Appendix 3-2- Construction Environmental Management Plan

TOBIN

Bord na Móna

Derryadd Wind Farm

Construction Environmental Management Plan (CEMP)

TOBIN CONSULTING ENGINEERS

Excellence in Engineering

www.tobin.ie

Table of Contents

Table of Figures

Table of Tables

1.0 INTRODUCTION

Bord na Móna Powergen Ltd. and hereafter referred to as the Applicant), intend to apply to An Bord Pleanála (ABP) for planning permission to develop a wind farm and all associated infrastructure across three bogs (Derryaroge, Derryadd and Lough Bannow) within the Mountdillon Bog Group in Co. Longford. There are works as part of the proposed development which will take place outside of the wind farm site along the turbine delivery route (TDR). TOBIN are the Lead Planning and Environmental Consultants for the planning application of the proposed development.

The proposed wind farm and all associated infrastructure, including works which will take place outside of the wind farm site along the Turbine Delivery Route (TDR), will hereafter be referred to as the proposed development.

The lands associated with the wind farm and supporting infrastructure (excluding the TDR and lands where works are required outside of the wind farm site) are owned by Bord na Móna. and are hereafter referred to as the proposed wind farm site. The proposed wind farm site encompasses a total of approximately 1,900 hectares (ha), is generally flat and consists predominantly of bare, locally re-vegetated cutaway peat, shallow peat, with an established drainage network throughout the peatland which is managed under IPC licence P0504-01 Mountdillon Bog Group, as well as a small number of manmade elements associated with previous peat extraction, including BnM buildings and railway lines.

The proposed wind farm is located approximately 1.9 km east of Lanesborough Town, County Longford. Longford Town is situated approximately 9 km northeast of the proposed wind farm site.

The proposed development comprises of the construction of 22 no. wind turbines and ancillary works including works along the TDR. The turbines will have a blade tip height of 190 m above the top of the foundation level and will be accessible from internal access routes within the Bord na Móna site. The proposed wind farm will have an estimated installed capacity of approximately 132 MW.

A description of the key elements of the proposed development is outlined in Section 2 of this CEMP. A full description of the proposed development is provided in Chapter 3 (Description of the Proposed Development) of the Environmental Impact Assessment Report (EIAR).

The proposed development refers only to the elements of this for which planning permission is being sought as part of this application.

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

This Construction Environmental Management Plan (CEMP) has been prepared to present the proposed management and administration of site activities for the construction phase of the

proposed development, to ensure that all construction activities are undertaken in an environmentally responsible manner. This CEMP summarises the environmental commitments related to the construction of the proposed development, and the measures to ensure compliance with legislation and the requirements of statutory bodies, all as detailed in the EIAR and NIS.

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

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

- Environmental Protection Agency (EPA), Guidelines on the Information to be contained in Environmental Impact Assessment Reports (May 2022);
- Department of Housing, Planning and Local Government (DHPLG), Draft Revised Wind Energy Development Guidelines (December 2019);
- Department of Environment, Heritage and Local Government (DEHLG), Wind Energy Development Guidelines (December 2006);
- EPA Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects (November 2021);
- Inland Fisheries Ireland (IFI) Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016);
- Construction Industry Research and Information Association (CIRIA) C532 publication 'Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors' (CIRIA, 2001);
- CIRIA C648 publication 'Control of water pollution from linear construction projects' (CIRIA, 2006);
- CIRIA C741 publication 'Environmental Good Practice on Site' (4th Edition) (CIRIA, 2015);
- CIRIA C750, 'Groundwater control: design and practice' (2nd Edition) (CIRIA, 2016);
- British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise;
- BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration;
- Scottish Natural Heritage (SNH) (2019) 'Good Practice during Wind Farm Construction' (4th edition). Scottish Natural Heritage;
- The Institute of Air Quality Management (IAQM) publication '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014);
- Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites".

1.1 SCOPE OF THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

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

This CEMP should be read in conjunction with the Planning Documents & Drawings, the EIAR, NIS, and the construction phase elements of the Traffic Management Plan (TMP) (see Appendix 15-2).

This CEMP provides a mechanism for ensuring compliance with environmental legislation and statutory consents. It defines the approach to environmental management at the site during the construction phase and addresses all relevant environmental aspects of the management of site preparation and construction work within the development works area (as set out in Section 3.1 'The Proposed Development – Overview' of Chapter 3 (Description of the Proposed Development) of the EIAR).

