EDF RENEWABLES IRELAND LIMITED

KELLYSTOWN WIND FARM

CO. LOUTH

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

November 2024

EDF Renewables Ireland Limited
Portview House,
Unit B,
Ground Floor,
Thorncastle St, Dublin 4,
D04 V9Y9
Ireland.

Jennings O'Donovan & Partners Limited,
Consulting Engineers,
Finisklin Business Park,
Sligo.
Tel.: 071 9161416
Fax: 071 9161080
email: info@jodireland.com

JENNINGS O'DONOVAN & PARTNERS LIMITED
Project, Civil and Structural Consulting Engineers,
FINISKLIN BUSINESS PARK,
SLIGO,
IRELAND.
Telephone (071) 9161416
Fax (071) 9161080
Email info@jodireland.com
Web Site www.jodireland.com

DOCUMENT APPROVAL

PROJECT	Kellystown Wind Farm	
CLIENT / JOB NO	EDF Renewables Ireland Limited	6918
DOCUMENT TITLE	Construction Environmental Management Plan	

	Prepared by	**Reviewed /Approved by**
Document Rev 1	Name Padraig O' Dowd	Name Shirley Bradley Sarah Moore
Date November 2024	Signature Padraig O' Dowd	Signature Shirley Bradley Sal Moore

KELLYSTOWN WIND FARM, CO. LOUTH

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

CONTENTS

1 INTRODUCTION 1
1.1 Background to Report 1
1.2 Construction Environmental Management Plan (CEMP): Aims & Objectives 1
1.3 CEMP DEVELOPMENT & Implementation 2
1.4 CEMP Roles & Responsibilities 4
1.5 CEMP Structure 4

2 PROJECT INFORMATION 8
2.1 Site Location and Scheme Description 8

3 ENVIRONMENTAL CONTROLS 12
3.1 Human Beings and Community 13
3.2 Ecology 14
3.3 Soils and Geology 24
3.4 Hydrology and Drainage 29
3.5 Air and Climate 40
3.6 Archaeology and Cultural Heritage 42
3.7 Noise & Vibration 43
3.8 Waste 44
3.9 Construction PLAN 48
3.10 Site Clearance and Construction Methods 56
3.11 Traffic Management 68
3.12 Planning Conditions and Outline Method Statements 72
3.13 Scheme Amendments 72
3.14 Register of Variations 73

4 COMMUNICATION PLAN 74
4.1 Introduction 74
4.2 Contact Sheets 74
4.3 Meetings Reports and Consultations 74
4.4 Roles & Responsibilities 75
4.5 Reporting Procedures 75
4.6 Training, Awareness and Competence 85
4.7 Emergency Preparedness and Response 85

5 CORRESPONDENCE, RECORDS & REPORTS 87
5.1 Requirements 87
5.2 Environmental Audits 87

5.3 Environmental Consents, Licenses & Permits 88
5.4 Environmental Monitoring and Measuring 88
5.5 Non-Conformance, Corrective and Preventative Action 89

6 MANAGEMENT PLANS & AVAILABLE INFORMATION 90
6.1 Management Plans 90
6.2 Contractors Requirements 90

FIGURES

Figure 1.1 Summary of CEMP Development Process
Figure 2.1 Map showing the location of Kellystown Wind Farm and Grid Connection
Figure 3.1 Map showing the proposed location of site entrances at Kellystown Wind Farm
Figure 3.2 Roadside Berm
Figure 3.3 Map showing the grid connection route
Figure 4.1 General Communication Plan

TABLES

Table 1.1 CEMP – Document Structure
Table 3.1 Site Entrance Preparation CMS
Table 3.2 Contractors' Compound and Welfare Facilities CMS
Table 3.3 Excavation and Spoil Management Method Statement
Table 3.4 Turbine Base Construction Method Statement
Table 3.5 Typical Hardstands Construction Method Statement
Table 3.6 HGV and Abnormal Load Deliveries
Table 3.9 Relevant Planning Conditions and Related Documentation
Table 3.10 Scheme Amendments
Table 3.11 Register of Variations
Table 4.1 Contact Sheets
Table 4.2 Meetings, Reports and Consultations
Table 4.3 Roles and Responsibilities
Table 5.1 Record of Environmental Consents, Licenses and Permits Issued
Table 6.1 List of Management Plans

PLATES

Plate 3.1: Turbine foundation under construction with adjoining crane pad
Plate 3.2: Proposed wind turbine foundation' to clarify that the intention is to use this type of foundation for the project
Plate 3.3: Wind Turbine Erection
Plate 3.4: Assembly of wind turbine blades
Plate 3.5: Crane for wind turbine erection

MANAGEMENT PLANS

Management Plan 1 - Emergency Response Plan

Management Plan 2 - Water Quality Management Plan

Management Plan 3 - Surface Water Management Plan

Management Plan 4 - Spoil Management Plan

Management Plan 5 - Waste Management Plan

Management Plan 6 - Decommissioning Plan

Management Plan 7 – Traffic Management Plan

Management Plan 8 – Blast Management Plan

1 INTRODUCTION

1.1 BACKGROUND TO REPORT

Jennings O'Donovan & Partners Limited, on behalf of EDF Renewables Ireland Limited, has prepared this Construction Environmental Management Plan (CEMP) for the construction of the Proposed Development of 5 no. wind turbines, a Permanent Met Mast, a 38 kV Onsite Substation and Control Building; all ancillary works and the construction of an underground Grid Connection to Drybridge 110 kV Substation, Co. Louth. The Proposed Development has been designed to ensure that any environmental impacts which may arise can be appropriately mitigated such that there will be no likely significant environmental effects.

This document has been prepared on the basis that this document will be further developed and expanded following the appointment of the Contractors for the main construction works. Some items of this CEMP can only be finalised with appropriate input from the Contractors who will actually carry out the main construction works. This CEMP 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.

The preparation of this document, and its continued development, is considered to be an appropriate mechanism to ensure the appropriate management of construction activities in accordance with the relevant environmental requirements.

This document should be read in conjunction with the Appropriate Assessment Screening Report, Natura Impact Statement, Environmental Impact Assessment Report (EIAR), Planning Report, Planning Drawings.

1.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP): AIMS & OBJECTIVES

This CEMP has been developed in accordance with the Institute of Environmental Management and Assessment Practitioner "*Environmental Management Plans*", Best Practice Series, Volume 12, December 2008.

The principal objective of this CEMP is to avoid, minimise and control adverse environmental impacts associated with the development of the wind farm. As such, the Contractors commit to safeguarding the environment through the identification, avoidance

and mitigation of the potential negative environmental impacts associated with the Proposed Development.

This CEMP defines good practice as well as specific actions required to implement mitigation measures required to comply with the environmental commitments outlined in the EIAR, NIS, the planning process and/or other licensing or consenting processes.

The CEMP will also be developed further, and/or amended where necessary, to take account of any additional information which may be made available from the detailed design process or pre-construction confirmatory surveys within the parameters prescribed in this CEMP and in consultation with the planning authority.

.

In the event planning permission is granted for the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for written approval. The contractors will be contractually obliged to comply with all measures identified in the CEMP, as above. The CEMP will form part of the main Civil Balance of Plant (CBoP) Construction works Contract as well as the Electrical Balance of Plant (EBoP) Construction works contract. The Developer will take account of the structure, content, methods and requirements contained within the various sections of this CEMP when further developing the CEMP and Management Plans as required by their Contract.

While this version of the CEMP provides a benchmark for good practice, where avoidance or further minimisation of risks to the environment can be demonstrated through use of alternative methods or improvements to current practices, the Contractors will implement these wherever possible, subject to approval from environmental monitoring personnel.

1.3 CEMP DEVELOPMENT & IMPLEMENTATION

The CEMP has been prepared as part of the planning application for Kellystown Wind Farm. It is a live document on site and will be developed further by the Contractors with site specific method statements and plans as required prior to each phase of the works, as set out above. It is also effectively a document management system for recording information and data relating to environmental checks, reports, surveys, monitoring data and auditing. Upon completion of the construction works, the Contractors will submit a complete electronic copy of the final CEMP to the client for their records. This final CEMP will include electronic

scans of all hard copy reports, data, field records and correspondence which are gathered over the course of the construction works.

While version numbers will remain fixed depending on the stage of the project, it is acknowledged that the CEMP is a continually evolving document which can be updated in part or whole, at any phase of the Project. Hence, revision and document distribution records are included at the front of each CEMP document to enable individual documents to be updated at any time. A summary of the CEMP development process and the required input from the main parties involved in the post planning and construction of the wind farm are indicated in **Figure 1.1**. The Contractors will be responsible for further development of the CEMP in line with other relevant licenses and consents. This may involve liaising with statutory bodies where appropriate. The CEMP will only be updated in line with the parameters in this version of the CEMP or to incorporate any planning conditions.

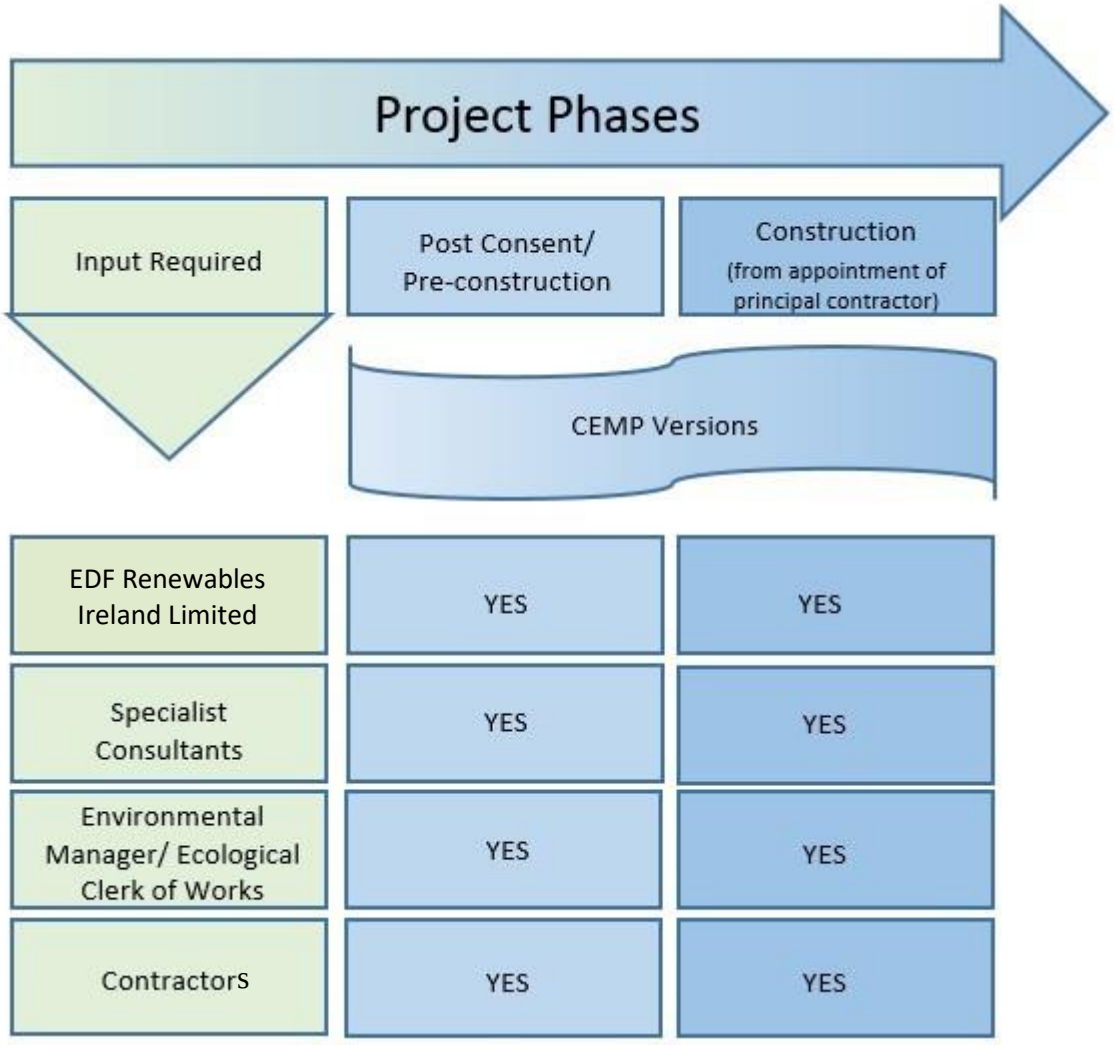

Figure 1.1 Summary of CEMP Development Process

1.4 CEMP ROLES & RESPONSIBILITIES

Prior to commencement of construction works, the Developer will identify a core Environmental Management Group, comprising of specific project personnel (Environmental Manager and Ecological Clerk of Works) and the Ecological Clerk of Works. The Environmental Management Group will meet monthly to discuss the monthly environmental report and will advise site personnel on areas where improvements may be made on site. The group will draw on technical expertise from relevant specialists where required, including the Resident Engineer and will liaise with other relevant external bodies as required.

The Developer will appoint an Ecological Clerk of Works who will be responsible for coordination, compliance monitoring and continued development of the CEMP and any other surveys, reports or method statements required. The Ecological Clerk of Works will also review the Contractors' method statements and environmental plans as required by the CEMP, carry out compliance auditing during the construction phase and coordinate the Environmental Management Group and required liaisons between EDF Renewables Ireland Limited, the Planning Authority and other statutory authorities.

The Contractor will appoint an Environmental Manager who will be responsible for coordination and development of the CEMP and any other surveys, reports or construction management plans required for discharge of relevant pre-commencement planning conditions. In conjunction with the Ecological Clerk of Works, the Environmental Manager will also review the Contractor's construction management plans, method statements and environmental plans as required by the CEMP, carry out compliance auditing during the construction phase and coordinate the Environmental Management Group and required liaisons between the Employer, the Contractor and other statutory authorities.

The Developer will appoint a Project Manager to monitor the construction phase of The Project and ensure works are being carried out in accordance with the agreed method statements, safety procedures and pollution control measures. The Environmental Management Group will liaise regularly with the Project Manager.

1.5 CEMP STRUCTURE

The CEMP is divided into discrete Sections which are designed to be filed as separate documents / folders if required. A copy of the CEMP documents / folder(s) will be kept in the site offices for the duration of the site works and will be made available for review at any

time. The Ecological Clerk of Works/Environmental Manager will be responsible for the CEMP and will keep all sections updated throughout the construction phase.

Where a Contractor has standard documents within their own company / corporate Environmental Management Plans which cover a particular requirement of this CEMP, these will be reviewed by the Ecological Clerk of Works to confirm that they are appropriate and sufficient to meet the environmental commitments outlined in the EIAR and NIS, and in the event that they do meet these requirements the documents will either be inserted or inserted or cross referenced within the relevant Section of this CEMP.

The CEMP Sections are listed in **Table 1.1** as follows:

Table 1.1: CEMP – Document Structure

Section	Title & Brief Description	Contractors Development Required
1	**Introduction**	No (Information purposes only)
2	**Project Information** Provides details on site location, scheme description and a summary of the environmental sensitivities at the Site (as derived from the Appropriate Assessment Screenings and other information where available).	No (Information purposes only)
3	**Environmental Controls** Provides details on relevant Planning Consent Conditions and mitigation measures outlined in the EIAR and NIS. Any documents prepared by EDF Renewables Ireland Limited in response to Consent Conditions will be recorded in Table 3.9. Table 3.10 contains a record of all Scheme Amendments and Table 3.11 a Register of Variations.	**Yes** Any documents prepared by the Contractors in response to Consent Conditions will be recorded by the Contractors in Table 3.9 and inserted in the CEMP where necessary. Any Scheme Amendments and / or Variations to the CEMP required during the works will be recorded by the Contractors in Tables 3.2 and 3.3.
4	**Environmental Communications Plan** Contains details on specific requirements relating to: • Contact details for EDF Renewables Ireland Limited, personnel, technical specialists, Contractor's personnel,	Yes The Contractors will: i) Insert contact information for regulatory authorities and other stakeholders (where not already provided) into Table 4.1

Section	Title & Brief Description	Contractors Development Required
	regulators, landowners, other stakeholders etc.; • Meetings, reports and consultations; • Roles and responsibilities; and • General reporting procedures and tasks.	ii) Refer to Table 4.2 for details on requirements for meetings, reports and consultations iii) Insert information on Contractors appointments and responsibilities relating to environmental management and implementation of this CEMP into Table 4.3. iv) Refer to Figure 4.1 for a summary of the main communication lines.
5	**Correspondence, Records, Reports** This Section relates to document control and retention of records. The information at the start of Section 4 provides: • A list of all documents to be retained / filed within the CEMP. Table 5.1 provides a record of all Environmental Consents, Licenses and Permits issued for The Project.	**Yes** The Contractors will complete Table 5.1. Throughout the duration of the Contract, the Contractors will insert / file all communication records, data, field records and reports associated with Environmental Management and implementation of this CEMP into this Section 5. This Section may be sub-divided into sub-folders for specific information relating to discrete areas of Environmental Management (such as waste management, pollution prevention, water quality monitoring, ecology etc). Alternatively, this information may be filed within the individual Management Plans in Section 6. The filing method selected by the Contractors will be made explicit at the start of Section 5.
6	**Management Plans & Available Information** Management Plans include the following: • MP1 Emergency Response Plan (ERP) • MP2 Water Quality Management Plan (WQMP) • MP3 Surface Water Management Plan • MP4 Spoil Management Plan • MP5 Waste Management Plan • MP6 Decommissioning Plan	**Yes** The Contractors are required to develop the Management Plans and/or include additional information or method statements as appropriate and where required by the Contract. The development of the Management Plans will generate more site-specific documents which address particular environmental management procedures

Section	Title & Brief Description	Contractors Development Required
	• MP7 Traffic Management Plan • MP8 Blast Management Plan	applicable for works in specified areas of the Site. These Management Plans form the Contractors' Environmental Plans (for example, Spoil Management Plan). Table 6.1 lists all Management Plans and provides information on Contractor's responsibilities.

2 PROJECT INFORMATION

2.1 SITE LOCATION AND SCHEME DESCRIPTION

The Site, as shown in **Figure 2.1**, is located within an agricultural and forested landscape. There are areas of scrubland, native woodland and wetland (Drumshallon Lough cNHA). The Site is located 8.3 km north of Drogheda, 23.6 km South of Dundalk and 50 km north of Dublin.

