ECoW and Site Manager. This will ensure there is no negative effect on the environment as a result of the decommissioning of the Proposed Development.

1.5 Emergency Response Plan

An Emergency Response Plan provides details of procedures to be adopted on the event of an emergency in terms of site health and safety and environmental protection.

1.5.1 Emergency Response Procedure

The site Emergency Response Plan includes the response required and the responsibilities of all personnel in the event of an emergency. The Emergency Response Plan will require updating and submission from the Contractor/Project Supervisor Decommissioning Stage (appointed to manage and co-ordinate health and safety matters during the construction stage) and subcontractors as decommissioning progresses.

Where subcontractors are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the subcontractors Emergency Response Plan within this document.

Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Supervisor/Construction Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure.

The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4.1 below. This will be updated throughout the various stages of the project.

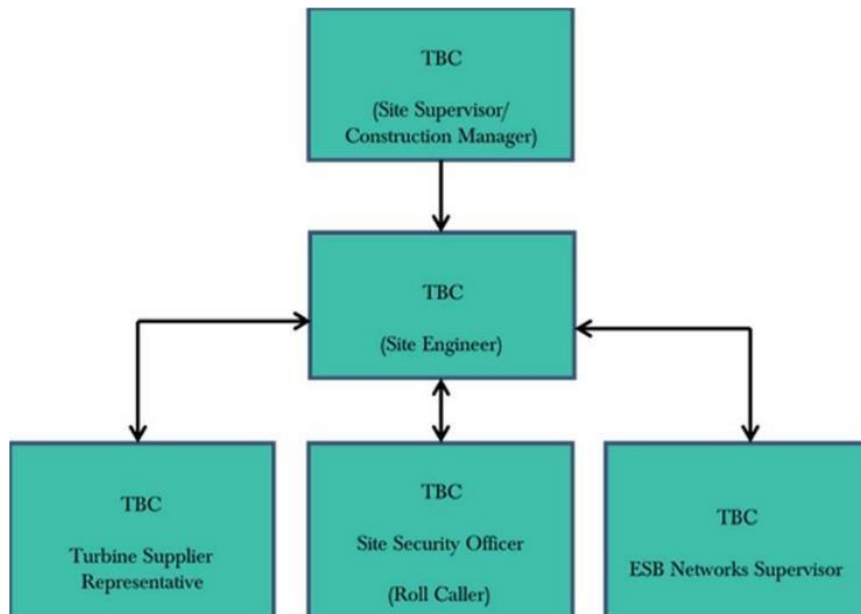


Figure 1.1 Emergency Response Procedure Chain of Command

Initial Steps

The following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 1-2: Hazards Associated with Potential Emergency Situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury
Peat instability	Excessive movement of peat on Site; onset of peat slide
Abrasive wheels / Portable tools	Entanglement, amputation or electrical shock associated with portable tools
Contact with services	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire
Falls from height including falls from scaffold towers, scissor lifts, ladders, roofs and turbines	Injury to operative after fall from height
Sickness	Illness unrelated to Site activities of an operative e.g. heart attack, loss of consciousness, seizure
Turbine specific incident	This will be included in the turbine manufacturers emergency response plan.

In the event of an emergency situation such as the hazards outlined in Table 4-2 the Site supervisor/Construction Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, who have been injured or are at risk of injury;
- here necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site. The Site Supervisor/Construction Manager must proceed to the assembly point if the emergency poses any significant threat to their welfare

and if there are no injured personnel at the scene that require assistance. The Site Supervisor/ Construction Manager will be required to use their own discretion at that point. In the case of fire, the emergency evacuation of the turbines and substation should proceed, without exception. The site evacuation procedure is outlined below;

- Make safe the area if possible and ensure that no identifiable risk exists with regard to dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured;
- Contact the required emergency services or delegate the task to someone. If delegating the task, ensure that the procedures for contacting the emergency services as set out in Section 4.5.1 is followed;
- Take any further steps that area deemed necessary to make safe or contain the emergency incident e.g., cordon off an area when an incident associated with electrical issues has occurred;
- Contact any regulatory body or service provider as required e.g., ESB Networks. The numbers for which are provided in Table 4-3 below; and
- Contact the next of kin of any injured personnel where appropriate.