The scope of the CEMP includes:

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

At a minimum, this CEMP will be developed further by the appointed main Contractor at construction phase to form a construction phase CEMP will contain:

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

1.1.1 Objectives of the CEMP

The key aims of the CEMP are:

- To set out the client's expectations to guide contractors on their requirements with regards to environmental commitments and environmental management;
- To ensure the proposed development is undertaken in accordance with best practice guidance for the management of the environment during construction works;
- To ensure that mitigation measures to protect all aspects of the environment as set out in the EIAR and the NIS are put in place;

- To ensure compliance with legislation and identify where it would be necessary to obtain authorisation from relevant statutory bodies;
- To ensure that construction activities are carried out in accordance with all planning conditions for the development;
- Ensure that appropriate proposed development monitoring and reporting will be in place;
- To carry out the works with minimal impact on the environment; and
- To ensure procedures are in place so that there is a prompt response to effects requiring remediation, including reporting and any additional mitigation measures required to prevent a recurrence.

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

- Appointment and delegation of responsibility to an individual for monitoring environmental compliance and adherence to the appointed main Contractor's CEMP;
- Updating the appointed main Contractor's CEMP on a continuous basis in accordance with regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the planning application documentation;
- Providing adequate environmental training and awareness to all proposed development personnel;
- Establishing documented schedules and records for monitoring and inspections;
- Establishing reporting procedures for any incidents on site with potential to impact on the environment;
- Provide a framework for reporting, compliance auditing and inspection to ensure environmental aims would be met.
- Provide an outline of the content that would be supplied in the construction method statements and strategies that would be prepared in order to secure mitigation measures in relation to different design aspects of the proposed development
- Providing opportunities for community feedback and submission of complaints; and
- Adopting a sustainable and socially responsible approach to construction.

1.1.2 Implementation and control of the CEMP

This CEMP will be accessible and displayed in the site office for reference by all personnel working on the site. The measures set out in this plan will form part of the site induction and will also be discussed with those working on site during informal 'toolbox' talks.

Where appropriate, the CEMP, or plans within the CEMP, will form part of the site induction which would be mandatory for all employees, contractors and visitors attending the site. All employees and contractors will need to familiarise themselves with the relevant contents of the CEMP and supporting appendices as directed.

Compliance with the CEMP is the key control measure required during construction to ensure mitigation is appropriately addressed. The appointed main Contractor would be required to prepare a series of site / task specific method statements providing detail on how the contractor intends to implement the mitigation set out in the CEMP.

The CEMP would be used by the appointed main Contractor to ensure appropriate environmental management is implemented throughout the construction phase of the proposed development. The CEMP documents the commitment to safeguarding the environment through the identification, avoidance and mitigation of the potential negative environmental impacts associated with the proposed development. The CEMP aims to define good practice as well as specific actions requited to implement mitigation requirements.

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

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

The CEMP seeks to:

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

It is important to note that the CEMP is considered to be a live document that will continue to be developed further and / or amended throughout all phases in the lifetime of the proposed development.

1.1.3 Revisions to the CEMP

As mentioned above, the CEMP is a 'live' document and as such will be reviewed on a regular basis to allow any changes to construction programme, operations or unforeseen issues be incorporated at any stage throughout the proposed development t as deemed necessary by the Applicant, their agents, or relevant authorities. The CEMP will be subject to continual review to address. For example:

- Any conditions required in the planning permission;
- Any requirements/issues highlighted through consultations prior to works e.g. by the National Parks and Wildlife Service (NPWS), Longford County Council etc.;
- To ensure it reflects best practice at the time of construction;
- To ensure it incorporates the findings of any pre-construction site investigations;
- Changes resulting from the construction methods used by the contractor(s);
- Unforeseen conditions encountered during construction.

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

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

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

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

2.0 SITE LOCATION AND PROPOSED DEVELOPMENT DETAILS

2.1 LOCATION OF THE PROPOSED DEVELOPMENT

The proposed wind farm (i.e., the no. 22 turbines and associated infrastructure within the proposed wind farm site boundary) will be located on Derryaroge, Derryadd, and Lough Bannow bogs within the Mountdillon bog group in County Longford. The site of the proposed wind farm is illustrated in Figure 1.1 of Chapter 1 (Introduction) of the EIAR. The closest settlements to the proposed wind farm are Derraghan village and Lanesborough town located approximately 200 m and 500 m west, respectively.

Other nearby settlements to the proposed wind farm include Keenagh 1.6 km east and Killashee 700 m northeast, while the main urban centre in the region, Longford Town, is located 9 km to the northeast from its nearest point. Derryaroge Bog is approximately 1.20 km south of the River Shannon which runs in a northwest direction to the proposed wind farm site and Lough Bannow Bog is approximately 0.5 km to the west of the Royal Canal which runs in a northwest to east direction.

There are 5 no. locations along the TDR requiring minor temporary accommodation works in order to facilitate the delivery of turbine components to the proposed wind farm site. These are detailed further in Section 3.3.15 of Chapter 3 (Description of the Proposed Development) of the EIAR.