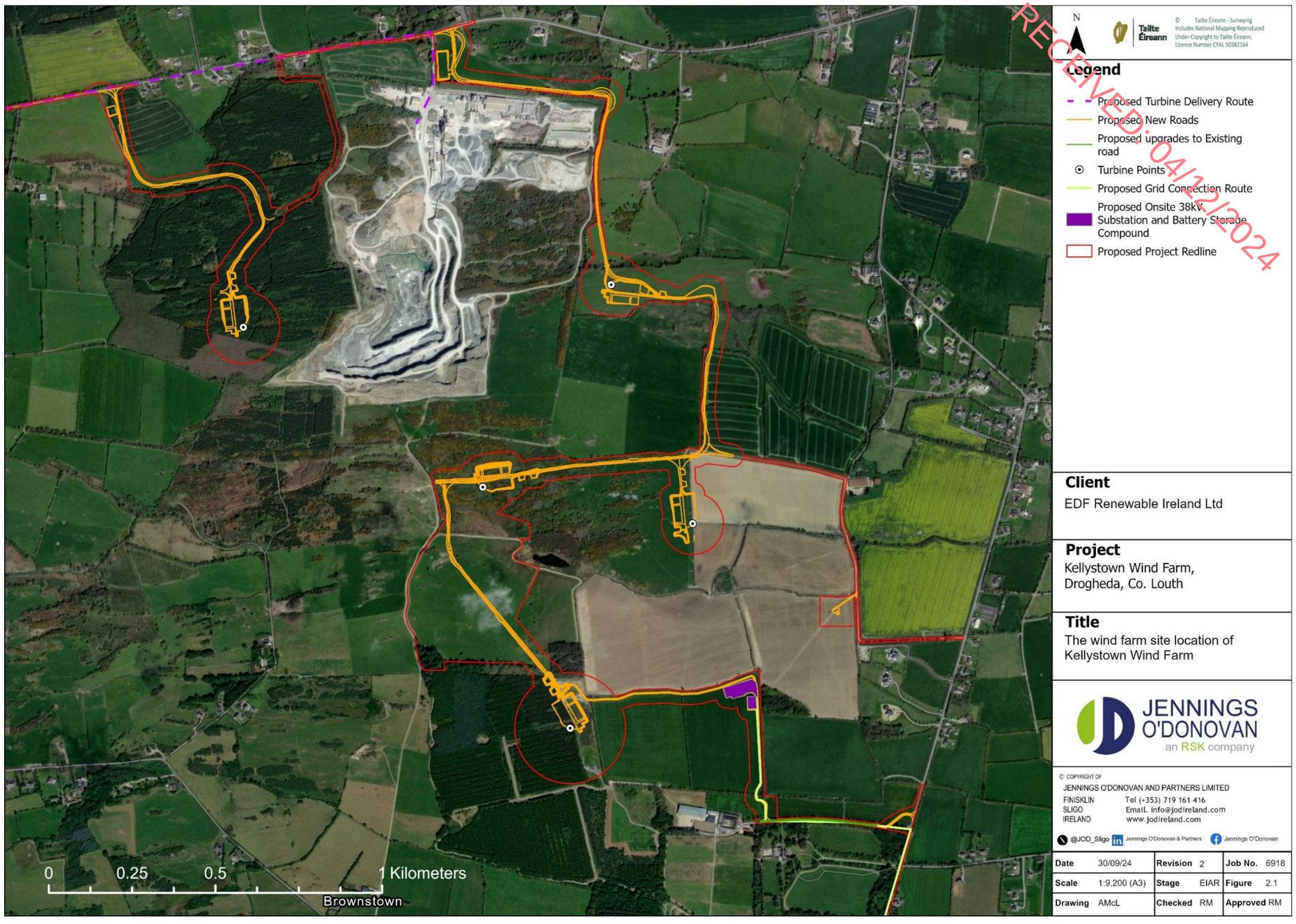

Figure 2.1: Map showing the location of Kellystown Wind Farm and Grid Connection

The Proposed Development will consist of the following:

- The Construction of 5 no. wind turbines with the following parameters:

a) Total tip height range of 179.5m – 180m,

b) Rotor diameter range of 149m – 163m,

c) Hub height range of 98m to 105m,

- Construction of turbine foundations, crane hardstand areas and assembly areas;
- All associated wind farm underground electrical and communications cabling connecting the turbines and meteorological mast to the proposed onsite electrical substation including cabling. in the public road corridor in the townlands of Gallstown and Kearneystown;
- Construction of 1 no. permanent 38kV electrical substation compound including a single-storey control building with welfare facilities, all associated electrical plant and equipment, security fencing, gates, all associated underground cabling, wastewater holding tank, and all ancillary structures and works in the townland of Piperstown.
- A Battery Energy Storage System within the 38kV electrical substation compound;
- All works associated with the connection of the proposed wind farm to the national electricity grid which includes 5 no. of water crossings (3 no. bridges and 2 no. culverts). The provision of joint bays and associated communication chambers along the underground electrical cabling route via underground 38kV electrical cabling predominantly within the public road corridor, from the onsite substation in the townland of Piperstown to the existing Drybridge 110 kV Substation located in the townland of Tullyallen;
- Reinstatement of all road and track surfaces above cabling trench along existing roads and tracks in public lands;
- Provision of new site access tracks and upgrade of existing site tracks/roads to facilitate access to all onsite infrastructure this includes 3 no. water crossings, passing bays and all associated drainage;
- The provision of 2 no. new permanent site entrances for construction and operational access from the local road L6274 in the townlands of Kearneystown and Gallstown;
- The permanent realignment of 1 no. existing entrance for construction and operational access to the 38kV electrical substation compound from the local road L2275 in the townland of Piperstown;
- Use of 1 no. existing site entrance for construction, operational access to the permanent met mast on a private road off local road L2275 in the townland of Drumshallon.
- The construction of 1 no. new temporary track in the townland of Castletown at the R162 / L-6274-0 Junction to facilitate the delivery of the turbine components during

construction. This track will be temporarily re-installed as required during the operational phase;

- 3 no. temporary construction compounds with associated temporary offices, staff facilities parking and security fencing in the townlands of Gallstown, Piperstown and Stonehouse;
- 1 no. permanent meteorological mast of c.36m in height, and associated foundation and hard-standing area in the townland of Drumshallon;
- The provision of 2 no. permanent spoil storage areas;
- Tree felling to facilitate the construction and operation of the proposed development;
- Operational stage site signage;
- All ancillary apparatus and site development works above and below ground, including soft and hard landscaping and drainage infrastructure.

3 ENVIRONMENTAL CONTROLS

his CEMP sets out the key environmental considerations to be taken into account by the contractor during construction of the proposed development. This CEMP details the mitigation measures to be implemented in order to comply with the environmental commitments outlined in the EIAR, NIS and associated documents, and the applicable guidance documents and best practice measures as listed below. The contractor will be contractually obliged to comply with all measures outlined in this CEMP. In the event planning permission is granted for the Proposed Development, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for written approval. This CEMP will be adhered to and further developed by the Contactor and will be overseen by the Project representative/foreman.

Guidance Documents

The guidance documents listed below must be complied with by the appointed Contractor.

- Construction Industry Research and Information Association (CIRIA) (2006) Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London.
- CIRIA (2006) Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006).
- COFORD (2004) Forest Road Manual – Guidelines for the Design, Construction and Management of Forest Roads.
- CIRIA (2015) SuDS Manual, (CIRIA Report C753, 2015)
- Coillte (2009): Forest Operations & Water Protection Guidelines.
- Department of Agriculture, Food and the Marine (2018) DRAFT Plan for Forests & Freshwater Pearl Mussel in Ireland – Consultation Document.
- Forestry Commission (2004) Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh.
- Forest Services (2006) Draft Plan for Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures.
- Forest Service (2000) Forestry and Water Quality Guidelines. Forest Service,
- IFI (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- GPP1 (2020) Understanding your Environmental Responsibilities – Good environmental Practices, NetRegs.
- GPP 5 (2018) Works and Maintenance In or Near Water, NetRegs.

- GPP21 (2021) Pollution Incident Response Planning, NetRegs.
- GPP 22 (2018) Dealing with Spills, NetRegs.

3.1 HUMAN BEINGS AND COMMUNITY

The assessment set out in **Chapter 5: Population & Human Health** has not identified any likely significant effects from the Project on population or human health.

The main mitigation measure is by design or avoidance. A suitable separation distance from turbines and other key infrastructure to properties has been embedded in the EIA development design. Additional mitigation to protect site personnel and the public will also be implemented.

These are:

- Turbines will be procured from a reliable manufacturer and will have undergone vigorous safety checks during design, construction, commissioning and operation.
- Physical and visual warnings such as signs will be erected at access points and close to turbines for the protection of site personnel and the public.
- Facility for remote turbine deactivation will be provided.
- Access to turbines for site personnel will be restricted in storm events. Where access by site personnel is required the following safety precautions will be implemented: remotely shutting down the turbine, yawing to place the rotor on the opposite side of the tower door and parking vehicles at a distance of at least 100 m from the tower. All personnel will be fitted with appropriate Personal Protective Equipment. Regular maintenance and inspections will take place during the 35-year operational phase. The final turbine model chosen will be in line with International Electrotechnical Commission 61400-1 safety standards. Maintenance visits will take place as needed with the Supervisory Control and Data Acquisition (SCADA) control system monitoring turbine performance remotely. If a fault occurs, then a message is automatically sent to the operations personnel preventing emergency situations. Warning signs and security infrastructure will be in place around the onsite switchgear and control building to provide for public safety.
- Access to the turbines will be via the door at the base of the turbines. The turbine access door will otherwise be securely locked at all times.
- Measures are set out in **Chapter 16: Transport and Transportation** relating to how delivery of goods and services would be managed during works to minimise impacts.

3.2 ECOLOGY

All mitigation measures have been developed in the context of national and international legislative guidance for the protection and management of flora, habitats of conservation importance, fauna and aquatic ecological interest.

Guidelines to be adhered to in the delivery of the CEMP and method statements are as follows:

- *'Guidelines on protection of fisheries during construction works in and adjacent to waters'* (Inland Fisheries Ireland, 2016)
- *'Guidelines for the treatment of Badgers prior to the construction of National Road Schemes'* (National Roads Authority, 2005)
- *'Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post construction of National Road Schemes'* (National Roads Authority, 2006a)
- '*Guidelines for the treatment of bats during the construction of national road schemes'* (National Roads Authority, 2006b)
- *'Guidelines for the treatment of Otters prior to the Construction of National Road Schemes'* (National Roads Authority, 2006c)
- *'Guidelines for the crossing of watercourses during the construction of national road schemes' (*National Roads Authority*, 2008)*
- *'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads'* (National Roads Authority, 2010)

The description of mitigation measures is provided in terms of mitigation by avoidance, reduction and remediation.

3.2.1 Ecology Mitigation Measures

3.2.1.1 Mitigation for habitat loss

The Proposed Development will result in the loss of a limited amount of habitat of significant ecological importance in a local context, namely sections of hedgerow/treeline (up to 775 m) and to a lesser extent scrub (1.55 ha plus bat buffer). Part of the losses will be from implementation of bat buffer zones. These habitats are of value for a range of local wildlife, including small mammals, bats, birds and invertebrates. In addition, small areas of wet grassland will be loss by a section of track leading southwards from Turbine T04 (estimated at 150 m^2).

The losses will be offset through a Biodiversity Enhancement and Management Plan (BEMP). The BEMP is outlined in **Section 6.8, Chapter 6 – Biodiversity** and is presented

in full in **Appendix 6.1**. Briefly, the BEMP area comprises the following: (i) the enhancement of existing wetland habitat to the south and west of Drumshallon Lough, and (ii) the planting of an area of broadleaved woodland (c.0.5 ha).

The loss of the small areas of wet grassland along the western edge of the Drumshallon wetland system will be offset by the enhancement of a considerably larger area of wetland habitat (wet grassland and marsh) to the west.

The total loss of hedgerows, including bat buffers, will amount to approximately 755 m. The loss due to the bat buffers will be offset by the planting of 0.5 ha of broadleaved woodland. Details of this planting scheme are given in the BEMP (**Appendix 6.1 of the EIAR**).

A total of approximately 300 m will be lost by the road impact points and the new access entrances. With an average width of 3 m, a total minimum area of 90 m^2 is required to offset this loss. However, this figure will be doubled to 1,800 m^2 in recognition of the importance of local hedgerows.

It is proposed that the hedgerow loss will be offset by a planting scheme, which will amount to a total area of 0.18 ha. Hence, the loss of hedging will be exceeded by the planting programme.

The planting of woodland will follow best practice, including guidance from the Department of Agriculture, Food and the Marine ACRES scheme and the Teagasc Native Tree Area Scheme.

While the planting of trees that will achieve tall woodland is a primary focus for bat mitigation, the programme will allow for parts dominated by lower growing tree and shrub species characteristic of the hedgerows in the local area.

Plantings will consist of native Irish species from Irish genetic stock (certified Irish). A typical planting mix for tall woodland is sessile oak (40%), Scot's pine (15%), beech (15%) and others (such as alder, birch, rowan, holly) 30%.

Smaller tree species which have a fairly widespread presence in the hedgerows of the local area, and which are useful biodiversity species, include hawthorn, blackthorn, grey willow (*Salix cinerea* subsp. *oleifolia*), hazel (*Corylus avellana*), holly (*Ilex aquilifolium*), rowan (*Sorbus aucuparia*), alder (*Alnus glutinosa*), guelder rose (*Virburnum opulus*) and spindle

(*Euonymous europaeus*). Formerly ash would be used as a principal tall tree species but is not being planted due to ash dieback disease.

The following guidance will be adhered to for woodland planting:

- As soon as planning permission is approved, the first step in the schedule for construction will be the planting of the new hedgerows and woodland within the appropriate season, once the applicable licenses are obtained. The earlier planting is carried out the better, as this will allow time for these features to establish prior to the loss of existing features.
- As noted, plantings will consist of native Irish species from Irish genetic stock (certified Irish).
- For tall trees, a minimum tree planting spacing of 3 x 3 metres is required, giving a planting density of 1,100 trees per hectare. Should the installation of deer shelter be considered necessary (and such would be advised by the commercial contractor familiar with the local area), a minimum tree spacing of 4 x 4 metres will be used.
- Smaller tree and shrub species can be planted at higher densities and also less formally and with open spaces between stands of trees where grassland and low scrub will develop.
- Ground preparation will be limited to inverted (or scrap) mounding, shallow ripping, pit planting and auger planting. The creation of new drainage channels is not permitted.
- Fertiliser application will not be permitted.
- The control of competing vegetation is critical for the establishment and growth of young trees. Inadequate vegetation management will result in mortality, loss of growth and vigour and the need for further inputs during the establishment process.
- The sites will be fully protected from browsing stock animals.
- Any trees that fail will be replaced on an annual basis.

3.2.1.2 Drumshallon Lough Wetland System

While sensitive design has avoided almost entirely the Drumshallon Lough wetland system, there is minor encroachment by track at extreme western end and potential for run-off during works on the higher ground adjoining the lake and wetland. Specific mitigation to minimise any effects on the system, will comprise:

- Supervision by ECoW when track construction is in progress so as to minimise disturbance of adjoining wetland ground on the eastern side,

- Use of stone of similar chemical composition for track bases in area of wetland,
- Strict adherence to surface water mitigation measures to ensure that there is no run-off of contaminated water from work areas close to the wetland (as described in **EIAR Chapter 11: Hydrology and Hydrogeology**).

3.2.1.3 Badgers

Badger is present in the study area though no setts were recorded during the baseline surveys.

As distribution of local populations can change over time, should more than 24 months have elapsed by the commencement of construction since the baseline surveys in 2023-24, a pre-construction confirmatory survey will be undertaken in accordance with NRA Guidance (2006). This will focus on the areas of the site where works will take place (to a distance of approximately 100 m).

Should an active sett be located within a 50 m distance of the works area, mitigation would be necessary to ensure that the sett is closed prior to the commencement of any works onsite. This procedure would be carried out in strict accordance with relevant legislation.

3.2.1.4 Otter

While there was no evidence of otter breeding sites on any of the watercourses associated with the site, otter has a presence on the Drumshallon Lough Stream and may at times feed within the lake itself. Such populations could be affected adversely by pollutants entering the watercourses as a result of activities associated with the Proposed Development.

The mitigation proposed to maintain water quality in the aquatic zones (as detailed in the **Chapter 8: Aquatic Ecology Assessment Appendix 6.3** and in **Chapter 9: Hydrology and Hydrogeology** and summarised in **Section 3.4** of this **CEMP**) will ensure that the food supplies for otters within local watercourses are not affected by contaminants generated by the Proposed Development.

3.2.1.5 Common frog and common lizard

The common frog is widespread within the Wind Farm Site occurring in drains, fields which have a wet character, and in the wetlands associated with Drumshallon Lough.

Areas where construction works are due to commence during the period February to August will be checked by the ECoW for the presence of frog spawn, tadpoles and adult frogs. If

present, these will be removed under licence from NPWS and transferred to suitable drains or wetlands in the vicinity and away from the construction footprint.

The common lizard was recorded in the areas of open scrub and shallow soils in the location of Turbine T04. The ECoW will be vigilant to the presence of this species and will review the work areas prior to the entry of plant machinery. Should a lizard be observed, it will be retained in a suitable container and released in similar habitat away from the construction foot-print.

3.2.1.6 Invasive plant species

The baseline surveys have identified the presence of two Third Schedule List invasive species at two locations within the study area, namely Japanese knotweed and Himalayan balsam (see **EIAR section 6.3.3.15** and **Figure 6.5**).

Best practice measures will be taken throughout the construction phase to prevent the spread of these invasive alien species and the introduction of further species.

The commencement of works will be preceded by a detailed confirmatory survey for invasive species.

During construction, the following best practice measures will be implemented:

- Where the presence of an invasive species is identified, the treatment and control of same will follow guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010).
- Good construction site hygiene will be employed to prevent further introduction of invasive plant species and/or spread of sources within the site to outside areas, by thoroughly washing vehicles prior to entering site and prior to leaving site.
- Any soil or topsoil required on the site will be sourced only from a stock that has been screened for the presence of invasive species

Implementation of the above measures will ensure that there will be no significant effect with regard to Third Schedule invasive species as a result of the proposed development.

3.2.1.7 Bats

The construction phase is expected to result in unavoidable impacts, primarily in the form of habitat loss or alteration and disturbances necessary for various construction activities.

Mitigation efforts during this phase should primarily focus on avoiding direct impacts on roosting bats, crucial habitats such as swarming sites, and habitats/features essential for bat foraging and commuting.

3.2.1.7.1 Supervision of vegetation clearance

An ecologist/ECoW will supervise areas where vegetation, scrub and hedgerow removal will occur prior to and during construction as appropriate (e.g., ecologist may be required during some clearance works of areas where vegetation is too dense to check beforehand). This will ensure that any site-specific issues in relation to wildlife not currently present (e.g., Bat roost locations) on site will be discovered prior to commencement of works to allow appropriate mitigation measures to be put in place. In the event that an issue arises, the NPWS will be informed, and the relevant guidelines will be implemented as appropriate. As outlined in **Chapter 7 – Bat Ecology; Section 7.6.2.1,** Areas of compensatory habitat enhancement and replanting have been established and are outlined in the BEMP. The planting will be a mix of tree species in the identified compensatory habitats and will include early senescent fruit trees to provide roosting features for bats quickly.