Site Evacuation/Fire Drill

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

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

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

Excessive Peat Movement

The wind farm infrastructure has been designed such that peat will be stable (see EIA Technical Appendix 10-3 Peat Management Plan). No excessive excavation works are proposed for the decommissioning phase.

In the unlikely event of excessive peat movement or continuing peat movement recorded at a monitoring location, or identified at any location within the Site, but no apparent signs of distress to the peat (e.g., cracking, surface rippling), not as a result of the decommissioning of the wind farm, then the following shall be carried out:

- All decommissioning activities shall cease within the affected area;

- Increased monitoring at the location shall be carried out. The area will be monitored, as appropriate, until such time as movements have ceased;
- Re-commencement of limited decommissioning activity will only start following a cessation of movement and the completion of a geotechnical risk assessment by a geotechnical engineer; and
- Such detailed monitoring and awareness will further ensure that the potential for peat slide is absolutely minimised as actions arising from monitoring will reduce the significance of the possible negative effects.

Onset of Peat Slides

Particular restricted areas have been identified on the Site as part of the EIA Technical Appendix 11-2 Peat Stability Risk Assessment and should be referred to for full details. As these areas were identified prior to any development taking place, and fed into the design of the Proposed Development, turbines and development footprints should not intersect with potentially at-risk areas.

As a result, it is highly unlikely that peat slides may occur resulting from the decommissioning works. In the highly unlikely event of an onset or actual detachment of peat then the following shall be carried out:

1. On alert of a peat slide incident, all activities will cease, and all available resources will be diverted to assist in the required mitigation procedures; and
2. For localised peat slides that do not represent a risk to a watercourse and have essentially come to rest, the area will be stabilised by rock infill, if required. The failed area and surrounding area will then be assessed by the geotechnical engineer and stabilisation procedures implemented. The area will be monitored, as appropriate, until such a time as movements have ceased.

Spill Control Measures

Every effort will be made to prevent an environmental incident during the decommissioning phase of the project. Oil/fuel spillages if arising, are likely to be small and localised. The importance of a swift and effective response in the event of a spill is important. The following steps provide the procedure to be followed in the event of such an incident:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers;
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill;
- If necessary, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats;
- Clean up as much as possible using the spill control materials.
- Contain any used spill control material. Dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited;

- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- The ECoW will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The ECoW will notify the appropriate regulatory body such as Kerry County Council, and the Environmental Protection Agency, if necessary.

Environmental Investigation

Any incident must be investigated in accordance with the following steps:

- The ECoW will be immediately notified;
- If necessary, the ECoW will inform the appropriate regulatory authority. The regulatory authority will depend on the nature of the incident;
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident;
- If the incident has affected any sensitive receptor such as an archaeological feature the ECoW will halt work and will liaise with the Project Archaeologist; and
- 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 such as Kerry County Council, and Environmental Protection Agency if required.

The ECoW will be responsible for any corrective actions required as a result of the incident e.g., an investigation report, formulation of alternative works methodologies or environmental sampling, and will advise the Main Contractor as appropriate.

1.5.2 Contact the Emergency Services

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

- Ring 999 or 112
- Clearly state the situation and location
- Await further instructions from emergency services.