The proposed development is located within the townlands of Annaghbeg, Annaghmore, Ards, Ballynakill, Barnacor, Ballypheasan, Bogganfin, Cloonbearla, Cloonybeirne, Cloonbony, Cloonbrock, Clonfinfy, Cloonfiugh, Cloonfore, Cloonkeel, Cloontabeg, Cloontamore, Coolnahinch, Corlea, Corralough, Derraghan Beg, Derraghan More, Derryad, Derryaroge, Derryart, Derrygeel, Derryglogher, Derrynaskea, Derryoghil, Derryshannoge, Grillagh, Kilmakinlan, Monksland, Mosstown, Mount Davys, Rappareehill.

The proposed wind farm site boundary encompasses an area of approximately 1,900 ha and measures approximately 12.1 km in length from north to south and approximately 3.8 km from east to west at its widest point.

The proposed wind farm site is situated to the east of Lough Ree and west of the Royal Canal while the River Shannon is located to the north and west.

A network of grid infrastructure exists in the area, including the Lanesborough/Richmond line 110 kV overhead line, which traverses the proposed wind farm site along the boundary of the Derryadd and Derryaroge bogs near the existing Mountdillon works buildings.

2.1.1 Designated Sites

Full details of the Sites of International Importance (European Sites: Special Areas of Conservation (SACs) and Special Protected Areas (SPAs)) and Sites of National Importance (Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA)) within 15 km of the Wind farm site are outlined in the Chapter 7 (Biodiversity) of the EIAR and the NIS.

Sites of International Importance

Figure 7.4 of Chapter 7 (Biodiversity) of the EIAR shows the designated European sites around the proposed wind farm. Considering the hydrological and hydrogeological connectivity source-pathway-receptor via hydrological linkages associated with the proposed wind farm site, two European Sites are considered as potentially connected with the proposed wind farm site:

- Lough Ree SAC [Site code: 00440] (NPWS, 2016; 2019);
- Lough Ree SPA [Site code: 004064] (NPWS, 2015; 2022a).

Sites of National Importance

Figure 7.5 of Chapter 7 (Biodiversity) of the EIAR shows the National designated sites around the proposed wind farm. Considering hydrological and hydrogeological flow associated with the proposed wind farm site, four Nationally important sites are considered as potentially connected with the proposed wind farm site:

- Lough Bawn pNHA [Site code: 001819] (NPWS, 2009a);
- Lough Bannow pNHA [Site code: 000449] (NPWS, 2009b);
- Lough Ree pNHA (see site synopsis for Lough Ree SAC [Site code: 00440] (NPWS, 2019);
- Derry Lough pNHA [Site code: 001444] (NPWS, 2009c).

2.2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development will comprise the following:

- 22 no. wind turbines with a blade tip height of 190 m, blade rotor diameter of 165 m, hub height of 107.5 m and the associated infrastructure including tower sections, nacelle, hub, and rotor blades and all associated foundations and hard-standing areas in respect of each turbine;
- New internal site access roads, approximately 27,500 m in length including passing bays and associated drainage;
- 2 no. permanent Meteorological Masts, both of which will be 120 m in height, and associated hardstanding areas for both masts, as well as the decommissioning and removal of an existing 100 m Meteorological Mast on site in Lough Bannow Bog;
- 4 No. Borrow pits in Derryadd Bog; All works associated with the opening, gravel and spoil extraction, and decommissioning of the borrow pits;
- 4 No. temporary construction compounds, including material storage, site welfare facilities, and site offices;
- 4 No. temporary security cabins at the main construction site entrances as well as at a number of access points around the proposed wind farm site;

- 1 no. 110 kV electrical substation compound in Derryaroge Bog. The substation will consist of 2 No. control buildings, a 36 m high telecommunications tower, associated electrical plant and equipment, ground water well, wastewater holding tank and welfare facilities;
- All associated underground electrical and communications cabling connecting the turbines and masts to the proposed electrical substation, including road crossing at N63 and associated grid connection via a 110 kV loop-in connection to the existing Lanesborough-Richmond 110 kV overhead line which traverses the proposed wind farm site;
- 1 No. 16 MW battery storage facility;
- 2 No. Peat Deposition Area, one to the north of the proposed substation compound in Derryaroge Bog and one in Derryadd Bog;
- New site access entrances, temporary improvements and modifications to existing public road infrastructure to facilitate delivery of abnormal loads including locations on N6 Eastbound Slip Road, N6/N61 Roundabout at Athlone, N61/N63 Roundabout at Roscommon, N63 Roscommon Arts Centre Roundabout and N61/N63 Roundabout, Northeast of Roscommon;
- Hinge 3 No. permanent lighting fixtures in Folio RN40465F in Roscommon town to facilitate the delivery of abnormal loads (i.e. turbine blades);
- Approximately 7,500 m of dedicated amenity access tracks to provide linkages between the proposed wind farm site roads and the existing royal canal greenway (to the east), Corlea visitor centre and amenity areas (to the south) and the Midlands Trail Networks project (to the north);
- 3 No. permanent amenity carparks, one of which is situated in Derryaroge Bog (19 no. car parking spaces in total) and two carparks in Derryadd Bog (19 no. car parking spaces in each carpark);
- All associated site work and ancillary works including new drainage and upgrading existing drainage, access road, earthworks, site reinstatement and erosion control, which will be aligned with the existing and future site rehabilitation plans; and,
- A 10-year planning permission is being sought with a 30-year operational life from the date of commissioning of the entire wind farm.