Existing hedgerows and semi-natural scrub or semi-natural grasslands outside of the footprint of the Development will be retained and incorporated into the landscaping. Disturbed areas will be allowed to recolonise naturally.

3.2.1.7.2 Hedgerow removal and replanting

Where the working area intersects a hedgerow, where practicable the hedgerow will be reinstated with a proportion replanted with similar species or native species of Irish provenance. This will maintain connectivity of the linear features for use by bats. Where the loss is permanent, additional areas of hedgerow will be planted within appropriate locations within lands under the control of the applicant, this is outlined in **Section 3.0** of the **BEMP**.

3.2.1.7.3 Retention of trees

Several species of bats roost in trees. Treelines and mature trees that are located immediately adjacent to the line of proposed access routes will be avoided and retained intact. Overall impacts on these areas will be reduced through modified design and sensitivity during construction. Any trees and treelines along approach roads and planned site access tracks will be retained unless felling is unavoidable.

Retained trees will be protected from root damage by an exclusion zone of at least 7 metres or equivalent to canopy height. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing.

3.2.1.7.4 Tree Felling

No tree roosts were confirmed during surveys, however as previously outlined tree roosts can be used on a transitional pathway. Where practicable, tree removal, especially of trees that have been identified as Potential Roost Features (PRFs), will be avoided.

Where avoidance is not practicable, as a pre-caution prior to removal of PRF trees, all trees that were confirmed as having potential for roosting bats will be re-examined immediately prior to their removal to assess whether bats are present. Pre-construction surveys will be undertaken as set out below:

Low suitability trees will be subject to a visual inspection at height using an endoscope. If no bats are confirmed to use the tree it will be felled on the same day using sectional felling or soft felling technique. Limbs and tree sections will be left in situ on the ground for at least 24 hours before they are processed, to allow any bats to fly out.

Trees of moderate suitability or higher will be subject to a roost emergence and re-entry survey to confirm there are no bats using the tree prior to felling. If no bats are found to use the tree, it will be felled on the same day using sectional felling or soft felling technique. Limbs and tree sections will be left in situ on the ground for at least 24 hours before they are processed, to allow any bats to fly out.

If a tree is confirmed to be used by roosting bats following pre-construction surveys, NPWS will be consulted and appropriate mitigation as set out in this section applied.

For trees identified as having moderate PRF suitability, which could be used as a maternity roost, subject to visual inspection as outlined above, these will be felled during the period March-April and/or October-early November which is outside the maternity season and when bats are capable of flight.

For trees identified as having low PRF suitability, subject to visual inspection as outlined above, these trees will be felled during the period March to early November as there is an unlikely risk of these features having suitability to hold a maternity roost.

To minimise habitat loss due to the removal of PRF trees and areas of treeline, bat boxes to the specification of a woodcrete box intended for bats that normally reside in tree cavities, or similar, will be installed in appropriate locations within lands under the control of the applicant. A variety of types of bat boxes will be erected to provide bats with alternatives and a variety of conditions. Bat boxes will be installed by a suitably qualified ecologist, or the project ECoW.

3.2.1.7.5 Lighting

As detailed in **EIAR Chapter 7: Bat Ecology** construction work will take place between 07:00 and 19:00 throughout the week with some operations taking place outside these hours when needed, subject to consultation and agreement with Louth County Council. Instances of this occurring include the deliveries of concrete for Turbine Foundation construction, along with the Turbine erection phase. When night working is required, the following mitigation will be employed.

Floodlighting associated with construction activities will be of a design that limits light spill beyond the working areas. The ECoW will be consulted to ensure that lighting at the construction compounds and in active working areas, which are in close proximity to watercourses, hedgerows and treelines, will be designed to minimise light spill onto habitats used by bats reducing any impacts to foraging or commuting bats. The lighting will be designed in accordance with the current best practice guidance, GN08/23 or any more recent updates in place at the time of the works.

Some, or all, of the below mitigation measures will be employed to reduce light spill where necessary:

- The use of sensor / timer triggered lighting.
- LED luminaires to be used where practicable due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- Column heights will be below TBC level in order to minimise light spill.
- Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only where needed; and
- Where night-time works are required, the appointed contractor will liaise with the engaged suitably experienced and qualified ecologist(s) to implement the measures outlined in the above bullet points to mitigate the impact of such works on bats.

3.2.1.8 Aquatic Ecology Mitigation Measures

- No works will take place within the 50 m buffer zone of watercourses except for the watercourse crossings, road development and drainage measures as detailed on the Water Quality Management Plan.
- The site compound and any temporary soil storage areas will be located at a minimum distance of 50 m from any watercourse. All drainage from these facilities will be directed through a settlement pond with appropriate capacity and measures to provide spill containment. A Peat and Spoil Management Plan, Surface Water Management Plan and

a Water Quality Management Plan have also been appended to this CEMP and will be implemented during the construction phase of the Proposed Development.

- All site drainage, as described in the surface water management plan and shown on associated drawings, will be directed through either sediment traps, settlement ponds and / or buffered drainage outfalls to ensure that total suspended solid levels in all waters discharging to any watercourse will not exceed 25 mg/l (IFI, 2016). All construction site run-off will be channelled through a stilling process to allow suspended solids to settle out and through a spill-containment facility prior to discharge.
- Daily monitoring of all sediment traps and settlement ponds will be undertaken by the Environmental Manager or Ecological Clerk of Works to ensure satisfactory operation and/or maintenance requirements. A full specification for the water quality monitoring is presented in the Water Quality Management Plan.
- The storage of oils, hydraulic fluids, etc., will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005).
- The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc., will be completed in the dry to avoid pollution of the freshwater environment.
- All machinery operating at the Site will be fully maintained and routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken at a discrete “fuel station” designated for the purpose of safe fuel storage and fuel transfer to vehicles.
- The construction of the watercourse crossing will be undertaken during the period July to September as set out in Inland Fisheries Ireland Guidance (2016) to avoid accidental damage or siltation of spawning beds, unless otherwise specified by Inland Fisheries Ireland during consultations in advance of works.
- Any extensions to existing drainage culverts on the Access Tracks will be undertaken in dry conditions and in low flow.
- The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc., will be completed in the dry to avoid pollution of the freshwater environment (see **EIAR Chapter 11** for further details).
- There will be no batching or storage of cement allowed in the vicinity of any watercourse crossing construction area.
- Procedures (as detailed in **EIAR Chapter 11: Hydrology and Hydrogeology**) will be put in place to ensure the full control of raw or uncured waste concrete to ensure that watercourses will not be impacted.

- Should there be any incidents of pollution to watercourses, immediate steps as specified in the Emergency Response Plan (appended) will be undertaken to resolve the cause of the pollution and where feasible, mitigate against the impact of pollution.
- Re-seeding / re-vegetation of all areas of bare ground or the placement of Geo-jute (or similar) matting will take place prior to the operational phase to prevent silt-laden run-off. Seed mixes will contain only suitable native species of plant that occur in the local area.
- Silt traps erected during the construction phase within roadside and artificial drainage will be replaced with stone check dams for the lifetime of The Project. These stone check dams will only be placed within artificial drainage systems such as roadside drains and not in natural streams or drainage lines.
- A full review of construction stage temporary drainage will be undertaken by the Developer (in conjunction with the Project Hydrologist / Site Engineer and the Project Ecologist) following the completion of construction, and drainage removed or appropriately blocked where this will not interfere with infrastructure.

3.2.1.9 Ornithology Mitigation Measures

Surveys will include the following:

- Raptor monitoring between March and August to identify any breeding raptor territories within 1km of the Development, following the methods described in Hardey *et al.* (2013);
- Breeding snipe surveys with a minimum of three survey visits between March and July to identify any breeding wader territories within 500m of the Development. Surveys Will be undertaken following methods outlined in Gilbert *et al.* (1998);
- Non-breeding season collision monitoring: carcass searches, carcass persistence trials and observer efficiency trials will be completed at least once per month throughout the year, to determine whether actual bird collisions are in line with predicted values. Carcasses of all species found on Site will be recorded.

In line with NatureScot guidance (2009), the above monitoring is proposed to take place annually during construction, and after the Development becomes operational during years 1-3, 5, 10 and 15.

Following the restoration of Kilsaran Quarry, it is recommended in **Chapter 8 – Ornithology, Section 8.7.3** that "*additional collision monitoring is undertaken...*" to *"determine the effects on the avian population. It is recommended that VPS are undertaken from a suitable VP to determine any changes in flight activity within 500m of the Proposed*

Development. Surveys should be undertaken for six hours per month for a single non-breeding season following restoration, with methods replicating those used for baseline surveys (or best practice at the time of survey). It is considered that surveys from a single VP location should be sufficient, however this would be confirmed by a suitably experienced ornithologist when designing the survey scope."

3.3 SOILS AND GEOLOGY

The following section details the environmental control measures which must be incorporated into the Contractors' Construction Method Statement (CMS) to ensure the protection of soils and geology. In addition, a Spoil Management Plan and a Waste Management Plan (see **Management Plans 4 and 5** respectively) have been prepared which provide further details of control measures and monitoring procedures.

3.3.1 Subsoil and Bedrock Removal – Mitigation Measures

Mitigation by Avoidance

Areas of sensitive or soft soils and shallow bedrock have been avoided during construction by careful design of the wind farm.

Mitigation by Good Practices

Best practice as described in the IWEA and Scottish Best Practice Guidelines will be applied during construction which will minimise the amount of soil and rock excavation.

Mitigation by Reduction

The disturbance of soil, subsoil and bedrock is an unavoidable effect of the Proposed Development, but careful design of the Wind Farm layout has been undertaken to ensure that the amount of earth materials excavated is kept to a minimum in order to limit the effect on the geological aspects of the Site (by avoiding areas of deep peat and shallow bedrock where possible and reducing the length of site tracks). The management of geological materials is an important component of controlling dust and sediment and erosion control.

Mitigation by Reuse

Bedrock will be re-used for construction of Access Tracks wherever possible.

Mitigation by Remediation

On completion of the construction stage, any areas not required for operation will be reinstated. This will include the Temporary Construction Compounds, turning areas and

any materials storage areas. Granular material will be removed as required and reinstated with peat or other soils in keeping with the adjacent soils. Drainage will be reinstated, if required, in order to minimise future erosion of the soils and restore the pre-development state of the environment.

3.3.2 Storage and Stockpiles – Mitigation Measures

Mitigation by Avoidance and Good Practice

Please refer to Section 3.3.1.

- Areas of sensitive or soft soils and shallow bedrock will be avoided during construction of the wind farm.
- IWEA and Scottish Best Practice Guidelines will be applied during construction which will minimise the amount of soil and rock excavation.
- This CEMP will be updated by the civil engineering contractor and agreed to prior to any works commencing on Site.

Mitigation by Reduction

Whenever possible, soil and rock will be re-used on the Site immediately, thereby reducing the need for double handling, which will also reduce the requirements to stockpile soils. Excavated rock will be used immediately for Access Track construction.

3.3.3 Vehicular Movements – Mitigation Measures

Vehicular movements will be restricted to the footprint of the Proposed Development, particularly with respect to the newly constructed Access Tracks. This ensures that machinery must be kept on tracks and will not move onto areas that are not permitted for the Proposed Development.

Vehicular traffic on Site will be reduced through the re-use of excavated material on Site which will reduce the need to source material from external quarries.

Mitigation by Avoidance and Good Practice

Please refer to Section 3.3.1.

- Areas of sensitive or soft soils and shallow bedrock will be avoided during construction of the wind farm.
- IWEA and Scottish Best Practice Guidelines will be applied during construction which will minimise the amount of soil and rock excavation.
- This CEMP will be updated by the civil engineering contractor and agreed to prior to any works commencing on Site.

3.3.4 Ground Stability – Mitigation Measures

Mitigation by Avoidance and Good Practice

- Areas of sensitive or soft soils and shallow bedrock will be avoided during construction of the wind farm. Careful design of the wind farm has reduced the amount of construction required in areas of sensitive or soft soils, high slopes and other areas of potential ground instability.
- IWEA and Scottish Best Practice Guidelines will be applied during construction which will minimise the amount of soil and rock excavation.
- This CEMP will be updated by the civil engineering contractor and agreed to prior to any works commencing on Site.
- All Site excavations and construction will be supervised by a geotechnical engineer/engineering geologist.

Emergency Response

Emergency responses to potential stability incidents have been assessed (**EIAR Chapter 19: Major Accidents and Natural Disasters**) and established to form part of **Management Plan 1, Emergency Response Plan** before construction works initiate.

- Catch fences and other physical barriers (i.e. concrete blocks) will be on site and available in sufficient quantities to be used in the event of ground instability.
- In the event that soil stability issues arise during construction activities, all ongoing construction activities at the particular area of the Site will cease immediately, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed. Localised stability issues will likely occur with a broad range in severity including minor side will collapse with no significant impact, to relatively significant areas of peat being impacted by excavation activities, or in worst case scenarios localised stability at one location triggering a chain of events leading to significant peat or slope stability issue arising. The assigned geotechnical engineer will assess each scenario and will escalate to the following mitigation scope as the need arises.
- In the unlikely event that soil and slope stability issues arise during construction activities, all ongoing activities in the vicinity will cease immediately, all operators will evacuate the area by foot, if safe to do so, until the area is assessed by competent person/s, the assigned geotechnical supervisor will inspect and characterise the issue at hand, corrective measures will be prescribed. The area impacted will be characterised fully and risk assessments completed prior to any further works

commencing at or near the location. This assessment will be phased including initial rapid response Phase 1 Assessment which will include at a minimum the prescription of exclusion zones and preliminary mitigation steps to be taken, for example, the management of runoff in or from the affected area.

- Considering the highly dynamic nature of peat or soil stability issues at any particular site, it is important to establish an equally dynamic yet robust framework to follow in the event of an incident. Establishment of an emergency framework will follow relevant guidance to initially qualify any incident (by on site competent geotechnical engineer) and risk assess the area, and to then apply initial measures and design a complete emergency / contingency plan in line with an established structured emergency response. Emergency response will prioritise isolating and containing any materials which is being or will be intercepted by the established drainage network or receiving surface water network. Emergency materials and equipment requirements will be identified, incorporated in the CEMP, and will be managed on site with a view to be being easily accessible and readily available.
- On site training and toolbox talks will delivered by the ECoW. This will ensure any response to any potential incident is mobilised quickly and efficiently.
- Detailed emergency response protocols are specified in the **Management Plan 1: Emergency Response Plan**.

3.3.5 Soil Contamination – Mitigation Measures

Mitigation by Avoidance and Good Practice

Protecting soils from spills will in turn mitigate against the potential for contaminates reaching watercourses, mitigation measures for contaminants are presented in detail in **EIAR Chapter 11: Hydrology and Hydrogeology and EIAR Chapter 10: Soils and Geology**.

- Mobile bowsers, tanks and drums will be stored in secure, impermeable storage area, away from drains and open water;
- Fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores;
- Ancillary equipment such as hoses, pipes will be contained within the bund;
- Taps, nozzles or valves will be fitted with a lock system;
- Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage;
- Only designated trained operators will be authorised to refuel plant on Site.

Mitigation by Reduction

As discussed previously, careful design of the wind farm has reduced the amount of Site traffic required on Site by reducing Access Tracks lengths, excavation volumes and double handling. Similarly, good site practice will also result in less traffic and a lower potential for fuel spills and leakages.

Emergency Response

Procedures and contingency plans are proposed to deal with any emergency accidents or spills. In particular an emergency spill kit with oil boom and absorbers will be kept on site in the event of an accidental spill. These are outline in **Management Plan 1: Emergency Response Plan**. All site operatives will be trained in its use. In addition, all vehicles will also contain emergency spill kits.

Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise. Hydrocarbon spill kits will be prepared and kept in vehicles associated with the construction phase of the Proposed Development. Spill kits will also be established at proposed construction areas, for example, a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for hydrocarbon contaminated materials will also be at hand.

Significant hydrocarbon spill or leak – In the event of a significant or catastrophic hydrocarbon spillage, emergency responses will be escalated accordingly. Escalation can include measures such as the installation of temporary sumps, drains or dykes to control the flow or migration of hydrocarbons, excavation and disposal of contaminated material, these, these escalation measures are set out in **Section 6.1.1** of the **Emergency Response Plan**.

Cementitious material – Cement / concrete contamination incidents will be dealt with immediately as they arise. Spill kits will also be established at proposed construction areas, for example, a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for cementitious materials will also be at hand.

Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the vicinity of works. Additionally, emergency responses, including methodologies, are specified in the **Management Plan 1: Emergency Response Plan.**

In the event of a significant contamination or pollution incident e.g., discharge or accidental release of hydrocarbons / fuel to surface water systems, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. The relevant authorities, noted above and stakeholders will also be promptly informed.

3.3.6 Blasting Activity at adjacent Quarry

Where blasting is to continue at the adjacent quarry this can have the potential affect both the integrity of the works and safety of the site users / workers. During these periods the construction works programme will be co-ordinated with that employed at the quarry for quarry blasting and the relevant mitigation employed to avoid risk to site users.

These mitigation measures include:

- The construction works programme will be co-ordinated with that of the Gallstown Quarry blasting programme.
- A 500m radius exclusion zone centred on the blast site will be delineated on site with lockable gates installed at entry / exit points.
- Signage will be erected to warn site users of the blasting hazard and the need to keep out of the exclusion zone. Signage will also detail the annual calendar of these expected events.

3.3.7 Material and Waste Management

All materials used on site and wastes generated on site will be reduced by good site practice and attention to the CEMP, these measures are outlined in the Waste Management Plan (**Management Plan 5**). All waste will be segregated and re-used where possible or removed from site for recycling. Any waste which is not recyclable or compostable will be properly disposed to landfill. Whenever possible, excavated materials will be re-used close to the area of excavation. The careful design which has been achieved will result in minimal excess soil and rock.

3.4 HYDROLOGY AND DRAINAGE

The following section details environmental control measures which will be implemented on site in relation to hydrology and drainage and provide the framework within which the targeted CMS must be prepared. In addition, a Surface Water Management Plan and a Water Quality Management Plan have been prepared (see **Management Plans 2** and **3** respectively) which provide further details of control measures and monitoring procedures.

3.4.1 Storage

All equipment, materials and chemicals required for the Proposed Development will be stored away from any watercourse (i.e. outside previously stated buffer zones). Chemical, fuel and oil stores will be sited on impervious bases in accordance with GPP2: Above Ground Oil Storage Tanks and within a secured bund of 110% of the storage capacity.

Storage space shall be located within the 3 no. temporary construction compounds (as described in **Chapter 2: Description of the Proposed Development**); the same conditions shall apply where materials are stored at main working areas (e.g. turbine cranepads).