Table 1-3: Emergency Contacts

Contact	Telephone No.
Client: Cummeenabuddoge DAC c/o FuturEnergy Ireland	01 66985 65
Doctor: Ballyvourney Medical Centre	026 45 341
Emergency Services: Ambulance, Fire, Gardai	999/112
ESB Emergency Services	1850 372 999
Hospital: Cork University Hospital	021 492 0200
Gas Networks Ireland Emergency	1850 20 50 50
Gardai: Ballyvourney Garda Station	026 45 002

Contact	Telephone No.
Health and Safety Co-ordinator: Health and Safety Service	TBC
Health and Safety Authority	1890 289 389
Inland Fisheries Ireland (IFI)	1890 347 424
Project Supervisor Construction Stage: TBC	TBC
Project Supervisor Design Stage: TBC	TBC

1.6 Program of Works

1.6.1 Decommissioning Schedule

The decommissioning phase will take approximately 3-6 months to complete from commencing the removal of turbines to the final reinstatement of the site.

The decommissioning of the Proposed Development will take place after the 35-year operational period of the planning permission has elapsed.

The phasing schedule of the main decommissioning tasks are outline in Figure 4-2 below, where the 1st of January has been shown as an indicative start date for decommissioning to commence.

Table 1-4: Indicative Decommissioning Schedule

Task Name	Task Description	Timeline						
		Jan	Feb	Mar	Apr	May	Jun	Jul
Site Health and Safety								
Turbine decommissioning	Disconnect Power Output							
Turbine and Met Mast Dismantling	Disassemble turbine components and met mast							
Turbine Removal	Transport of all turbine components off-site							
Cable Removal	Remove underground cables from ducting							
Turbine Foundations Backfill	Reinstate foundation areas by covering with soil material							

1.7 Compliance and Review

1.7.1 Site inspections and Environmental Audits

Routine inspections of decommissioning activities will be carried out on a daily and weekly basis by the ECoW and the site Supervisor/Construction Manager to ensure all

controls are in place to prevent environmental effects, relevant to the decommissioning activities taking place at the time.

Environmental inspections will ensure that the works are undertaken in compliance with this Decommissioning Plan and all other planning application documents. Only suitably trained staff will undertake environmental site inspections. These staff will have undergone third level education training and will have experience in a similar role.

1.7.2 Auditing

An Environmental Audit will first be carried out prior to the decommissioning phase of the development to ensure the implementation of mitigation measures. Further environmental audits will be carried out on a monthly basis during the construction phase of the project and again after the decommissioning of the wind turbines.

Environmental audits will be carried out by the ECoW. An impartial and objective approach will be taken. Environmental audits will be conducted monthly to determine whether the Decommissioning Plan is being appropriately implemented and maintained. The results of environmental audits will be provided to the Main Contractor.

An audit of compliance with the decommissioning mitigation measures will be complete by the ECoW during the decommissioning phase of the development. The findings of each audit will be documented by the ECoW in an audit report within the Decommissioning Plan for the site. The audit report will be made available to Cork and Kerry County Councils on request.

1.7.3 Environmental Compliance

The following definitions will apply in relation to the classification of Environmental Occurrences during decommissioning of the Proposed Development:

- **Environmental Near Miss:** An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.
- **Environmental Incident:** Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the immediate area of the incident.
- **Environmental Exceedance Event:** An environmental exceedance event occurs when monitoring results indicate the limits for a particular environmental parameter (as indicated in the Environmental Monitoring Programme) has been exceeded.

Any of these events will immediately trigger an investigation into the reason for the incident and the application of suitable mitigation where necessary.

Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter, e.g., 25mg/l total suspended solids in waters (Inland Fisheries Ireland, 2016).

1.7.4 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Site Supervisor/Construction Manager, as

advised by the Site ECoW. Corrective actions may be required as a result of the following:

- Environmental Audits
- Environmental Inspections and Reviews
- Environmental Monitoring
- Environmental incidents
- Environmental Complaints

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

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

1.7.5 Decommissioning Plan Review

This Decommissioning Plan will be reviewed and confirmed prior to the commencement of the decommissioning works. Further details will be added to the plan during decommissioning works to adapt to specific situations or site conditions that are encountered that need to be considered by the Plan