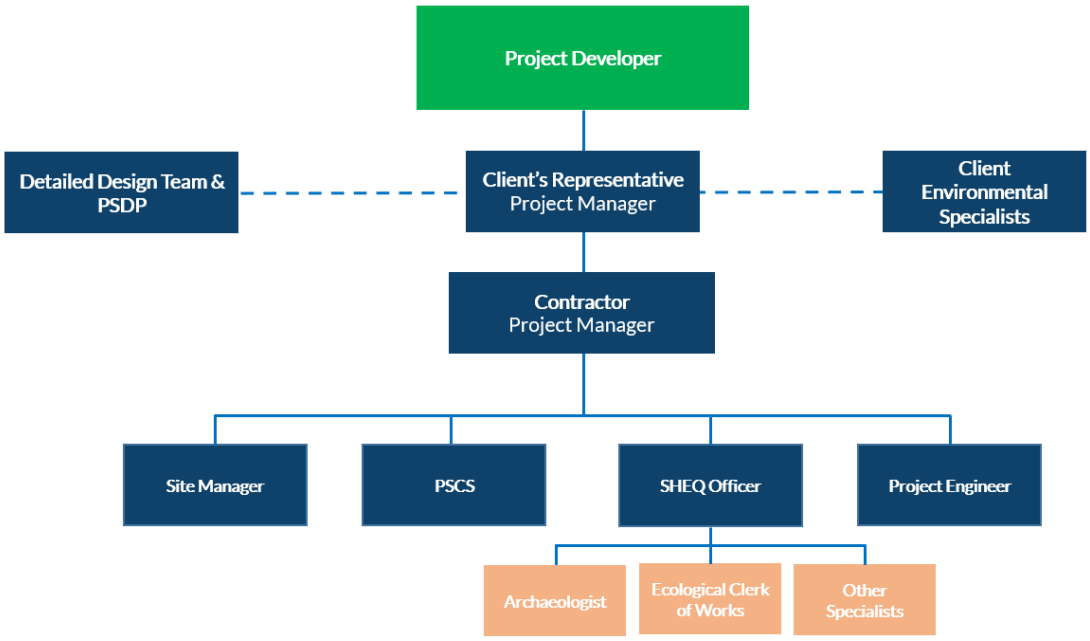
2.3 KEY ROLES AND RESPONSIBILITIES

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

The names and contact details of the individuals with responsibility for implementation and supervision of mitigation measures during all phases of the development will be clearly identified and set out in documents such as the appointed main Contractor's CEMP and site-specific method statements as appropriate.

Summary details of these roles are outlined in the following sections. At construction phase, the appointed main Contractor's CEMP will confirm roles and finalise responsibilities and contact details once appointed.

Figure 2-1 Example Project Development Organisational Chart



2.3.1 Construction / Site Manager

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

2.3.2 Project Supervisor Construction Stage (PSCS)

A suitably qualified PSCS will be appointed by the main Contractor for the duration of the construction period. The duties and responsibilities of the PSCS are detailed in Section 2.4.1.1 Safety and Security of this CEMP.

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

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

- The daily implementation of the CEMP and any other monitoring/mitigation proposals required under the planning consent;
- Ensuring that the objectives of the CEMP are achieved and maintained;

- Informing the appointed contractor(s) of the CEMP and ensuring that appropriate training and awareness materials are developed and implemented on-site;
- Co-ordinating and monitoring the inputs from the ECoW, Project Geotechnical Engineer and Project Archaeologist;
- Implementing appropriate measures in the event of any environmental incidents and managing communications with relevant authorities; and
- Regular communication with the Construction/Site Manager detailing the execution and progress of environmental activities on-site.

2.3.4 Ecological Clerk of Works (ECoW)

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the main Contractor for the duration of the construction period. The Ecological Clerk of Works will ensure that all relevant mitigation measures in this CEMP are implemented.

The role of the ECoW is defined by British Standard BS 42020:2013[1] as *"person who has the ecological qualifications, training, skills and relevant experience to undertake appropriate monitoring and to provide specialist advice to "development" site personnel on necessary working practices required to i) safeguard ecological features on site and ii) aid compliance with any consents and relevant wildlife legislation related to the works."*.

The duties of the ECoW will include review of method statements; supervision of the installation, operation and removal of construction phase mitigation measures such as sediment control traps; compliance checks; supervision of the peat replacement plan; and liaison with relevant statutory bodies.