3.4.2 Surface Water Quality Monitoring

The Contractors are solely responsible for pollution prevention for the duration of the contract and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed.

In order to verify the efficacy of pollution prevention and mitigation works during construction, Water Quality Monitoring will be undertaken by a suitably qualified Environmental Consultant(s) (qualified to minimum of degree level with a minimum of 5 years' relevant experience), prior to, during and post completion of construction works. This will include all watercourses within the catchment of the construction area. The monitoring will comprise visual, hydrochemistry and grab sample monitoring and is detailed in **Management Plan 2 Water Quality Management Plan**.

3.4.3 Mitigation by Design/Avoidance

3.4.3.1 Site Drainage

Details of the Site drainage can be found in **Management Plan 3: Surface Water Management** Plan. The design criteria for the Sustainable Drainage Systems (SuDS) design are as follows:

- To select and install drainage.
- To minimise alterations to the ambient site hydrology and hydrogeology.
- To provide settlement and treatment controls as close to the Site footprint as possible and to replicate the existing hydrological environment of the Site.
- To minimise sediment loads resulting from the Proposed Development run-off during the construction phase.
- To preserve Greenfield runoff rates and volumes.
- To provide settlement ponds to encourage sedimentation and storm water runoff

settlement.

- To reduce stormwater runoff velocities throughout the Site to prevent scouring and encourage settlement of sediment locally.
- To manage the problems of erosion and allow for the effective revegetation of bare surfaces.
- To control water within the Site and allow for the discharge of runoff from the Site within the limits prescribed in the Salmonid Regulations.

The proposed on-site drainage is set out in detail at **EIAR Appendix 9.1 Flood Risk and Drainage Assessmen**t. The drainage manages flood risk to the Proposed Development, provides environmental protection and manages water quality and silt / suspended sediment, and avoids unnecessary disruption to existing hydrological patterns by adhering to the following principles:

- Track and hardstanding drainage adopts SuDS principles and ensures that runoff from new track and hardstanding shall be reduced to the pre-development greenfield rate. The drainage system caters for protection for up to a 1 in 100-year / 1% AEP rainfall event including allowance for climate change;
- The drainage plan adopts sub-catchments to manage runoff from the Proposed Development where sub-catchments mimic natural topography to avoid “crossing catchments” which could locally affect flood risk;
- Drainage maintains existing overland flow routes and channels. Existing natural flow paths are maintained through the use of piped crossings under road alignments at natural depressions and at regular intermediate intervals;
- Drainage minimises transporting rainfall runoff in long linear drainage swales by providing regular channel “breakouts”, whereby water is encouraged to flow overland, thus maintaining existing natural hydrological patterns;
- Drainage reducing surface water flow rates and volumes by attenuating runoff from tracks and hardstands “at source” by providing check-dams in swales, whereby the flow velocity and rate of discharge is artificially reduced to mimic natural properties. This provides an additional layer of protection rather than relying solely on “end of line” attenuation basins;
- Drainage provides attenuation and settlement ponds at main surface water discharge locations at end of drainage “runs”, where runoff from significant new impermeable areas is treated and attenuated before being discharged, either by dispersal overland, or over a riparian zone adjacent to a watercourse.

Drainage design will reduce chemical, silt and other suspended pollutant transport by providing a "treatment train" of two to three stages of pollutant removal to all surface water runoff, nominally by:

- Ensuring that drainage swales are designed to convey flows at a low velocity by using a wide, flat-bottomed drain;
- Providing settlement and filtration features in all linear drainage swales (check dams, filtration dams) to reduce flow velocity and encourage settlement;
- Encouraging appropriate vegetation growth in the base of all linear drainage to provide additional filtration of water;
- Providing settlement ponds at discharge locations in order to provide treatment to contaminated runoff prior to discharge;
- Discharging surface water runoff over undisturbed vegetated ground, hence allowing any remaining silts and other pollutants to drop out of flows before entering the watercourse (having the effect of polishing the runoff); and
- Preventing the discharge of surface water runoff flows directly to existing watercourses or drainage. Discharges will be via SuDS and buffer zones which will act as a filter strip, allowing deposition of suspended solids and other pollutants.
- Consideration specific to the proposed infrastructure elements are documented in the detailed site-specific drainage management / SuDS design – refer to **EIAR Appendix 11.1 Flood Risk and Drainage Assessment** and accompanying drainage drawings.

3.4.3.1.1 Drainage at Upgraded Access Tracks

The Proposed Development design includes the upgrading of sections of existing access track associated with the existing agricultural lands and commercial forestry workings. As such, the proposed upgrade works (maintenance of existing running surface and associated drainage) may encounter current track drainage which is locally significant in terms of drainage function.

In these instances, additional mitigation measures will be deployed where necessary, including placement of temporary silt barriers (e.g., check dams) within retained and replacement drains, these are outlined in the Surface Water Management Plan (**Management Plan 3**).

3.4.3.2 Watercourse Crossings

The number of watercourse and drainage crossings has been minimised through the principle of avoidance at the layout design stage. The Proposed Development will result in the crossings of 3 no. minor watercourses.

Crossings are designed to accommodate the track width and minimise length of affected channel. Hydraulic design of crossings has been undertaken as per the guidance and requirements provided in CIRIA C786 "Culverts, Screen and Outfall Manual" with primary parameters as follows:

- Width of the culvert will be greater than the width of the active drainage channel;
- Alignment of the culvert will suit the alignment of the drainage channel, i.e. preserve the existing direction of flow;
- The slope of the culvert will not exceed the slope of the bed of the existing drainage channel;
- Detailed design of crossings will comply with OPW Construction, Replacement or Alteration of Bridges and Culverts Section 50 guidelines, which will include providing freeboard to design flood levels and ensuring no increase in flood risk elsewhere as a result of the bridge / culvert. Detailed hydraulic design of culverts and similar structures post permission is normal and accepted practice for wind farms in Ireland; and
- Fisheries shall be protected by adopting the guidance stated in 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' as published by Inland Fisheries Ireland (2016).

Hydraulic design of crossings has been undertaken as part of this assessment and details are provided in a 'Watercourse Crossing Schedule' included as part of **EIAR Appendix 9.1 Flood Risk and Drainage Assessment**.

The GCR will require the crossing of 5 no. watercourses (3 no. bridges and 2 no. culverts) where there is insufficient cover to install the cable to ESB specification (450 mm cover to the top of ducts). At these locations Horizontal Direction Drilling (HDD) shall be employed.

All other culverts to be traversed using standard 38 kV Service / Culvert Crossing details provided in **Appendix 14.1: 38kV Grid Connection - Outline Construction Methodology**.

During decommissioning phase, underground cables will be removed while the ducting will be left in-situ. Therefore, no works in or adjacent to watercourses shall be required during any phase of the Proposed Development.

Further details on the proposed HDD methods and relevant mitigation measures are provided in **Appendix 14.1: 38kV Grid Connection - Outline Construction Methodology**.

Consultation and approval will be sought from all relevant stakeholders and regulators in accordance with OPW Section 50 guidelines (OPW, 2022), at the pre-construction detailed design stage for all works in and affecting watercourses and drains.

3.4.4 Pollution Prevention Mitigation Measures

During all phases of the Proposed Development, the site manager will ensure that mitigation measures as identified within this assessment are fully implemented and that activities are carried out in such a manner as to prevent or reduce effects.

To ensure best practice on site and to help avoid pollution release to watercourses, IFI 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) will be adhered to. The Guidance on Pollution Prevention (GPP) series (SEPA / NIEA, 2022), relevant in similar adjacent jurisdictions, will be consulted (as additional examples of best practice) and complied with to help avoid pollution release to watercourses. Key requirements for control of chemical pollution risk that will be implemented include those outlined in the following sections.

The following sections should be read in conjunction with the construction management information provided within **EIAR Chapter 2: Description of the Proposed Development** and **EIAR Appendix 9.2: Water Framework Directive Assessment**.

3.4.4.1 Storage

All equipment, materials and chemicals required for the Proposed Development will be stored away from any watercourse (i.e. outside previously stated buffer zones). Chemical, fuel and oil stores will be sited on impervious bases in accordance with GPP2: Above Ground Oil Storage Tanks and within a secured bund of 110% of the storage capacity.

Storage space shall be located within the 3 no. temporary construction compounds (as described in **Chapter 2: Description of the Proposed Development**); the same conditions shall apply where materials are stored at main working areas (e.g. turbine cranepads).

3.4.4.2 Vehicles and Refuelling

Standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Spill kits will also be available in designated areas throughout the Site. Refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, away from any watercourse or drainage ditches and will adhere to best practice as detailed in the safe operation of refuelling facilities: PPG 7.

3.4.4.3 Maintenance

On-site maintenance (outside of construction compounds) to construction plant will be avoided in all practicable instances, unless vehicles have broken down necessitating maintenance at the point of breakdown. Suitable measures will be put in place prior to commencement of maintenance in this instance comprising spill kit, drip trays, absorbent booms.

3.4.4.4 Cement and Concrete Batching

Measures to prevent discharge of alkaline wastewaters or contaminated storm water to watercourses will be determined before commencement of works. Concrete contaminated water will be discharged to a lined basin in order that it be contained for authorised disposal off site. Wastewater spillage will be minimised by using settling tanks and recycling water. Spill kits will also be available in designated areas throughout the Site.

3.4.4.5 Mess and Welfare Facilities

Mess and welfare facilities will be required during the construction phase and will be located at the construction compounds. 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 of treated or untreated foul effluent on the Site).

3.4.4.6 Construction in the Vicinity of Watercourses

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; and

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.
Work in or near water is expected to be limited to construction of drainage outfalls and pre-construction felling.

3.4.4.7 Construction of Watercourse Crossings

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. For purposes of outline design, 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; and
- Use of over pumping where deemed appropriate.

3.4.4.8 Construction in the Vicinity of Private Water Supplies

There shall be no storage of chemicals, fuels, or other lubricants and no refuelling permitted within 100 m of private water supplies.

A spill kit will be available on site at all times and a team of operatives will be trained in the use of the spill kit. Emergency procedures in the event of a spillage will be displayed on site and communicated to all operatives prior to their commencing of work on the site. All operatives will be made aware that any fuel spillage must be reported to the contractor's office as soon as it happens.

An Emergency Response Plan for dealing with an accidental spillage of chemicals, fuels, or other lubricants shall be prepared prior to works commencing and communicated to all operatives. This document is attached to the CEMP as an appendices **Management Plan 1 – Emergency Response Plan.**

3.4.4.9 Temporary SuDS

SuDS, comprising temporary drainage and silt management features will be constructed prior to earthworks (including preliminary or enabling works including felling) proceeding to construct any linear works (tracks / hardstanding areas / cable routes), turbine bases, and other infrastructure.

Drainage will be provided to temporary earthworks. Permanent drainage will be installed in advance of or in parallel with completion of tracks and hardstanding areas; a planning design for permanent drainage is shown on drawings within **EIAR Appendix 11.1: Flood**

Risk and Drainage Assessment and **EIAR Appendix 11.2 Surface Water Management Plan.**

These measures will include:

- Temporary silt fences erected in areas where risk of pollution to watercourses has been identified by the ECoW and monitored e.g. watercourse crossing locations and areas where felling lie within watercourse buffer zones;
- Placing temporary filtration silt fences within drainage channels where required;
- Installing temporary constructed settlement features such as sumps or settlement ponds / lagoons in areas where water is to be discharged. Principles and design standards for sizing of treatment are stated in **Appendix 9.2**;
- 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;
- 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 where dewatering of reduced quality runoff is expected; and
- 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.

The prevention measures described above will be in place at all times during the construction phase to prevent the conveyance of silts to receiving watercourses. Further detail on the measures above is elaborated in **EIAR Appendix 11.2 Surface Water Management Plan.**

3.4.4.10 Electrical Cable Lying

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 spoil management plan, which will be produced as part of the detailed CEMP at the pre-construction stage this is appended to the **CEMP Management Plan 4 – Spoil Management Plan.**

3.4.4.11 Excavations and Spoil Management

Soil and subsoil excavation and movement will be undertaken in accordance with best practice guidelines will be complied with Good Practice Guide for Handling Soils (MAFF, 2000) in order to minimise potential for silt laden runoff from spoil and excavations. Areas of stockpiled spoil including stored peat:

- will not be permitted within previously identified watercourse buffer zones; and
- will not be permitted to obstruct the flow of overland surface water with specific drainage to spoil mounds to be provided.

Material produced from excavations on the Site will be reused where reasonably practicable in the reinstatement of the site. Excavated materials will be separated into rock material, subsoil, reusable peat and vegetated sod material and will be stored in the designated temporary stockpile zones, under the supervision of a geotechnical expert. These materials will be reused where possible to re-grade slopes, and to re-vegetate and stabilise the sides of access tracks and hard standing areas.

Spoil drainage will be designed on a bespoke basis for spoil storage areas to allow controlled dewatering and prevent washout of suspended solids to the receiving water environment. As part of the detailed design, a Spoil Management Plan (**Management Plan 4**) will be developed by the appointed competent contractor for the development. Outline designs for drainage arrangements for temporary spoil areas are shown on the Drainage Management Drawings within **EIAR Appendix 11.2: Surface Water Management Plan.**

3.4.4.12 Dewatering of Excavations

The majority of the turbine base foundations will be on bedrock or other hard strata above bedrock (to be confirmed by detailed site investigation prior to detailed design); therefore, deep excavations within bedrock and the associated bedrock aquifer, and dewatering below the bedrock aquifer groundwater table are not anticipated.

Shallow groundwater or rainfall runoff collected in excavations will be discharged via settlement ponds or filter strips prior to entry to the receiving water environment.

Any settlement lagoons or filter strips associated with 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. Maintenance requirements are set out in full in **EIAR Appendix 11.2: Surface Water Management Plan**.

3.4.4.13 Dust Management

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. In dry weather dust suppression methods such as by dust suppression bowser will be employed.

3.4.4.14 Maintenance of Pollution Prevention Measures

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:

- Unblocking of drains;
- Maintenance of access road and other hard standing surfaces;
- Replacement of filtration features; and
- Removal of silt build-up from settlement and filtration features.

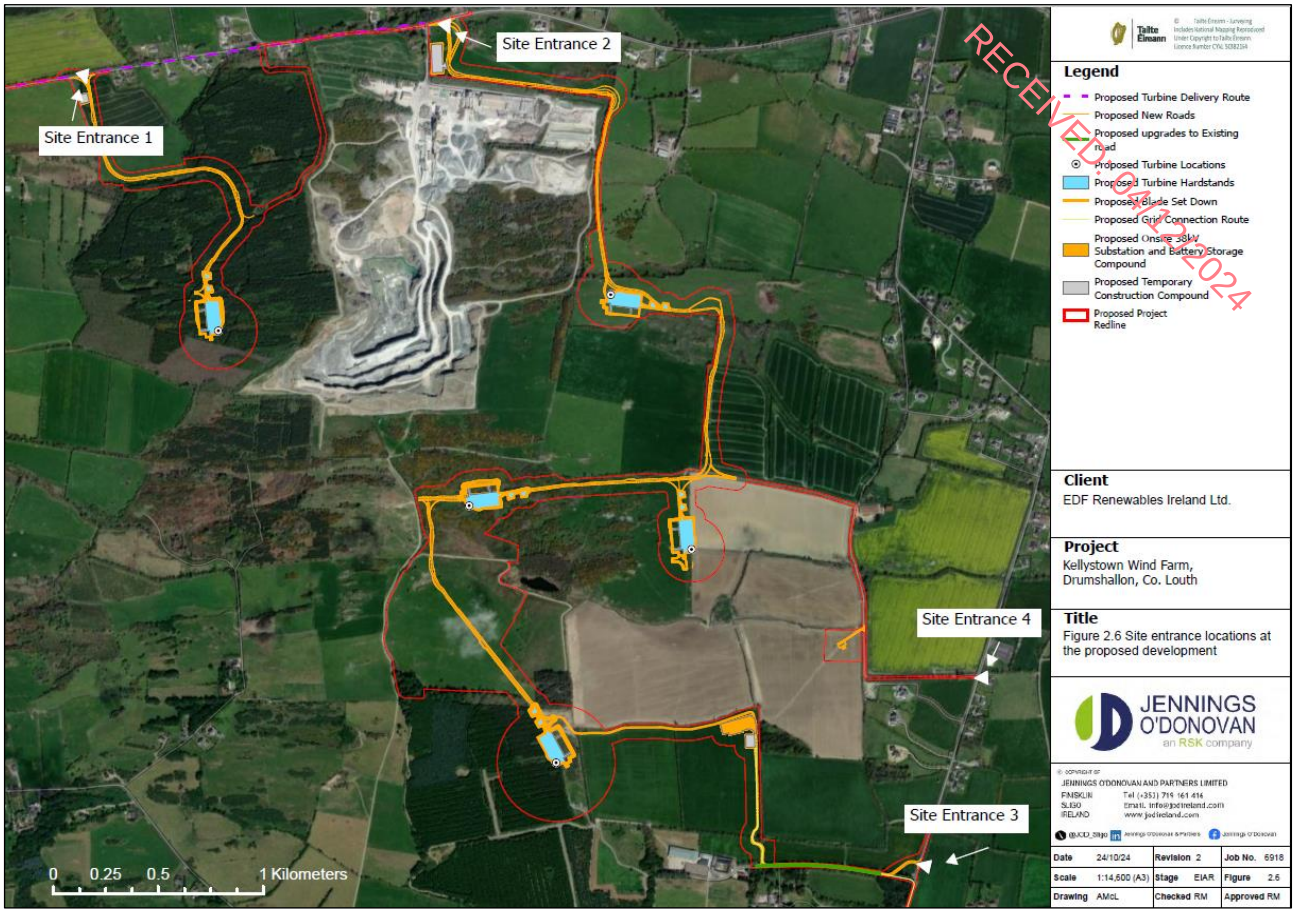

Figure 3.1: Map showing the proposed location of site entrances at Kellystown Wind Farm

3.5 AIR AND CLIMATE

3.5.1 Air

The main potential impact during the construction phase of the Proposed Development will be from dust nuisance at sensitive receptors close to the site. Good practice site procedures will be followed by the appointed contractor to prevent dirt and dust being transported onto the local road network and to minimise vehicle exhaust emissions. Good practice site control measures will comprise the following:

- Site Access Roads will be upgraded and built in the initial construction phases. These roads will be finished with graded aggregate which compacts, preventing dust.
- Approach roads and construction areas will be cleaned on a regular basis to prevent build-up of mud and prevent it from migrating around the Site and onto the public road network.
- Wheel wash facilities will be provided near the Site entrance to prevent mud/dirt being transferred from the site to the public road network. All vehicles entering and exiting the site will be required to use these facilities.
- Public roads along the construction haul route will be inspected and cleaned when being used for construction delivery. In the unlikely event that dirt/mud is identified on public

roads, the roads will be cleaned. The wheel wash facility will be investigated, and any issues identified will be fixed before the facility is used by further construction vehicles.