Typically, the requirements of the ECoW role is largely fulfilled by a single individual, with support and assistance provided by technical specialists and senior colleagues when required, and will include:

- The ECoW (individual or team of individuals) must therefore have appropriate qualifications, training and experience to meet the requirements of the role and in addition, where needed, can access support from senior ecologists within the company with the required qualifications, training and experience;
- The ECoW will have the power to "Stop Works" at any time they deem it necessary to do so;
- The ECoW will be responsible for monitoring compliance with the mitigation measures and construction phase monitoring requirements relating to ecology / biodiversity as set out in the proposed development EIAR, NIS and supporting documents such as this CEMP etc.;
- The ECoW will be responsible for the day to day management and interaction with the project SHEQ;
- The ECoW will have authority over the content of routine reports and will act independently in determining instances of non-compliance with the consents and licenses or any breaches of environmental legislation;
- The ECoW will provide the main Contractor's team with advice on environmental issues and compliance with planning conditions, commitments etc. as required. This includes managing certain activities that may be required in discharging consent conditions. The ECoW will inform the main Contractor and Project Developer Teams of any information

that could increase the risk of a non-compliance and/ or require a new licence, consent or approval.

During construction there will be occasions when the ECoW will be required to rapidly respond to unplanned events such as any wildlife incidents, pollution incidents, etc. The ECoW will have a very specific role within the emergency response teams responding to these incidents. The ECoW will also be expected to support the project team in resolving any other unplanned events that are not classified as emergency responses or incidents.

Non-Compliance Events

The ECoW will produce a procedure setting out the sequence of actions to be completed and the lines of communication required to resolve and appropriately report on a non-compliance event relating to ecology/biodiversity, should one occur.

This procedure will be approved by the Project Developers Team prior to construction commencing. The ECoW, and any other individual present on-site, has a duty of care to report any wildlife crime or breach of environmental legislation to the Project Developer. The Project Developer must report such breaches to the relevant authorities.

Reporting and Follow up

After the ECoW has responded to an incident or non-compliance event the ECoW will produce a report to the SHEQ Officer for approval before it is issued to the Project Developer. The report will set out the following information as a minimum;

- Precise details of the event and those involved;
- Assessment of impact and severity (method for assessment to be developed by ECoW);
- Mitigation introduced;
- Subsequent revision of risk assessments and construction method statements and/or construction programme; and
- Lessons learnt.

Ad-Hoc Advice and Support

The ECoW will provide the main Contractor's Team, with advice on environmental issues and compliance with planning conditions, commitments etc. as required. This includes managing certain activities that may be required in discharging consent conditions.

2.3.5 Project Archaeologist

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

2.3.6 Other Specialists

Project Ecologist / Ornithologist

The Project Ecologist / Ornithologist is responsible for the protection of sensitive habitats and species encountered during the construction phase of the proposed development will report to

the ECoW. The Project Ecologist will not be full time on site but will visit the site at agreed periods during construction.

Project Hydrologist

The Project Hydrologist will report to the Environmental Clerk of Works and is responsible for inspection and review of drainage and water quality aspects associated with construction of the wind farm. The Project Hydrologist will review and input to the final construction phase CEMP in respect of drainage and water quality management. The Project Hydrologist will complete ongoing inspection and monitoring of the development, particularly in areas of drainage control, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, and in relevant planning conditions. The Project Hydrologist will not be full time on-site but will regularly visit the site at agreed periods during construction and on weekly basis during site preparation/groundworks.

Project Geotechnical Engineer / Geologist

The Geotechnical Engineer / Project Geologist will report to the ECoW and is responsible for inspection and review of geotechnical aspects associated with construction phase of the proposed development. The Geotechnical Engineer will be responsible for ongoing inspection and monitoring of the development, particularly in areas of peatland and the peat deposition areas, through all phases of construction (including pre, during and post construction) and ensure construction is carried out as specified in the EIAR, and in relevant planning conditions. The Geotechnical Engineer will be full time on-site during the site preparation and groundworks and will visit site regularly at agreed periods during the construction phase.

2.4 FACILITIES, SAFETY AND SECURITY

The proposed Derryadd Wind Farm will be constructed, in accordance with all relevant Health and Safety Legislation, including:

- Safety, Health and Welfare at Work Act 2005 - 2014 (as amended);
- Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2023 (as amended);
- Safety, Health and Welfare at Work (Construction) Regulations 2013 – 2021 (as amended).

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

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

A (Preliminary) Health and Safety (H&S) Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction phase by the PSDP.

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

2.4.1 Safety and Security

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

The scale and scope of the proposed development will require the appointment of a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) in accordance with the provisions of the *Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No.291 of 2103)*, as amended. These persons will be appointed by the Applicant and notified to the Health and Safety Authority (HSA) prior to commencement of detailed design works (in the case of the PSDP) and prior to commencement of construction (in the case of the PSCS).