- During periods of dry and windy weather, there is potential for dust to become friable and cause nuisance to nearby residences and users of the local road network. This requires wetting material and ensuring water is supplied at the correct levels for the duration of the work activity. The weather will be monitored so that the need for damping down activities can be predicted. Water bowsers will be available to spray work areas (wind turbine area and grid connection route) and haul roads to suppress dust migration from the Site.
- Vehicles delivering materials to the site will be covered appropriately when transporting materials that could result in dust, e.g., crushed rock or sand.
- Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the Contractor by ensuring that emissions from vehicles are minimised through regular servicing of machinery.
- All machinery when not in use will be turned off.
- Ready-mix concrete will be delivered to the Site and no batching of concrete will take place on the Site. Only washing out of chutes will take place on site and this will be undertaken at a designated concrete washout facility at the contractor's compound. The concrete wash water will be disposed of at a licensed facility as outlined in the Construction Environment Management Plan (CEMP) – Management Plan 5 Waste Management Plan (**Appendix 2.1**)
- Speed restrictions of 15km/h on access roads will be implemented to reduce the likelihood of dust becoming airborne. On-site speed limits will be implemented, policed by the Contractor, and referred to in the toolbox talks.
- Stockpiling of materials will be carried out in such a way as to minimise their exposure to wind. Stockpiles will be covered with geotextiles layering and damping down will be carried out when weather conditions require it

  Earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable.
- An independent, qualified Geotechnical Engineer will be contracted for the detailed design stage of the project and geotechnical services and will be retained throughout the construction phase, including monitoring and supervision of construction activities on a regular basis. The methodology statement will be signed off by a suitably qualified Geotechnical Engineer.
- A complaints procedure will be implemented on site where complaints will be reported, logged and appropriate action taken.

The appointed contractor responsible for the detailed design of the project will provide details to the planning authority for agreement in writing prior to the commencement of development of environmental safety methodology including best practice procedures to manage construction activities. The methodology statement will be signed off by a suitably qualified geotechnical engineer/engineering geologist.

3.5.2 Climate

The following mitigation measures will be implemented to reduce GHG emissions during the construction of the Proposed Development:

- All machinery when not in use will be turned off.
- Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the Contractor by ensuring that emissions from vehicles are minimised through regular servicing of machinery.
- Use of local quarries, materials suppliers and waste facilities will be used, as outlined in **EIAR Chapter 16 Traffic and Transport**, minimising travel distances
- A robust Traffic Management Plan (**Management Plan 7**) has been developed, utilising the most direct routes where possible. This plan will be updated to reflect project needs.

3.6 ARCHAEOLOGY AND CULTURAL HERITAGE

The Wind Farm layout was informed by Cultural Heritage desktop studies and fieldwork undertaken during the design and assessment phases and was designed to avoid the locations of known and potential heritage receptors.

There is an identified potential relict field system (CH09) and overall sub-surface archaeological potential at the Site (recorded monuments in close proximity/near environs; previous investigations at Kilsaran Quary to the northwest (geophysical survey, test trenching); potential relict field system, AAPs 1 & 2). Where suitable, feasible and viable (non-heavily vegetated ground conditions or areas of rock outcropping) there will be a need to conduct a programme of licenced archaeological geophysical survey at CH09 and throughout the design footprint and temporary working areas in the Site, to be followed up by strategic and targeted test trenching of any anomalies that may be identified. In the event of an archaeological find during testing, consultation with statutory bodies (NMS/NMI) will be required to direct next steps in terms of preservation in situ (avoidance) or preservation by record (excavation).

Ground works during the construction phase will be subject to archaeological monitoring by a suitably qualified archaeologist under licence by the National Monuments Service. A systematic advance programme of archaeological field-walking surveys will also be carried out within Proposed Development areas in forestry plantations following tree felling to confirm the conditions predicted in this assessment, i.e., that they contain no visible surface traces of potential unrecorded archaeological or architectural heritage sites.

In the event that any sub-surface archaeological features are identified during archaeological monitoring they will be securely cordoned off, cleaned and recorded *in situ*. The National Monuments Service will then be notified and consulted to determine further appropriate mitigation measures, which may include preservation *in situ* (by avoidance) or preservation by record (archaeological excavation).

The identified temporary indirect negative impacts on the Cultural Heritage resource during construction stage are of a visual nature only that detract from the setting and/or amenity value/access to the identified sensitive receptor. There are no appropriate mitigation measures to reduce or offset these indirect impacts on setting.

It is noted that standing stone LH021-013--- has possibly toppled over based on field survey observations, since the ASI survey was conducted, while standing stone LH021-014--- is still upright, and located 31m distant (closet point) to the Proposed Development footprint. A minimum 20m diameter buffer and exclusion zone will be retained around the monuments at construction stage (using temporary and highly visible non-ground intrusive fencing) in order to avoid any inadvertent damage to the stones as well as ground rutting in and around the monuments.

3.7 NOISE & VIBRATION

The core hours for the proposed works will be normal construction hours 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 Saturday. There will be no working on Saturday afternoons, Sundays and Public Holidays, however, it should be noted that out of necessity some activity outside of the core hours could arise, from delivery and unloading of abnormal loads or health and safety requirements, or to ensure optimal use is made of fair weather windows for concrete deliveries, the erection of turbine blades and the erection and dismantling of cranes. If occasional work is undertaken outside of core hours, especially during construction of access tracks at the site entrance, this will be agreed in advance with the local planning authority.

Good site practices, both for construction of the Proposed Wind Farm and the Proposed Grid Connection Route will be implemented to minimise the likely effects. Particular care will be taken at the M1 crossing along the Proposed Grid Connection Route. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that will be employed onsite:

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

3.8 WASTE

Staff Facilities

Provision for separation of waste streams will be provided so that e.g., paper, and cardboard waste and bottles will be recycled. This waste will be appropriately stored to prevent exposure to wind, rain, and wildlife.

Sewage

A rainwater harvesting system will be proposed as the source of water for toilet facilities for the operational phase. Wastewater from the staff welfare facilities in the control building will be collected in a sealed storage tank, fitted with a high-level alarm. This is a device installed

in a fuel storage tank that is capable of sounding an alarm, during a filling operation, when the liquid level nears the top of the tank.

Concrete

During the construction phase:

- Precast concrete will be used wherever possible i.e., formed offsite. Elements of the Proposed Development where precast concrete will be used have been identified and are indicated in the CEMP. Elements of the Proposed Development where the use of precast concrete will be used include structural elements of watercourse crossings (single span / closed culverts) as well as Cable Joint Bays. Elements of the Proposed Development where the use of precast concrete is not possible include turbine foundations and joint bay pit excavations. Where the use of precast concrete is not possible the following mitigation measures will apply.
- The acquisition, transport and use of any cement or concrete on site will be planned fully in advance and supervised at all times by the ECoW.
- Vehicles transporting such material will be cleaned upon arrival on site, that is; vehicles will be washed/rinsed removing cementitious material leaving the source location of the material. There will be no excess cementitious material on vehicles which could be deposited on trackways or anywhere else on site. To this end, vehicles will undergo a visual inspection prior to being permitted to drive onto the Wind Farm Site or progress beyond the contractor's yard. Vehicles will also be in good working order.
- Where shuttering is required to be installed in order contain the concrete during pouring, it will be installed to a high standard with minimal potential for leaks. Additional measures will be taken to ensure minimal potential of leaking, these measures are the use of plastic sheeting and the use sealing products at joints.
- Concrete will be poured during meteorological dry periods/seasons. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. These works will be limited to dry meteorological conditions i.e. avoid foreseen sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any foreseen intense rainfall event (>3mm/hour, yellow on Met Eireann rain forecast maps), and do not proceed during any yellow (or worse) rainfall warning issued by Met Eireann. This also will avoid such conditions while concrete is curing, in so far as practical.
- Ground crew will have a spill kit readily available, and any spillages or deposits will be cleaned/removed as soon as possible and disposed of appropriately.
- Pouring of concrete into standing water within excavations will be avoided. Excavations will be prepared before pouring of concrete by pumping standing water out of excavations to the buffered surface water discharge systems in place.

- Temporary storage of cement bound sand (if required) will be on hardstand areas only where there is no direct drainage to surface waters and where the area has been bunded e.g., using sand-bags and geotextile sheeting or silt fencing to contain any solids in run-off.
- No surplus concrete will be stored or deposited anywhere on site. Such material will be returned to the source location or disposed of off-site appropriately.

Chemicals, Fuels and 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.

Only essential refuelling (e.g., cranes) will be carried out, outside of this area but not within 65m of any watercourse. In such cases a non-permeable High-density Polyethylene (HDPE) membrane will be provided beneath connection points to catch any residual oil during filling and disconnection.

A Chemical and Waste Inventory will be kept, as outlined in Appendix 2.1 (Waste management plan no. 5). 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
- Mobile units will have secondary containment when in use/out on site

All dangerous substances will be conveyed in a container that compiles with the ADR[1]. As such the manufacturer of each bowser will provide certification to contractors of the following:

- A leak-proof test certificate.
- A copy of the IBC (intermediate bulk containers) approval certificate.

[1] ADR, 2023 (European Agreement Concerning the International Carriage of Dangerous Goods by Road). https://unece.org/transport/standards/transport/dangerous-goods/adr-2023-agreement-concerning-international-carriage Accessed 29/01/2024

- An identification plate attached to the container.

Where mobile bowsers are used on site, guidelines (EU Directive 95/55/EC) 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;
- The pump or valve will have a lock and be locked shut when not in use.

Refuelling

During construction/decommissioning, all refuelling on site will be within the temporary compound within the re-fuelling area (see **Drawing No. 6918-PL-102 and 6918-PL-401**. Only essential refuelling (e.g., cranes) will be carried out, outside of this area, but not within 65m of any watercourse. In such cases a non-permeable High-density Polyethylene (HDPE) membrane will be provided beneath connection points to catch any residual oil during filling and disconnection. This membrane will be inspected and if there is any sign of oil contamination, it will be removed from site by a specialist licensed waste contractor. All vehicles will be well maintained and free from oil or hydraulic fuel leaks.

Vehicles will be refuelled off-site where possible. For vehicles that require refuelling on-site, fuels will be stored in the Temporary Construction Compound and bunded to at least 110% of the storage capacity of fuels to be stored.

Refuelling will take place via a mobile double skinned fuel bowser. The bowser will be a double axel refuelling trailer which will be towed to the refuelling locations by a 4x4 vehicle. The 4x4 will carry, a drip tray, spill kit and absorbent mats in case of any accidental spillages. Only designated competent personnel will refuel plant and machinery on the Wind Farm Site.

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 appropriately in anticipation to be transferred offsite by a licensed contractor to a licenced facility.

Metals

Waste metals from concrete reinforcing etc, have a commercial value and therefore there is an additional economic incentive for the appropriate re-use or recycling with the licensed waste contractor.

3.9 CONSTRUCTION PLAN

The following sections detail an outline construction sequence to provide an overview of the construction process; The construction-stage details of the sequence and methodologies, to be undertaken within the framework of this CEMP, will be determined by the Contractors.

3.9.1 Phasing of Works

It is envisaged that the following will be the sequence of construction for the Proposed Development:

1. Site Preparation including felling and drainage
2. Site Access Roads
3. Contractors Compound and Welfare Facilities
4. Crane hardstandings
5. Turbine Foundations
6. Internal cable ducting
7. Installation of the Grid Connection
8. Erection of wind turbines
9. Commissioning and Energisation

3.9.2 Working Hours

The Proposed Development will have approximately 50 construction workers during the peak of the construction phase. Working hours for construction will be from 07:00 to 19:00 on weekdays, with reduced working hours at weekends, from 08:00 to 13:00 on a Saturday. It should be noted that during the turbine erection phase, operations will need to take place outside those hours with concrete pours commencing at 05:00 and continuing till 16:00, to facilitate turbine foundation construction and so that lifting operations are completed safely. Hours of working for turbine foundation construction will be agreed with Louth County Council prior to the commencement of turbine foundation construction. **Chapter 16: Traffic and Transportation** refers to this in further detail. A detailed Traffic Management Plan will be implemented for the construction phase. This shall be agreed during the prior to the commencement of construction works with the Planning Authority so that strict controls described therein are in place with all suppliers coming to the Site.

3.9.3 Site Management Procedures and Construction Methodologies

Prior to commencement of construction, the appointed Contractors(s) will prepare detailed method statements and work programmes for the construction stage. These method statements will be prepared in the context of measures set out in this CEMP and will take account of mitigation measures as outlined in the planning application and accompanying environment reports, and site investigations to be carried out prior to construction. Any specific requirements will be fully incorporated into the appointed Contractors scopes of work and appropriate supervision and management will be carried out to ensure full compliance.

The method statements produced by the Contractors(s) will be reviewed by the Ecological Clerk of Works and will be agreed with the appropriate parties, including Louth County Council. The Developer will employ a Project Manager to monitor the construction phase of The Project and ensure works are being carried out in accordance with the agreed method statements, safety procedures and pollution control measures.

3.9.3.1 Mobilisation of Contractors Plant

Prior to commencement of construction works, the selected Contractors shall submit to the Developer a full list of plant, equipment and accommodation (site offices etc.) proposed for use during the works.

Dates for mobilisation will be agreed with the developer and/or his representative/Owners Engineer.

3.9.3.2 Site Infrastructure

Site Access Roads / Turbines

Machinery and vehicles used in access track construction are operated from the track only as it is constructed.

The location of all infrastructure required for this Proposed Development shall be set out by GPS (Real-Time Kinematic enabled[2]) equipment to the permitted detail as noted on the approved drawings. The Site will be set out using wooden posts to mark the boundary and extent of construction activities, in accordance with the approved Site layout and

[2] Real-time kinematic (RTK) processing on a drone **records GPS information and geotags images as they're captured during flight**.

environmental constraints drawings, and with contributions from the appointed ecologist. The boundaries of the buffer zones will be taped/fenced off to prevent construction plant from entering the buffer zones and impacting on water quality. Site personnel will be informed of the buffer zones through toolbox talks onsite, both before and during construction. New personnel will be informed of the construction buffer zones with induction training before commencing work.

3.9.3.3 Establish Pre- Commencement Mitigation Measures

Prior to construction works advancing on site, the Contractors shall confirm to the Employer of their intention to advance the works in a sound practical manner with no undue impact on the receiving environment. The Contractors shall identify all sensitive environmental areas within the Employer's site and confirm their intended method of construction works regarding these areas in line with the methods outlined in this CEMP. All environmentally sensitive areas shall be identified prior to the detailed design/construction phase.

Where the estimated working area is reduced by any sensitive environmental areas i.e., buffer zones, post and tape marking shall be used to set out these locations and thus prevent the entry of Contractors plant within these areas during construction works.

To protect any known ecological features that occur close to the planned infrastructure, a delineated working corridor will be employed throughout the construction. Posts and tape will be used to establish these areas and thus prevent the entry of Contractors plant outside the working corridor during construction works. Locations of ecological significance or where invasive species are identified will also be fenced off.

A 50 m buffer to natural watercourses will be employed during construction to protect water quality and to ensure that there is no significant direct effect on existing watercourses. The proposed locations for spoil storage are highlighted in the attached Spoil Management Plan. Where spoil storage areas are located in proximity to watercourse buffer zones, silt fencing will be installed along the area facing the buffer zone and maintained in line with the instructions of the manufacturer. Works within the buffer zone will be subject to specific method statements.

3.9.3.4 Site Preparation

Entrance Formation

The site access will be from 4 new site entrances, it is proposed to access the proposed development site during both the construction and operational and decommissioning

phases. The site entrance coordinates are located in Table 2.4. The Turbine Delivery Route and the Construction Haul Routes will utilise Site Entrances 1 & 2 for the construction of the Wind Farm. All the site entrances are Illustrated on **EIAR Figure 2.6**.

Site entrance 1 located at the northwest of the site in on the Local Road L-6274-0. This entrance will include removal of existing vegetation for visibility splays to facilitate the use of it for the delivery of construction materials to the site and operational site use.

Site entrance 2 located at the north of the site in on the Local Road L-6274-0. This entrance will include removal of existing vegetation for visibility splays to facilitate the use of it for the delivery of construction materials to the site and operational site use.

Site entrance 3 located at the east of the site on the Local Road L2275-24. This entrance will include removal of existing vegetation for visibility splays to facilitate the use of it for the delivery of construction materials to the site and operational site use of the substation only.

Site entrance 4 located on a private road located at the east of the site off the Local Road L2275-24. This entrance will include removal of existing vegetation for visibility splays to facilitate the use of it for the delivery of construction materials to the site and operational site use of the Permanent Met Mast Only.

Please refer to **Figure 3.1** for an illustration of the Site entrance's locations.

Works required at the site entrances will include the following:

- Clearing visibility splays of vegetation / soil to a level surface;
- Excavating to solid formation level;
- Installing roadside drainage features;
- Placing entrance sub-base with rockfill material;
- Placing capping layer;
- Providing surface dressing where necessary to prevent rutting of existing road surface.

The detailed construction method statement for site entrance preparation is included in **Table 3.1**.

Table 3.1: Site Entrance Preparation CMS

Activity	Notes
Video Road Condition Survey.	The Contractors will arrange and provide a video survey to establish the condition of the road prior to mobilisation to site.
Prepare a Traffic Management Plan (TMP) in coordination with Louth County Council and An Garda Síochána and implement.	The Contractors will agree an approved TMP with the Roads Section at Louth County Council and An Garda Síochána and the developer.
Set out the alignment of the site entrance using GPS equipment.	Wooden pegs/posts or similar to be used in setting out, following a site walkover by the Ecological Clerk of Works.
Archaeology Requirements.	The Site will be accessible to the appointed archaeologist at all times during working hours. The nominated archaeologist will monitor all invasive works.
Install drainage treatment features as per the Surface Water Management Plan.	Required to minimise the transportation of suspended solids generated during the construction stage.
Excavate and/or clear the area which is required to accommodate the visibility splays.	The top layer of vegetated material is set aside for re-use as a sealing layer to prevent sediment runoff and reduce visual impact.
Re-align private fences as required by the visibility splays and detailed design.	Required for stock control, security, and sight line visibility requirements.
Excavate to track formation level along the extent of the site entrance and accommodate drainage.	The Contractors shall provide that soil is carefully distributed and banked adjacent to the entrance within the construction boundary. Soil will be managed as per the spoil management plan. Any storage of material will be located to see that no interference with visibility splays occurs.
Installation of stone foundation and surfacing of apron to be installed.	In the interests of road safety, appropriate construction measures will be implemented to see that site debris is not deposited on the carriageway. In the unlikely event of same

Activity	Notes
	occurring, the Contractors shall ensure that all material is removed immediately in accordance with the provisions of the TMP to be agreed with Louth County Council.
Installation of security gates/hut (where required), tied into the re-aligned fence.	Required for site security.

Contractors Compound and Welfare Facilities

The temporary site compound will be in place for the duration of the construction works only. The compound will be used as a secure storage area for construction materials and to contain temporary site accommodation units for sealed type staff welfare facilities. The compound will contain cabins for offices space, meeting rooms, canteen area, a drying room, parking facilities, and similar personnel type facilities.

An area within the compound will be used for the storage of fuel and oils and this will be suitably bunded to 110% of the storage volume. The bund will be lined with an impermeable membrane in order to prevent any contamination of the surrounding soils, vegetation and water table. Double protection containers / equipment will be used along with drip trays and details

During the construction phase, water will be supplied by water bowser. The maximum wastewater production is estimated to be the same as the maximum water consumption (2,000 litres per day). The Project will include an enclosed wastewater management system at the temporary compound capable of handling the demand during the construction phase with 50 construction workers on site at peak. A holding tank is proposed for wastewater management. Wastewater will be removed off-site and disposed at an appropriate licenced facility.

The proposed construction method statement for the construction compound / storage area is detailed in **Table 3.2**.

Table 3.2: Contractors' Compound and Welfare Facilities CMS

Activity	Notes
Set out the perimeter of the site compound using GPS equipment following a site walkover by the Ecological Clerk of Works.	Setting out must be undertaken in Irish Grid co-ordinates and to sub-centimetre accuracy in the X, Y and Z plane.
Archaeology	The Site will be accessible to the appointed archaeologist at all times during working hours. The nominated archaeologist will monitor all invasive works.
Install drainage treatment and flow attenuation features as per the detailed design.	Required to minimise the transportation of suspended solids generated during the construction stage.
The top layer of vegetated material will be stripped and stored for re-use onsite.	The top layer of vegetated material is set aside for re-use as a sealing layer to prevent sediment runoff and reduce visual impact. The location for storage of these vegetated turves will be around the perimeter of the site compound away from any sensitive habitats.
Stone will be placed in layers to form the hardstanding area for the site compound.	Hardcore area with Clause 804 stone on geotextile layer (Netlon SS30 or similar) for temporary site offices and for vehicle movements / parking.
The accommodation, eating and sanitary cabins will be installed in accordance with the construction drawings. The site office will be located in the temporary storage area.	Foul drainage from site welfare accommodation will discharge to a holding tank. The holding tank will be fully enclosed with no discharge outlet. The toilets will be the 'portaloo' chemical toilet type. The holding tank will be emptied as required by a licenced waste disposal operator. Temporary power supply and telecommunications will be connected to the relevant cabins.
Construct an impervious covered bunded area for plant refuelling and plant maintenance and cleaning operations.	Bund to absorb 110% of potential spill volume. Non-permeable concrete refuelling area with petrol interceptor. An oil interceptor will be installed on the drainage outlet from the bunded area to separate any oils from the surface run off. Generators and

Activity	Notes
	associated diesel tanks are to be installed on such an area.
Storage units for hazardous products and covered waste skips will be installed as per best industry practice.	All storage units for hazardous products will be fully lockable and bunded proprietary steel containers.
Provide measures for waste management.	Waste segregation skips will be deployed for optimum recycling and re-use of materials. Skips will be covered with lid.
Parking	Parking areas shall be identified by signage with a handrail system or barrier separating pedestrian areas and vehicle routes.
Reinstatement	Compound areas to be restored to pre-construction condition at completion and demobilisation stage.

Site Security

From an operational point of view, for control of site access and for proper site management, all access to the Site will require passage through a controlled safety barrier/gate or hut. The exact location(s) shall be decided by the Contractors with primary responsibility for safety on the Site. It is proposed that the barrier(s) be located at two permanent site entrances on the local Road L6274 and one provisional site entrance on the Local Road L2275 and one permanent site entrance onto a private road L2275 of the Site, so that no unauthorised traffic can enter the Site and to check that all personnel are permitted / inducted on the Site. The barrier will be set back sufficiently so that HGVs can enter the Site without stopping.

The Contractors shall be responsible for securing each area of work, so as to ensure the safety and health of all affected persons (Contractors personnel, site supervision staff, members of the general public, traffic, etc.). The Contractors will provide details to the Developer of security arrangements for the following:

- Fencing specification;
- Provision of personnel to man site access point(s);
- Signage; and
- Signing in/out procedures.

3.10 SITE CLEARANCE AND CONSTRUCTION METHODS

The management of earthworks will be of paramount importance throughout the construction of the Project. The general principles that will apply to earthworks include:

- Excavations to only take place following implementation of setting out the working corridor, drainage treatment and flow attenuation provisions.
- Archaeological supervision works will be undertaken during all earthworks.
- Vegetation within the construction corridor shall be cleared as part of the excavation works.
- Suitable plant to be used, particularly when working off road i.e., use of geotextile mats.
- Machinery and vehicles used in access track construction are operated from the track only as it is constructed.
- Vegetated top-mat layer to be removed separately and set aside from other spoil and place around the excavations for use in reinstatement. Spoil storage areas will be around turbine bases as per the attached Peat and Spoil Management Plan.
- Topsoil stockpiles shall be no more than 1m in height, smoothed to prevent erosion, and watered to prevent them drying out.
- Apply the vegetated capping layer to permanently exposed excavations or storage areas to mitigate against movement and to avoid sediment run-off. Input from the appointed ecologist will be used to apply the appropriate species of the immediate environment in the capping layer.
- No permanent stockpiles will remain on site after completion of the construction phase.
- Monitor all rock breaking activities and survey areas for indicators of peat/soil movement/slide. The appropriate remedial action will be taken.

The construction method statement for excavation and spoil management is shown in **Table 3.3**.

Table 3.3: Excavation and Spoil Management Method Statement

Activity	Notes
Archaeology	The Site will be accessible to the appointed archaeologist at all times during working hours. The nominated archaeologist will monitor all invasive works.
Install drainage treatment and flow attenuation features as per the detailed design, which includes recommendations of an expert ecologist	Required to minimise the transportation of suspended solids generated during the construction stage. Temporary and permanent ponds and outflow buffers will be constructed as per the attached Surface Water Management Plan.
Spoil locations to be identified to machine drivers	Spoil storage areas to be mapped and pegged out prior to excavation commencing.
A Risk Assessment shall be developed for each and every excavation location to be carried out on site.	Control measures to mitigate safety, stability and environmental risks specific to the local conditions.
The vegetated layer will always be removed and set aside separately from any spoil material.	Required to enhance revegetation.
Excavated material will only be stored to a maximum height of 1.0 m along site access roads.	Prevent movement of stored material and protect watercourses.
Excavated material will not be stored in areas which have been identified as unsuitable for spoil storage.	Prevent movement of stored material and protect watercourses against harmful run offs.
Excavated material will be separated and stored so that it is not left exposed to the elements. This will be provided for through the immediate application of a vegetated capping layer.	No spoil is permitted to be stored on areas identified as sensitive or high value habitats. Other material will be used for landscaping.
Interim (temporary) material storage during the construction stage will be kept to a minimum by the implementation of a continuous construction cycle: 1) Excavate material; 2) Handle material;	Return and re-vegetate the Site to its original state as soon as possible.

Activity	Notes
3) Permanently store material	
Permanent excavated or spoil surfaces shall be re-vegetated without undue delay using seed collected pre-construction, final details of which will be approved by the ecologist. Reseeding will occur within the growing season.	To encourage growth of locally common habitats
Material from excavations in rock, suitable sands and gravels will be carefully managed and re-used as structural fill in the locality of the excavation where possible.	To minimise the volume of imported material required and ensure no impact on the local pH level. No spoil will be permitted to be stored on areas identified as sensitive or high value habitats.

3.10.1 New Site Access Roads

Carrying capacity will be based on the weight restriction for the installation crane, which is expected to have a maximum 20 tonne axle weight with a minimum of 12 tonnes. The construction method will be Cut and Fill.

Prior to advancing any construction works, final road design shall take into account the following:

- Existing Ground Profile
- Existing Ground Soil Type
- Bearing Capacity
- Natural Drainage
- Proposed Turbine Delivery Specification
- Existing Environmental Buffers

As this Project will most likely be advanced as Design & Build, the Contractors will be obliged to form the design and construction works with reference to the above and seek final approval from the Engineer for their design prior to advancing any work on site. In any event, it is proposed that the site access roads are built as follows:

- The alignment of the new site access roads will be established and the centrelines will be marked out with ranging rods or timber posts.

- Any trees/hedgerow within the construction corridor shall be cleared prior to any construction works. All works will be undertaken outside of the breeding season.
- The first phase of drainage will then be installed in accordance with the detailed drainage design. Road construction will require the crossings of a number of cut drains and minor drainage paths.
- The angle of repose of the cut face of excavations shall be battered back approximately 45 degrees. However, where peat is encountered, it will be increased to 26.5 degrees.
- Slopes will not be undercut or excavations left unsupported for periods in excess of 24 hours.
- Soil excavation shall be observed by a qualified archaeologist, in accordance with the approved scheme of archaeological monitoring in order to respond appropriately to identification of any potential archaeological remains.
- The access road will be excavated to a suitable formation level. Roadside berms will be constructed. Where necessary, stone will be delivered to site by tipper trucks from approved local quarries (please see **EIAR Figure 16.5**) and will be placed, spread and compacted in layers to form the running surface. The compaction will be carried out using a dead weight roller.
  - Imported stone will be used throughout for the final surfacing layer.
- Well-graded granular fill (quarry sourced clean stone) will be spread and compacted in layers to provide a homogeneous running surface. The thickness of layers and amount of compaction required will be decided by the Site Manager based on the characteristics of the material and the compaction plant to be used.

3.10.2 Cut and Fill (Excavated) Roads

This form of road construction is a traditional method whereby the final road construction is formed on a firm bearing strata. This is generally found following removal of the initial vegetation layer and more than likely the underlying layer of soft material found between the topsoil layer and the firm strata. Typically, this form of road construction could be founded on relatively shallow excavations. However, if soft spots are encountered locally, they will be excavated out and in-filled with suitable excavated material. Imported rock will be chemically compatible with the existing geology. It will be tested for compatibility prior to entering the Site. This involves using rock that is similar to the geology of the Site and locally sourced i.e., sandstone till. Construction of Cut and Fill Road sections will be carried out in accordance with detailed design. This system will consist of either 1 or 2 layers of stone depending on the load bearing capacity of base layer and the design loading required with construction traffic. Where the underlying layer is clay, 2 layers of stone are used. In areas

where the load bearing layer is rock, the capping layer is omitted, and the running layer is installed directly onto the rock surface.

If the vertical alignment requires local infilling for the formation of the road, the above process of exposing a firm strata is followed and infill material is employed to raise the road profile in a local embankment.

3.10.3 Road Drainage

A vegetative filter strip and under-road drainage will allow discharge in a controlled manner downslope of the works.

Any crossing of field drains, man-made drains and vegetated drains will be piped directly under the road through appropriately sized drainage pipes. Where appropriate, a lateral drainage ditch (interceptor drain) will be cut along the uphill side of the road to intercept the natural runoff. This lateral drain will be drained under the road at regular intervals through correctly sized cross drains. In cases where the roads must run significantly downhill, transverse drains ('grips') will be constructed where appropriate in the surface of the roads to divert any runoff down the road into the drainage ditch. Where the crossing of ditches, field drains, man-made drains and vegetated drains cannot be avoided, the design of the crossing, (in this case culverts) shall be prepared in line with the drainage design philosophy. This is further detailed in the Surface Water Management Plan and Water Quality Management Plan.

Under road drainage will be provided under the excavated roads at all locations where existing land drainage passes under the proposed roads. Conventional cross drains will be 150 mm diameter and increased to 300 mm diameter (minimum) at points for land drainage or natural drainage paths. The spacing of the cross drains will be dependent upon whether the roads run parallel or tangential with the general contours of the Site.

The detailed design of all under-road drains in areas near flushes will have the input from the Environmental Manger and Ecological Clerk of Works to see that there is sufficient flow connecting the upstream and downstream habitats. These will be inspected by the Environmental Manager and Ecological Clerk of Works during construction.

All existing site drainage channels and culverts shall be maintained, and any additional drainage design required on-site shall be carried out as per the detailed design. Any such additional requirements will be reviewed by the Engineer, Environmental Manager and Ecological Clerk of Works prior to site clearance activities taking place on-site.

The proposed water crossings on Site will be carried out in accordance with the attached Water Crossing Management Plan.

3.10.3.1 Turbine Bases/Foundations

Foundation requirements will be provided by the wind turbine supplier, and appropriate factors of safety will be applied to these in accordance with Wind Energy Development Guidelines, 2006. The turbine towers will be anchored to the concrete foundation using a bolt assembly which shall be cast into the concrete.

Each turbine will be constructed on a cast in-situ concrete foundation requiring approximately 581 $m^3$of concrete which, for the most part, is buried in the ground. The turbine foundations will be constructed so that the top of the foundation is at the existing ground level, with an acceptable tolerance of +/- 1m. The turbine foundation is estimated to be between 2.8 m and 3.5 m deep and therefore the formation level is 2.8 m to 3.5 m below existing ground level.

Plate 3.1: Turbine foundation under construction with adjoining crane pad[3]

[3] Good Practice during Wind Farm Construction, 2019. Online: https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction [Accessed 20/06/2024]

There are two options for design and construction of Turbine foundations as follows:

- **Option 1 – Turbine Foundation constructed directly on in-situ ground:**
  The Contractors shall demonstrate that the soil/rock properties at the formation level are in compliance with the turbine Foundation Design limiting criteria for a ground bearing base.

- **Option 2 –Turbine Foundation constructed on engineering fill:**
  If it cannot be demonstrated that Option 1 is achievable, the Contractors shall establish and demonstrate a suitable bearing stratum at a lower level, design and construct engineering fill to the formation level of the foundation and demonstrate that the fill properties at the formation level are in compliance with the Turbine Foundation Design limiting criteria for a ground bearing base.

Plate 3.2: Proposed wind turbine foundation' to clarify that the intention is to use this type of foundation for the project

The construction method statement for the turbine bases will generally follow the sequence as defined in **Table 3.4**.

Table 3.4: Turbine Base Construction Method Statement

Activity	Notes
Set out the turbine location with the use of GPS (RTK) equipment.	The Contractors shall tape off buffer zones with assistance from the Ecological Clerk of Works , and toolbox talks will be used to inform site staff of the importance of the buffer zones.
Archaeology	The Site will be accessible to the appointed archaeologist at all times during working hours. The nominated archaeologist will monitor all invasive works.
Set out and install drainage treatment and flow attenuation features.	Required to minimise the transportation of suspended solids generated during the construction stage.
Remove and locally store the top layer of vegetated material over the excavation area.	This material will be stored for re-use to cover and promote natural re-vegetation of the inorganic spoils that will be deposited at the nearest suitable location to the excavation, monitored by the Ecological Clerk of Works.
Excavate remaining material to 1m depth and segregate organic material from mineral material.	Selected excavated organic material will be considered for re-use as backfilling material.
Excavate to formation level. Complete plate bearing tests.	Any excavated inorganic material will be re-used as structural ballast to minimise the required volumes of spoil and imported stone.
A reinforcement steel cage for the foundation will be assembled after insertion of the turbine foundation insert arrangement (required for fixing steel tower) and formwork will be fixed to surround the cage.	Reinforcing steel shall be checked for design compliance and signed off upon acceptance.
Reinforcement steel for the top section of the foundation is fixed along with the required number of cable ducts.	Reinforcing steel shall be checked for design compliance and signed off upon acceptance.

Activity	Notes
Erect the formwork to contain the concrete pour.	Formwork will be re-used and removed offsite when foundation construction is complete.
The foundation anchorage system will be checked both for level and line prior to the concrete being installed in the base. These checks will be passed to the appointed Turbine Contractors for their approval.	
The foundation will be backfilled with a cohesive material.	Using the material arising during the excavation and landscaped using the vegetated soil set-aside during the excavation.

Plate 3.3: Wind Turbine Erection[2]

Plate 3.4: Assembly of wind turbine blades [2]

3.10.3.2 Turbine Hardstands/Crane Pads

A crane pad hardstand area will be required at each turbine. The hardstands must allow for two cranes (including outriggers) to operate in the vicinity of the turbine to allow for turbine erection. The hardstand must also provide storage and set down areas for turbine components. The hardstand requirements are specified by the turbine supplier and require strict compliance so that there are no stability issues during erection of the turbine sections.

All Turbine Hardstands will be designed to take account of the loadings which will be provided by the appointed turbine and installation Contractors and will consist of a compacted stone structure which is to be installed in accordance with the Transport Infrastructure Ireland (TII) Specification 800 2013.

Two types of hardstands are facilitated:

- Locations that will require a turning head.
- Standard Hardstand arrangement where delivery vehicles do not require a turning area.

Hardstand formation will consist of either 1 or 2 layers of stone depending on the properties of the underlying load bearing layer. Where the underlying layer is clay, 2 layers of stone

formation are used, the stone capping layer and the running layer. In areas where the load bearing layer is rock, the capping layer is omitted, and the running layer is installed directly onto the rock surface (in this case siltstone). The crane pad layout measures c.4,500 m^2.

The hardstand area will be excavated to a formation level of weathered rock where possible or on stiff bearing strata on overlaying material.

Following completion of the hardstands, a series of plate load tests will be undertaken to demonstrate compliance with the turbine supplier requirements of 260 kN/m^2.

Excavated material will be used for side slope formation local to the hardstands. Material from the excavation of the hardstands will be used to dress exposed areas around the hardstand with the remainder being used for landscaping around the turbine base in accordance with the attached Spoil Management Plan. A Hardstand construction method statement is set out in **Table 3.5**.

Table 3.5: Typical Hardstands Construction Method Statement

Activity	Notes
Set out the crane hardstands with the use of GPS (RTK) equipment.	The Contractors ensure that buffer zones and areas of restricted working width are taped off with assistance from the ECoW and toolbox talks used to inform site staff of the importance of the buffer zones with identification of areas on drawings and maps.
Archaeology	The site will be accessible to the appointed archaeologist at all times during working hours and monitor earthworks where appropriate.
Set out and install drainage treatment and flow attenuation features around the crane hardstand and turbine area.	Temporary and permanent ponds and outflow buffers will not be constructed in sensitive habitats or buffer zones. Liaison with the ECoW at the detailed design stage will assist in the identification of suitable locations.
Remove and locally store the top layer of vegetated material over the area of the crane hardstand excavation.	This material will be stored for re-use to cover and promote natural re-vegetation of the amorphous peat and /or inorganic spoils that will have to be deposited at the nearest suitable location to the excavation.