The PSDP appointed for the construction phase will be required to perform their duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):

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

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

- Development of the Safety and Health Plan for the construction phase with updating where required as work progresses;
- Compile and develop safety file information;
- Reporting of accidents / incidents;
- Weekly site meeting with PSCS;
- Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out;
- Induction of all site staff including any new staff enlisted for the proposed development from time to time;
- Toolbox talks as necessary;

- Maintenance of a file which lists personnel on site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;
- Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;
- Monitor the compliance of contractors and others and take corrective action where necessary; and
- Notify the Authority and the client of non-compliance with any written directions issued.

As mentioned, the PSDP will prepare a Preliminary H&S Plan which will identify any particular risks, residual risks and particular sequences of work that are envisaged during the design of the works.

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

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

2.4.2 Site Access and Public Safety

Public safety will be addressed by restricting site access during construction works and the erection of security fencing as appropriate at construction work areas. The entrance to the proposed wind farm construction site will be controlled by the main Contractor.

The proposed wind farm site will be accessed primarily via the main site access A to the southern part of Derryadd Bog, off the R392 and will facilitate both materials delivery (stone, steel and concrete) as well as large oversize components such as turbine blades, tower sections and substation components. Additional access points for HGVs and LGVs are provided on the N63 National Road to Derryaroge and Derryadd bogs (Existing Mountdillon access and site Access C). Site Access B will provide access to Lough Bannow bog off the R398 and from Derryadd bog.

2.4.3 Compound and Facilities

Four temporary construction compounds are included as part of the proposed development. The four temporary compounds strategically situated to serve wind farm construction on all bogs (i.e., south of Derryaroge, south of Derryadd and north of Lough Bannow bogs).

Table 2-1: Construction Compounds

Compound	Townland	Dimensions	Total Area (m^2)
Compound No. 1: Existing Mountdillon Works Yard	Cloonfore	130 m x 75 m	9,750 m^2
Compound No. 2: West of proposed onsite substation in Derryaroge Bog and North of Mountdillon Works	Cloonfore	100 m x 40 m	4,000 m^2
Compound No. 3: South of proposed T15 in Derryadd Bog	Derraghan More	100 m x 40 m	4,000 m^2
Compound No. 4: West of proposed T16 in Lough Bannow Bog	Cloontabeg	100 m x 40 m	4,000 m^2

The location of the proposed construction compounds is shown on the site layout Planning Drawing 11399-2010 to 11399-2016. The construction compounds will typically consist of temporary site offices, staff welfare facilities, storage areas (including waste and recycling areas), and car-parking areas for staff and visitors. The layout of the temporary construction compounds is shown on Planning Drawings 11399 – 2029 to 2030.

Temporary toilets will be used during the construction phase as part of the welfare facilities for site staff and visitors. Wastewater from toilets will be directed to a sealed storage tank, which will be collected and tankered off site by an appropriately consented and licensed waste collector to wastewater treatment plants.

2.4.4 Signage

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

Signage will be erected on both sides of the local, regional and national, roads associated with the four proposed the site entrances to warn approaching vehicles of the construction site entrance locations and the potential presence of slow-moving vehicles. The four proposed site accesses are as follows:

- New proposed main site access (Site Access A) to the southern part of Derryadd Bog, off the R392;
- New proposed site crossing (Site Access B) from the South of Derryadd Bog to the northern part of Lough Bannow Bog, off the R398;
- Proposed new temporary site crossing (Site Access C) from the northern part of Derryadd Bog (Machine pass from Mountdillon Works yard), off the N63 will also be required for large component transport across the N63 into Derryaroge;
- Existing Mountdillon Access (off the N63) will be utilised by Light Vehicles (LVs) and Heavy Vehicles (HVs).

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

Road signage on the public road will be in accordance with the current Traffic Signs Manual1 (see Chapter 15 (Traffic and Transport) of the EIAR) and associated best practice guidelines. Signage in respect of traffic management is discussed in the TMP in Appendix 15-2 and will be in accordance with the Local Authority recommendations and relevant planning conditions. Within the site, maximum speed signage will be erected along the access roads for construction vehicles and health and safety signage will be erected at borrow pits and where deep excavations, or other areas of increased risk, are occurring. Signage will also be erected as a reminder to concrete delivery drivers that concrete truck wash-out is not permitted on-site and identifying the area(s) where concrete chute wash-out is permitted.

2.4.5 Emergency Response Plan

The appointed main Contractor will be responsible for developing a detailed Emergency Response Plan (ERP) for the proposed works, to cover health and safety emergencies as well as environmental emergencies, as part of the H&S Plan. Details related to the ERP are outlined in Section 4.0 (Emergency Response Plan / Procedures) of this CEMP.

Further information relating to the management of spills or leaks is outlined in Section 3.1.6.4.

2.4.6 Incidents / Complaints

All safety or environmental incidents associated with the proposed development will be reported and investigated in line with the ERP. Details related to the Incidents / Complaints are outlined in Section 4.0 (Emergency Response Plan / Procedures) of this CEMP.