Activity	Notes
Excavate remaining material to 1m depth and segregate organic material from mineral material.	Selected excavated organic material will be considered for re-use as backfilling material.
Excavate material to the required formation level.	The formation level for the crane hardstands will be on weathered rock or stiff overlaying material. Where suitable, the excavated material will be re-used as structural backfill material to minimise the required volumes of spoil and stone.
Place rock fill in accordance with the design to form the crane hardstand structure. Where appropriate, geotextile and/or geogrid should be used to help reduce the volume of stone. Fence off steep edges.	Special consideration will be given towards the stone placement and compaction so that the structural integrity meets the loading requirements.
Plate bearing tests will be undertaken following completion of the hardstand structure.	The number and location of the plate bearing tests shall be specified by the Contractor's designer.

Plate 3.5: Proposed crane to be used for wind turbine erection

3.10.3.3 Handling/Disposal of Excavated Material

Details of spoil management methodology are outlined in the attached Spoil Management Plan. Excavated soil will be used for landscaping.

3.11 TRAFFIC MANAGEMENT

The proposed mitigation measures outlined below have been incorporated into the design to maintain the highest standard of road safety, minimise delay and disruption to all public road users, and to comply with statutory regulations.

- Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána, TII, PPP operators and Louth County Council to obtain all necessary abnormal load permits and discuss the requirement for a Garda escort. The Applicant will also outline the intended timescale for deliveries and efforts can be made to avoid peak times such as school drop off times, church services, peak traffic times where it is considered this may lead to unnecessary disruption, and abnormal loads may travel at night and outside the normal construction times as may be required by An Garda Síochána. Local residents at sensitive locations along the affected route will be notified of the timescale for abnormal load deliveries.
- Prior to delivery of abnormal loads, the Applicant or their representatives, will consult with TII, PPP operators and all County Councils Dublin, Galway, Louth, Kildare, Meath, Offaly, Roscommon, Westmeath, Dublin and Louth through which the abnormal loads will pass and agree the specification for any enabling works to be carried out on the turbine delivery haul route.
- Prior to the delivery of turbine components, a survey of the TDR will be undertaken to identify if any overhead lines or height restrictions at toll booths will need to be lifted along the route to allow abnormal loads such as tower sections and nacelles to be delivered.
- Prior to the delivery of turbine components, a trial run shall be carried out between the Port of Galway and the wind farm site entrance using an abnormal load vehicle with a retractable load gauge to determine that abnormal load vehicles can transverse the route without undue delay and disruption to public road users.
- During the wind farm construction and decommissioning phases, road works signs in accordance with the requirements of Chapter 8 of the Traffic Signs Manual will be erected at all wind farm site entrances and at all locations on the grid connection route and turbine delivery haul route which are being modified to facilitate turbine delivery. Details of signage if given in the Traffic management plan in Appendix 15-2.
- Wheel cleaning equipment will be used at all site entrances with the public road to prevent any mud and/or stones being transferred from Site to the public road network. All drivers will be required to ensure that their vehicle is free from dirt and stones prior to departure from the wind farm site.

- To reduce dust emissions, vehicle containers/loads will be covered during both entrance and egress to the Site where required.
- All dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices such as adhering to strict speed limits 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.
- Access to the construction site will be controlled by on Site personnel and all visitors will be asked to sign in and out of the Site by security/Site personnel on entering and exiting the site.
- 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.
- A condition survey of the road network in the vicinity of the site entrances will be carried out and agreed with Louth County Council prior to any works being carried out on site.
- All works on the public road network will be carried out using an approved road opening licence and traffic management plan.
- All wind farm vehicles shall have roof mounted flashing beacons when working on the public road network or will use their hazard lights within the wind farm site.
- A speed limit of 25 km/h shall apply to all vehicles within the wind farm site.

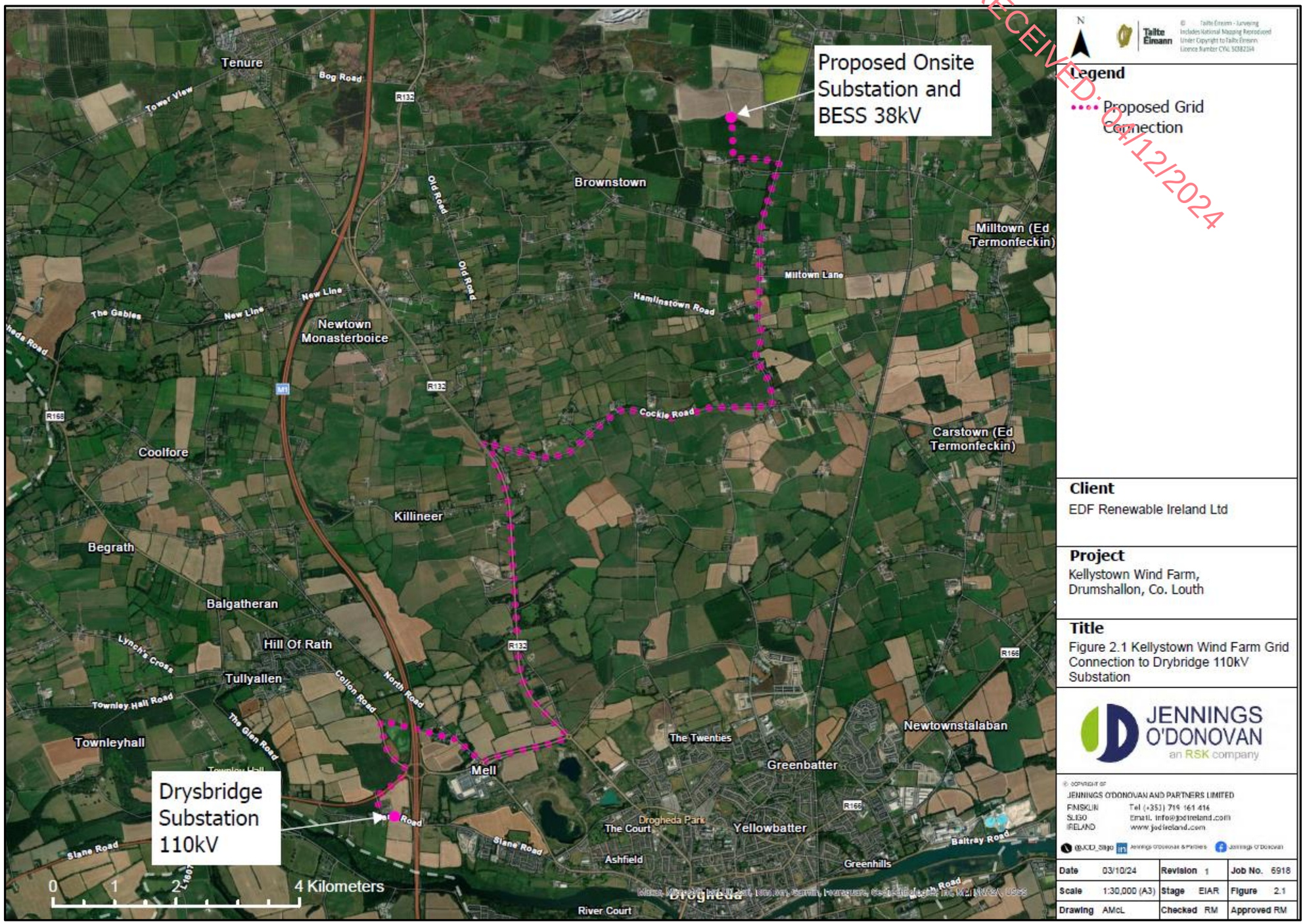

Figure 3.3: Map showing the grid connection route

Table 3.6: HGV and Abnormal Load Deliveries

Materials	Quantity	No. Of Deliveries	Timeframe (Month)	Maximum Loads / Day at R132 / L6274 Junction	Vehicle Type
Site Establishment & Fencing		10	1	5	OGV1 / OGV2
Temporary Construction Compound	1,665m^3	167	1-3	10	OGV1 / OGV2
Forestry felling and drainage	9.4ha @ 190m^3/ha	1,800	2-5	10	OGV2
Internal Access Road Upgrade & Construction	17,775m^3	1,777	2-6	10	OGV1 /OGV2
Substation (17 Loads) & Compound Construction (435m^3)		60	4-7	5	OGV1
Substation Electrical Works		20	10-16	2	OGV1
Substation Commissioning		5	18	2	OGV1
Construction of Turbine Hardstands	11,250m^3	1,125	2-10	15	OGV1 / OGV2
Construction of Turbine Foundations (949m^3 Per Base)	4,745m^3	594	2-10	119	OGV1 / OGV2
Internal Cabling Installation	530m^3	53	8-10	5	OGV1
Turbine Delivery and Erection	5 Turbines	70	10-13	10	OGV2
Grid Connection Excavated material 7,275m^3 Imported Backfill 7,275m^3 Reinstatement 1,100m^3	12,120m 15,650m^3	1,565	10-13	15	OGV1
Energisation		5	15-16	2	OGV1
Turbine Commissioning		5	16-18	2	OGV1
Site Restoration		15	17-18	5	OGV1
Total		**6,677**			

3.11.1 Site Entrance

There are four proposed Site entrances to Kellystown Wind Farm (see **Figure 3.1** above).

Workers employed on the Site will use the Site entrance but will need to have flexibility in the roads they use to reach the Site.

A wheel wash facility will be provided near the Site entrances so that the wheels of vehicles exiting the Site can be cleaned prior to exiting onto the public road. This will be carried out under the supervision of the Site Health & Safety manager and in accordance with the agreed Traffic Management Plan to ensure that it is undertaken in a safe manner.

3.11.2 Construction Material Haul Route

The haul route of quarry materials i.e. readymix concrete will be established after the appointment of the Contractors, but it is envisaged that material will be sourced from quarries local to the Site to minimise disruption on the public road network as per **EIAR Figure 16.3**.

3.12 PLANNING CONDITIONS AND OUTLINE METHOD STATEMENTS

This CEMP and its future versions/revisions will form part of the Contract for Kellystown Wind Farm. It will therefore be updated and revised during the different phases of the Proposed Development. Where the Proposed Development is granted planning permission, all the planning conditions associated with the Planning Application will be listed in **Table 3.9**.

Table 3.9: Relevant Planning Conditions and Related Documentation

Condition No.	Planning Condition	Reason
Planning Ref: INSERT NUMBER		

The Contractors will ensure compliance with all of the mitigation measures and best practice construction methods detailed within the above consent in their design and in any detailed environmental plans as required by this CEMP or the Contract.

3.13 SCHEME AMENDMENTS

Scheme Amendments will be recorded in **Table 3.10**. These amendments do not include changes to the scheme design which are completed in accordance with the existing planning consent. Instead, this refers to changes in the design of the wind farm for which additional approvals and / or consents may be required from Louth County Council. For example, amendments to layouts or in accordance with the current grant of planning permission. No scheme amendments are anticipated at present but Table 3.10 is included in the interest of completeness and to ensure that any amendments, if made, are appropriately recorded and managed in accordance with this CEMP.

Table 3.10: Scheme Amendments

Reference	Date	Scheme Amendment Description	Environmental Sensitivities potentially

3.14 REGISTER OF VARIATIONS

Where any variations to the Management Plans and CEMP are required (either as a result of Scheme Amendments or through corrective actions or improvements noted and undertaken on site) these will be recorded in **Table 3.11**, Register of Variations. Furthermore, all changes to construction methods, design, mitigation and the implications of these changes and authorising personnel will be recorded in **Table 3.11**.

Table 3.11: Register of Variations

No.	Variation Description	Authorising Personnel	Completion Date

4 COMMUNICATION PLAN

4.1 INTRODUCTION

Appointed Project Managers will be the main points of contact during the construction phase. This includes the Contractors Construction Project Manager and the Client.

It is envisaged that main project communications will take the form of structured reporting arrangements and meetings.

All issues in relation to environmental management/monitoring will be reported to the Ecological Clerk of Works. The Contractors Ecological Clerk of Works will report to the Contractors and Client on a regular basis.

4.2 CONTACT SHEETS

Table 4.1 provides a list of EDF Renewables Ireland Limited., Contractors and relevant third party contact details. This table will be updated and maintained by the Contractors for the duration of the Contract.

Table 4.1: Contact Sheets

Company	Position	Name	Telephone
EDF Renewables Ireland Limited	Client Project Manager	TBC	TBC
Contractors	Site Manager / EM	TBC	TBC
Contractors	Contracts Manager	TBC	TBC
Contractors	General Manager	TBC	TBC
Contractors	Foreman	TBC	TBC
EDF Renewables Ireland Limited	Construction Project Manager	TBC	TBC

4.3 MEETINGS REPORTS AND CONSULTATIONS

Table 4.2 lists all meetings and consultations as required by the Contract. The table also provides details on the schedule/frequency, scope & objectives and attendees / responsibility for each meeting.

4.4 ROLES & RESPONSIBILITIES

Roles and responsibilities for environmental management, monitoring and reporting are detailed in **Table 4.3**. The Ecological Clerk of Works/Environmental Manager Contractors will be responsible for the delivery of all elements of the Environmental Management Plan. The Ecological Clerk of Works/Environmental Manager Contractors will retain all responsibility for issuing, changing and monitoring the Environmental Management Plan.

4.5 REPORTING PROCEDURES

Figure 4.1 provides a diagrammatic outline of the general tasks and communication lines, based on the roles described in **Tables 4.2** and **4.3** and tasks detailed in the Management Plans. The Contractors will update this information as part of the construction phase CEMP upon receipt of a planning permission.

Management Plan (1) Emergency Response Plan includes the communications plan for reporting procedures for all potential environmental risks, hazards or incidents which may relate to ecology, water quality, dust, noise or archaeology. Environmental reporting to statutory bodies, such as Louth County Council, will be managed by the relevant Contractors in accordance with an agreed reporting schedule.

Table 4.2: Meetings, Reports and Consultations

Meeting/ Report	Schedule/ Frequency	Scope & Objective	Attendees/Responsibilities
A Record of all meetings, checks, permissions and licenses will be retained within Section 4 of this CEMP			
Site Inductions	All new site personnel and visitors		Contractors to organize and maintain records
Weekly environmental meetings	Weekly	To provide updates on environmental mitigation measures and performance and identify actions for improvement. The Ecological Clerk of Works Contractors is required to maintain a Pollution Prevention Measures Register in	Attendance required: Ecological Clerk of Works Contractors Site Manager, and any other relevant personnel or statutory consultees where necessary.

Meeting/ Report	Schedule/ Frequency	Scope & Objective	Attendees/Responsibilities
		which mitigation measures put into place will be listed and checked weekly to assess the requirement for maintenance. The results of these checks will be discussed at the meeting and corrective actions agreed as required.	
Monthly Environmental Report & Monthly Environmental Management Group Meeting	Monthly	To provide a compiled record of weekly meeting minutes and environmental performance and monitoring results (e.g. air, noise or water quality monitoring as appropriate). To identify any areas / action for improvement.	To be prepared by Ecological Clerk of Works/Environmental Manager. Report to be issued to the Contractors and Construction Project Manager before the end of each calendar month. Report to be discussed at the monthly meeting with recommendations for improvement passed to the Contractors in written format
Final Environmental Report	Upon completion of construction works	The final report will document the environmental and ecological effects of the construction period. The evidence for effects will be based on findings included in the minutes of weekly meetings and monthly meetings, together with other recording information maintained by the Ecological Clerk of Works. The report will relate results to residual	The Final Report will be prepared by the Ecological Clerk of Works. The report will be made available to the Contractors, Construction Project Manager and Planning Authority, if required.

Meeting/ Report	Schedule/ Frequency	Scope & Objective	Attendees/Responsibilities
		effects predicted in the EIS.	
Environmental Checks and Monitoring of Mitigation Works	As required in advance of construction works regular checks will also be made at least every 14 days.	Environmental Checks are to be carried out in advance of construction works. This will comprise an on-site meeting / inspection to confirm the appropriate use of identified mitigation measures and highlight any further issues / measures which may be relevant prior to commencement of works in any area. As a minimum, Environmental Checks will be completed at each main piece of site infrastructure (turbine bases, construction compounds, sub-station, control room) prior to works commencing in that area. Environmental Checks will include: • Checks for visual evidence of contamination / sediment alongside watercourses, nearby working areas and in areas of surface water discharge.	Environmental checks will be undertaken by the Contractors Ecological Clerk of Works. The Ecological Clerk of Works may also undertake regular checks, either independently or in conjunction with the Contractors checks as required. The Contractors and Ecological Clerk of Works will retain a record of all inspections / findings of Environmental Checks within Section 4 of this CEMP. All records will be made available for audit / review. All records will also be made available for discussion during regular meetings as scheduled herein.

Meeting/ Report	Schedule/ Frequency	Scope & Objective	Attendees/Responsibilities
		• Regular checks of all plant and equipment to identify any oil or fuel leaks to confirm the condition of the plant. • Inspection of drainage and erosion and sediment control measures. Additional checks will be made before, during (where safe to do so) and immediately following anticipated storm events or periods of continuous or heavy intermittent rainfall over one or more days. • Environmental checks will also encompass a review of: - Waste management procedures - General site tidiness - Temporary materials storage (extracted materials stockpiles) and restoration works and	

Meeting/ Report	Schedule/ Frequency	Scope & Objective	Attendees/Responsibilities
		- Soil stability - Signs of any mammal activity on site - Buffer zones (if any) are being maintained	
Environmental Audit	At least once every month.		Environmental Audits may be carried out by the Contractors, or EDF Renewables Ireland Limited. at any time during the works. Audit procedures and forms are included within Section 4 and TS1. These will be followed / completed by the Employer when undertaking environmental audits and may also be adopted by the Contractors, unless alternative procedures and forms are submitted and approved as part of the Contractors' construction stage CEMP.
Liaison with regulator / statutory Consultees	As Required	Provide regular updates to relevant authority on environmental performance and maintain good working relationships with the regulatory bodies.	Contractors and Ecological Clerk of Works where required. Meetings will be initiated as required by Planning Conditions, Management Plans or as agreed throughout the duration of the construction phase. The Contractors are responsible for obtaining all relevant permissions, consents, licenses and permits. Some permits may require application and implementation by an appropriately qualified person. In these instances, the Contractors will consult with the other specialist Environmental Consultants where required.