3.0 CONSTRUCTION METHODOLOGY

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

It is estimated that the construction phase will take approximately 24 - 30 months from starting onsite to completion of commissioning of the turbines.

All vegetation clearance that is required during construction works will commence outside the breeding bird season, which runs from the 1st of March to the 31st of August.

The construction phase can be broken down into three main phases as follows (there will be overlap of these phases):

1. Civil engineering works: approximately 18 months;
2. Electrical works: approximately 18 months (will commence shortly after the civil works and will then run in parallel); and
3. Turbine erection and commissioning: approximately 9 months.

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

The main tasks under each phase are outlined below.

Civil Engineering Works:

- Create new entrance(s) and hardcore existing entrances (where required);
- Construct new internal site roads, drainage ditches and culverts. The internal site roads will be a mixture of permanent (construction/operational and amenity) roads and amenity tracks;
- Construct site access roads to borrow pit locations and open borrow pits;
- Clear and hardcore area for temporary construction compounds, including material storage, site welfare facilities, and site offices and install;
- Construct turbine hard-standings and crane pads;
- Construct substation compound and associated drainage ditches and culverts;
- Construct electrical apparatus bases/plinths and bund for transformer;
- Excavate/pile as required for turbine bases. Sidecast or store soil/peat locally for backfilling and re-use, if deemed feasible;
- Place blinding concrete to turbine bases using either a piled solution or on competent strata. Fix reinforcing steel and anchorage system for tower section. Construct shuttering. Fix any ducts etc. to be cast in. Pour concrete bases. Cure concrete. Remove shutters after 1-2 days;
- Decommission existing 100 m high meteorological mast at Lough Bannow bog;
- Install new 120 m high permanent meteorological masts;
- Excavate cable trenches and install electrical ducting.

Electrical Works

- Install external electrical equipment at substation;
- Install transformer at substation compound;
- Erect stock proof and palisade fencing around substation area;
- Install internal collector network and communication cabling;
- Construct grid connection.

Turbine Erection and Commissioning

- Backfill tower foundations and cover with suitable material;
- Erect towers, nacelles and blades;
- Complete electrical installation;
- Commission and test turbines;
- Complete site works and reinstate site;
- Remove temporary construction compounds including material storage, site welfare facilities, and site offices. Construct permanent amenity parking in location of temporary compounds no. 1 and 3;
- Provide any gates, landscaping, signs, etc. which may be required.

The phasing and scheduling of the main construction task items are outlined in Table 3-8 (Indicative Construction Schedule) of Chapter 3 (Description of the Proposed Development) of the EIAR, where January 2027 has been selected as an arbitrary start date for construction

activities. Refer to the Peat and Spoil Management Plan (PSMP) (Appendix 9.2) for further details on the construction methodology.

3.2 CONSTRUCTION HOURS

The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations will generally be restricted to between 08:00 hrs and 20:00 hrs weekdays and between 08:00 hrs and 13:00 hrs on Saturdays.

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

Approximately 100-120 persons will be employed during the peak construction period and it is estimated that the construction phase will take approximately 24 - 30 months from starting onsite to completion of turbine commissioning. A reduction in construction staff on site is expected when the construction activities are more technical and less labour intensive.

It is assumed that some staff will arrive to the site by LVs (10 staff) and the remaining via mini bus with approximately 15 persons per vehicle to limit traffic movements.

3.3 OVERVIEW OF THE CONSTRUCTION METHODOLOGY

The proposed construction methodology is summarised in the following sections, however further detail is found in Chapter 3 (Description of the Proposed Development) and drawings in Appendix 1-2 of the EIAR.

3.3.1 Internal Site Access Roads and Passing Bays

Internal site access roads will be constructed as part of the initial phase of the construction of the wind farm. Material will either be won from the proposed borrow pits, if deemed suitable based on testing, or imported into the site to provide the required base of the internal roads. The internal roads will be a mixture of permanent (construction/operational and amenity) roads, and amenity pathways/cycleways (permanent). The internal site access road layout and types are shown in Planning Drawing 11399-2033.

New internal site roads for construction traffic and shared vehicular road ((Type 1 to 4) as shown in Planning Drawing 11399-2033) will have a running width of approximately 6 m, with wider section at corners and on the approaches to turbine locations. The amenity access tracks (Type 5 and 6) will be 3 m in width as shown in Planning Drawing 11399-2033. All new roadways will be constructed with a 2.5% camber to aid drainage and surface water runoff. The proposed new roadways incorporate passing bays to allow traffic to pass easily while traveling around the site.

Two road construction methodologies will be used:

- Floating Roads; and
- Founded Roads.

Typical road construction details are included in Planning Drawing 11399-2033 and detailed further in Section 3.9.3 of Chapter 3 (Description of the Proposed Development) of the EIAR.