Table 4.3: Roles and Responsibilities

Position	Roles and Responsibilities
Construction Project Manager	The Construction Project Manager will: Ensure that the Contractors has obtained the relevant approvals and licenses and consents from regulatory bodies and statutory consultees where required. Ensure that the Contractors has submitted all relevant documentation to liaise with the Site Manager and the Ecological Clerk of Works and ensure that corrective actions and variations to the CEMP have been instigated.
Project Site Manager/ Engineer	The Site Manager will provide liaison between the Ecological Clerk of Works and the Contractors where environmental sensitivities, instruction for environmental performance improvements or corrective actions are requested by the Ecological Clerk of Works or other appropriate person(s) as a result of environmental checks or audits conducted by these people(s). The Site Manager will ensure that all notifications of environmental sensitivities and incidents as well as other general observations on environmental performance are reported back to the Construction Project Manager. The Project Site Manager is responsible for review and further development of the CEMP.
Ecological Clerk of Works/Environmental Manager	The Ecological Clerk of Works will be a member of the Environmental Management group and will work with the Contractors to ensure compliance with best practice and with all environmental mitigation and monitoring requirements as detailed within the relevant planning conditions, compliance documents and CEMP during both the pre-construction and construction phases. The main roles of the Ecological Clerk of Works are as follows: • Organise start-up meeting / Toolbox talks with the Contractors to agree working methods, specifically including communications; schedules; monitoring of data storage; and preparation of plans indicating location of key features including mitigation measures, monitoring points and sensitive habitats (where not previously highlighted and approaches agreed). • Give toolbox talks as agreed with the Contractors to address key areas, including water pollution prevention, protected species management, and on-site biodiversity. Highlight to staff the requirement for compliance with planning conditions. • Undertake a pre-construction walkover with the Site Engineer / Site Manager to confirm that access routes remain appropriate to the conditions present at the time of construction • Delineate any sensitive habitats or features with wooden stakes and high visibility tape

Position	Roles and Responsibilities
	• Undertake or delegate to an appropriately qualified person, a pre-construction Invasive Alien Species survey along the works route • Monitor the installation of poles and infrastructure • Inspect pollution control measures during the works • Maintain a presence on site during the pre-construction and construction works, including setting out of access routes. • Organise a minimum of weekly meetings with the Site Environmental Supervisor and / or Foreman, to allow briefing on the programme of works on site and to provide on-site guidance during construction. • Identify environmentally sensitive areas and ecological hazards for demarcation by the Contractors. • Develop written reports / audits and submit to the Contractors and present findings at meetings as required. Prepare updated reports and a final report on mitigation measures, procedures and monitoring. • Monitor potential environmental impacts and the successful implementation of all mitigation as detailed in the EIAR, NIS and this CEMP. • Maintain a weekly presence on site during the main construction works • Prepare a pre-construction Invasive Alien Species survey along the works route • Identify environmentally sensitive areas and ecological hazards for demarcation by the Contractors. • Produce written reports to the Contractors following site visits and meetings. This includes monthly reports and a final report. The Contractors will provide comprehensive information on all proposed works and all scheduling to the Ecological Clerk of Works in advance, in order to anticipate and address any issues, especially access to new areas including areas where Invasive Alien Species may occur, vegetation clearance, setting out of buffer zones, excavation and silt mitigation measures, temporary compound works and vegetation reinstatement.
Ecological Clerk of Works and/ or Water Quality Specialist	The Ecological Clerk of Works will work with EDF Renewables Ireland Limited., the Contractors to ensue that compliance is achieved with best practice and with all environmental mitigation and monitoring requirements as detailed within the NIS, EIAR and CEMP and relevant planning conditions. The Ecological Clerk of Works will delegate and oversee the work to ensure competency of tasks achieved. Where a particular ecological concern exists at the Site, or specific habitat management activities are to be undertaken in conjunction with the main civils construction works, a Specialist Ecologist / Environmental

Position	Roles and Responsibilities
	Consultant may also be required unless the Ecological Clerk of Works is suitably qualified to undertake the particular ecological responsibilities. The main roles of the Ecological Clerk of Works are as follows: • Organise start-up meeting / Tool box talks with the Contractor to agree working methods, specifically including communications; weekly schedules; monitoring of data storage; and preparation of plans indicating location of key features including mitigation measures, monitoring points and sensitive habitats. • Maintain a weekly presence on site during the main construction works. • Organise a minimum of weekly meetings with the Site Manager and / or Foreman, to allow briefing on the programme of works on site and to provide on-site guidance during construction. Note: It is essential that the Contractor supplies information on works and scheduling to the ECoW in advance in order to anticipate and address any issues, specifically including drainage, buffer /protection zones, silt mitigation measures, cabling, roads, turbine bases, met masts, compounds, landscaping, topsoil removal, storage and replacement, vegetation reinstatement and restoration works, planting, felling and habitat management. • Highlight the need for compliance with planning conditions. Contractors Note: If failures occur and actions are taken which contravene legislation then the Project Ecologist has the power to stop works in the affected area with immediate effect. These actions will only be taken where appropriate. Notification to stop works will be by verbal means, followed up with written confirmation recording the time and date of the instruction, personnel involved and reasons for the instruction. Upon recommencement of works, details of any corrective actions and / or remedial measures implemented will be recorded within Section 4. • Give tool box talks as agreed with the site contractor to address key areas, including water pollution prevention, protected species management, and on-site biodiversity. • Monitor potential environmental impacts, including: - Use of and storage of oils and toxic chemicals on site, e.g. cement - Dewatering of excavations (including turbine bases) - Silt control - Water management, including working in or close to watercourses - Protection of ecological interests, e.g. protected species and habitats

Position	Roles and Responsibilities
	• Identify environmentally sensitive areas and ecological hazards for demarcation by the Contractor • Produce written reports to the Contractor following site visits and meetings. This includes monthly reports and a final report.
Specialist Ecologist/ Environmental Consultant	Where a Specialist Ecologist / Environmental Consultant is employed, this person(s) will: • Provide advice and maintain regular liaison with The Project Site Manager, Project Manager, Ecological Clerk of Works and Contractors and / or other specialist Environmental Consultant as and when required. • Undertake specific monitoring activities and reporting as defined in agreed documentation prepared as part of the planning process. • The Ecological Clerk of Works will be appointed. They will have responsibility for fulfilling the requirements of the Water Quality Management Plan, including: - Daily visual inspection of: access roads for signs of ground damage or solids escape to nearby watercourses in vicinity of construction works - The ground between the structure under construction and the nearest downslope watercourse for signs of solids escape or ground damage - Surface water features in vicinity of construction works - Any pollution control measures at structures and along access roads (e.g. silt fences, drain or stream crossings etc.) for evidence of contaminated run-off or mitigation failure - Attendance at the critical work phases including, access road construction, foundation excavation, watercourse crossings, concrete pouring and back-filling. - Collection and analysis of water samples at a number of monitoring locations (i.e. upstream & downstream) before, during (if potential pollution visually identified) and after construction works at that location. - EPA Q Value Biological Monitoring at monitoring locations (i.e., upstream & downstream of instream construction work locations) before and after construction works.
Archaeological Clerk of Works	The main roles of the Archaeological Clerk of Works (licenced) are as follows: • Maintain regular liaison with The Project Site Manager, Project Manager, Ecologist and Ecological Clerk of Works as appropriate.

Position	Roles and Responsibilities
	• Maintain liaison with officers of the Planning Authority, specifically the Council Archaeologist and Planning Officers as appropriate. • Where applicable apply for licence application; the Minister for Dept of Culture Heritage and Gaeltacht can approve and issue a licence under Section 26 of the National Monuments Act 1930. • Facilitate compliance with planning conditions and agreed Archaeological Programme of Works. • Demarcate any archaeologically sensitive areas and set up exclusion zones as required on site. • Immediately notify the relevant authorities in the event of the discovery of archaeological finds or remains and suspend works in the immediate area pending consultation. Allowance will also be made for full archaeological excavation if required. • Complete a full report for submission to the Planning Authority and the Department of Arts, Heritage and the Gaeltacht on completion of the works.
Geotechnical Clerk of Works or Appointed Geotechnical Consultant	The Geotechnical Clerk of Works will be responsible for preparation and monitoring of a geotechnical risk register as well as specific duties relating to geotechnical issues as they may arise during site construction works. Soil instability and the potential for slide even can have a significant impact on environmental receptors. In completing the geotechnical risk register, the Geotechnical Clerk of Works will work with the Contractors to identify suitable mitigation and monitoring methods. Where possible, construction works will avoid causing change to local hydrological and hydrogeological flow patterns and water levels.
Contractors Appointments	
Construction Manager	[The Contractors is required to specify roles and responsibilities for each individual below]
Site Agent	[To Be Confirmed]
Foreman	[To Be Confirmed]
Other Nominated Person(s)	[To Be Confirmed]

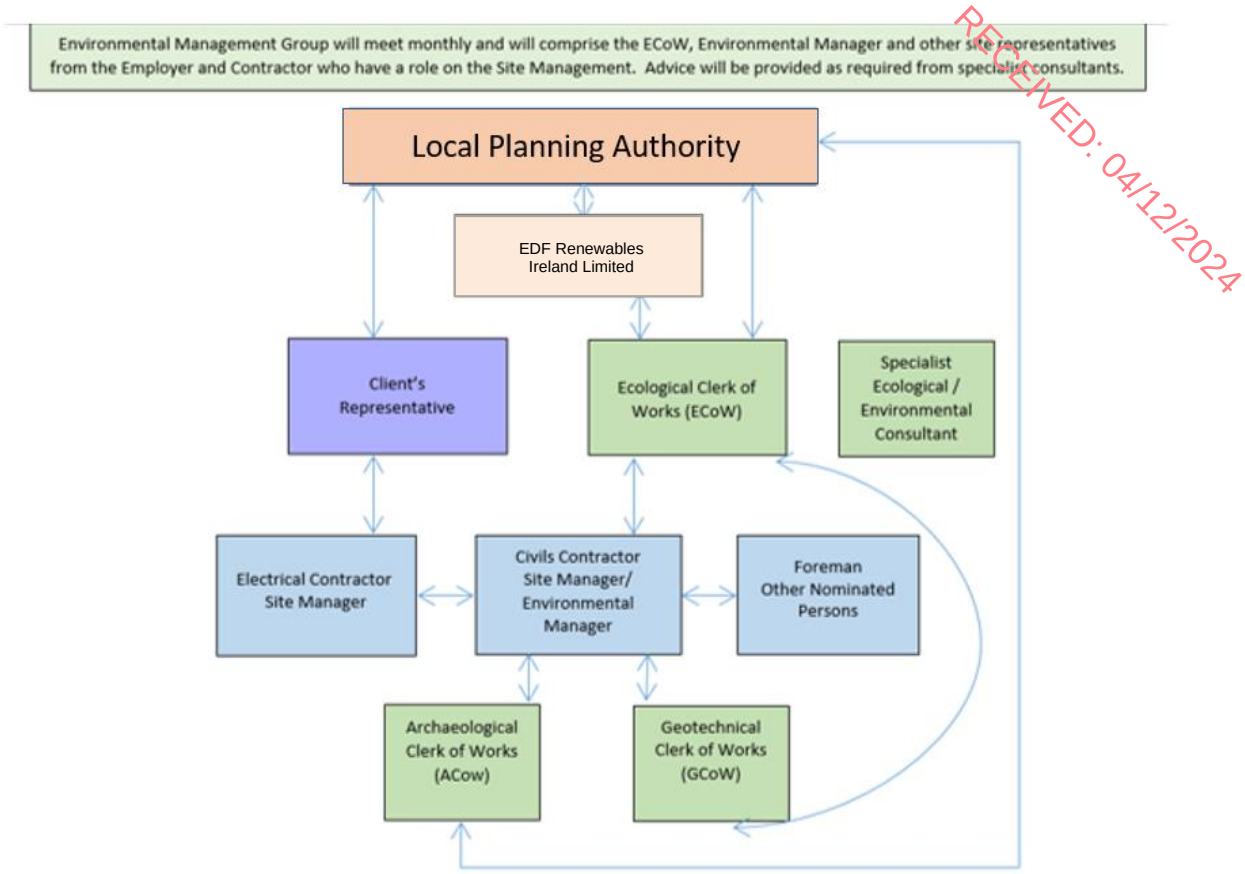

Figure 4.1 General Communication Plan

4.6 TRAINING, AWARENESS AND COMPETENCE

All site personnel will receive environmental awareness information as part of their initial site briefing. The detail of the information will be tailored to the scope of their work on site. This will ensure that personnel are familiar with the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The CEMP will be posted on the main site notice board during the Project. The environmental performance at the Site will be on the agenda of the monthly project management meetings for the Project. Elements of the CEMP will be discussed at these meetings including objectives and targets, the effectiveness of environmental procedures etc. Two-way communication will be encouraged by inviting all personnel to offer their comments on environmental performance at the Site.

4.7 EMERGENCY PREPAREDNESS AND RESPONSE

An emergency preparedness and response procedure is required to prevent environmental pollution incidents. Suitable spill kits and absorbent material for dealing with oil spills will be

maintained on site. In the event of pollution or potential risk of pollution, Louth County Council will be informed immediately. In the case of water pollution, in addition to Louth County Council, Inland Fisheries Ireland will also be informed immediately. Further details in relation to emergency responses are provided at **Management Plan 1: Emergency Response Plan.**

5 CORRESPONDENCE, RECORDS & REPORTS

5.1 REQUIREMENTS

The Contractors will insert / file all communication records and reports associated with Environmental Management and implementation of this CEMP under this Section 5. As a guide, the following sub-sections of filed information will be required (at a minimum):

5-A) Meeting minutes and attendance record

5-B) Weekly Environmental Reports

5-C) Monthly Environmental Reports

5-D) Environmental Checks

5-E) Audit Reports

5-F) Ecology documentation and monitoring records

5-G) Pollution Prevention, including a Pollution Prevention Measures Register

5-H) Water Quality documentation and monitoring records

5-I) Archaeology documentation and monitoring records

5-J) Ground Risk, including a Geotechnical Risk Register

5-K) Waste Management documentation

5-L) Licensing and Consents: copies of all permissions, consents, licenses and permits and related correspondence. A summary record of all such documents shall also be provided in accordance with **Table 5.1** of this CEMP.

5-M) General Correspondence: all other relevant internal and external communication records relating to environmental management issues and implementation of the CEMP.

5-N) Training Records

5-O) Toolbox Talk Records

5-P) Ecological Clerk of Works Reports

All of these documents and records will be made available for inspection in the site office. The documentation will be maintained and will be reviewed on a regular basis with revisions controlled in accordance with the site quality plan.

5.2 ENVIRONMENTAL AUDITS

The Contractors Ecological Clerk of Works will consult and assist with the Client in evaluating compliance with applicable legislation by means of a monthly Environmental Audit. A blank Environmental Audit Report form is included in **Management Plan 1: Emergency Response Plan**. All completed audit report forms and records of corrective actions (and close outs) must be filed within this section of the CEMP.

5.3 ENVIRONMENTAL CONSENTS, LICENSES & PERMITS

The Contractors Ecological Clerk of Works (or otherwise nominated responsible person(s)) will complete the summary record for all applicable permissions, consents, licenses and permits obtained for the Site. This record will follow the format provided in **Table 5.1**.

Table 5.1: Record of Environmental Consents, Licenses and Permits Issued

Consents, Licenses & Permits	Governing Legislation	Licensed Activity
Pollution Control & Hydrology		
Biodiversity		
Waste Management / Contaminated Land		
Noise / Vibration		
Archaeology		
Transport		
Other		

5.4 ENVIRONMENTAL MONITORING AND MEASURING

All of the mitigation measures outlined in Section 3.0 will be monitored, where applicable. The Contractors will put in place a program of monitoring for dust, noise, vibration and water sampling in accordance with the requirements of this CEMP.

Copies of all records will be maintained in the site office and will be reviewed by the Contractors.

5.5 NON-CONFORMANCE, CORRECTIVE AND PREVENTATIVE ACTION

Non-Conformance Notices will be issued where there is a situation where limits associated with activities on The Project are exceeded, or there is an internal/external complaint associated with environmental performance.

Non-Conformance is the situation where essential components of the CEMP are not met, or where there is insufficient control of the activities and processes to the extent that the functionality of the CEMP, is compromised in terms of the policy, objectives and management programmes

Correction will be required in order to improve the identified non-conformance. The CEMP must conform to its objectives and targets and the requirements of the ISO 14001 management standard. In the event of non-conformance with any of the above, the following must be undertaken:

- Investigate the non-compliance;
- Develop a plan for correction of the non-compliance;
- Determine preventive measures and ensure they are effective;
- Verify the effectiveness of the correction of the non-compliance.
- Ensure that any procedures affected by the corrective action taken are revised accordingly.

Responsibility must be designated for the investigation, correction, mitigation and prevention of non-conformance.

6 MANAGEMENT PLANS & AVAILABLE INFORMATION

6.1 MANAGEMENT PLANS

Various Management Plans have been prepared as listed in **Table 6.1**. These are intended to provide a benchmark for best practice and to define EDF Renewables Ireland Limited's minimum requirements for environmental management and mitigation.

6.2 CONTRACTORS REQUIREMENTS

The Contractor(s) is required to further develop the Management Plans into detailed site and works specific environmental plans, method statements and procedural documents. **Table 6.1** provides a summary of the content of the Management Plans and the Contractor's obligations for their further Proposed Development.

Table 6.1: List of Management Plans

No.	Name	Details
MP1	Emergency Response Plan	The Contractors will further develop the (Emergency Response Plan). This will include procedures for dealing with containment of accidental chemical or fuel spills, potential overload of the drainage system by silt during unforeseen adverse weather conditions etc. The Contractors will prepare a Communication Plan for emergency response in the event of a spillage. Detailed procedures will be outlined in this document.
MP2	Surface Water Management Plan	The Contractors are obliged to implement the water quality monitoring proposals set out therein. The Contractors are obliged to implement the water crossing proposals set out therein.
MP3	Water Quality Management Plan	The Contractors is obliged to implement the water quality monitoring proposals set out therein. Where changes to the plan are required the Contractors must consult with the Ecological Clerk of Works.
MP4	Spoil Management Plan	The Spoil Management Plan has estimated the volume of spoil that will be generated during the construction phase, and it outlines the locations where the material can be re-used on site. The Spoil Management Plan is a live document and

No.	Name	Details
		can be subject to the ability to amend if required.
MP5	Waste Management Plan	The Contractors will comply with and further develop the Waste Management Plan. The detailed plan will specify the licensed waste facilities that will be used for the duration of the Project.
MP6	Decommissioning Plan	The Contractors will comply with and further develop the Decommissioning Plan. Where changes to the plan are required, the Contractors must consult with the Ecological Clerk of Works.
MP7	Traffic Management Plan	The Contractors will comply with and further develop the Traffic Management Plan. Where changes to the plan are required, it can be amended by the Contractors.
MP 8	Blast Management Plan	The Contractors will comply with and further develop the Blast Management Plan. Where changes to the plan are required, it can be amended by the Contractors.

Management Plan 1

Emergency Response Plan

Management Plan 2

Water Quality Management Plan

Management Plan 3

Surface Water Management Plan

Management Plan 4

Spoil Management Plan

Management Plan 5

Waste Management Plan

Management Plan 6

Decommissioning Plan

Management Plan 7

Traffic Management Plan

Management Plan 8

Blast Management Plan