3.3.2 Road Construction - Permanent Roads, including Amenity Tracks (founded/floating)

Internal site roads will be constructed as part of the initial phase of the construction of the wind farm. Roads will generally be constructed as floating roads except in areas with shallow peat and highly trafficked areas (e.g., site entrances and access roads in and out of borrow pits).

The construction methodology for founded roads/ amenity tracks, is summarised as follows:

- Interceptor drains will be installed upslope of the access road alignment to divert any surface water away from the construction area;
- Excavation of roads will be to the line and level given in the detailed design requirements. Excavation will take place to a competent stratum beneath the peat (as agreed with the site designer);
- All excavated peat will be placed/spread and profiled for temporary storage or side-cast alongside the excavations where possible;
- Side slopes of the excavations will be battered as the excavation progresses;
- The surface of the excavated road will be developed using granular fill. The depth will vary based on the depth of peat and on the designer requirements;
- A layer of geogrid/geotextile may be required at the surface of the competent stratum (to be confirmed by the designer);
- A final unbound surface layer will be placed over the excavated road, as per design requirements, to provide a road profile and graded to accommodate wind turbine construction and delivery traffic;
- An additional 50 mm surface of quarry dust will be placed over the roads selected for use as amenity access tracks;
- Permanent founded roads for wind farm access will be designed to a running width of approximately 6 m, while permanent tracks for amenity use will be designed to approximately 3 m in width;
- During the operational phase of the proposed development all surface water run-off from hardstanding areas within the proposed wind farm site will be collected and discharge to settlement ponds prior to entering existing drainage system within the bogs. This treated water will then move into the existing bog drainage network.

The construction methodology for permanent floating roads/amenity tracks, is summarised as follows:

- A geotextile separation layer is placed on the existing ground surface;
- A biaxial geogrid is then placed over the geotextile;
- Where the California Bearing Ratio (CBR) of the underlying material is >1%, 400 mm of class 1A/6F2/6I/6J material followed by 100 mm of a compacted Clause 804 will be used for a running layer to give a total road thickness of 500 m;
- Where CBR of the underlying material is <1%, 300 mm of Class 1A/6F2/6I/6J material will be placed, followed by a second layer of biaxial geogrid, followed by 300 mm of Class 1A/6F2/6I/6J material, followed by a 100 mm of a compacted Clause 804 running layer for a total road thickness of 700 mm;

- Permanent floating roads for wind farm access will be designed to a running width of approximately 6 m, while permanent tracks for amenity use will be designed to approximately 3 m in width;
- Over the edge (OTE) drainage will be used along sections of proposed floating road between turbine infrastructure. OTE drainage will only occur where topography allows, and it is only proposed in areas of low risk and remote from outfall locations. Over the edge drainage allows runoff from site roads/access tracks to flow into local field drains and be managed via the existing site drainage system.

Typical sections of a new roads are shown on Planning Drawing 11399-2033. Where shown on the planning drawings, the road widths will be increased to form the indicated passing bays.

3.3.3 Proposed Culverts

Culverts will be required where site roads, crane pads and turbine hardstands cross main bog drainage networks. Indicative locations of the culverts are shown on 20852-NOD-01-XX-DR-C-08002 to 20852-NOD-01-XX-DR-C-08015. Culverts of 600 mm and 1200 mm in diameter will be provided, a typical detail of which is shown on Planning Drawing 11399-2035. The proposed culverts and any diversion of the existing main drainage network across the proposed wind farm site are specified in the site layout Planning Drawings 20852-NOD-01-XX-DR-C-08002 to 20852-NOD-01-XX-DR-C-08015. All culverts will be inspected regularly to ensure they are not blocked by debris, vegetation or any other material that may impede conveyance.

3.3.4 Borrow Pits

There are four borrow pit locations identified to produce excavated material to provide fill material for roads/tracks (for permanent roadways and amenity), passing bays, hardstands, upfill to foundations and temporary compounds, dependent on testing results. The borrow pits are all located within Derryadd Bog (i.e., centre of the proposed wind farm site as per Planning Drawing 11399-2010) and are at advantageous locations with regards to the hauling of materials within the site.

Approximate volumes of materials available on site are summarised in Table 3-2 of Chapter 3 (Description of the Proposed Development) of the EIAR. The estimates are based upon specific dimensions to provide a safe working zone and to minimise land take.

3.3.5 Rock Extraction – Rock Breaking

Rock breaking, crushing and screening will be required for some of the material won from borrow pits, with some limited rock ripping. Material will be extracted using excavators. No blasting will be carried out at any borrow pits. Extraction from borrow pits will be from above and below the water table.

3.3.6 Tree Removal / Felling

There will be a requirement to remove / fell some individual trees in the areas immediately surrounding the footprint of the wind farm infrastructure, and associated with the proposed temporary accommodation works required along the TDR.

Trees requiring removal along the TDR are outlined in Section 3.3.15 and Table 3-5 of Chapter 3 (Description of the Proposed Development) of the EIAR.

3.3.7 Peat and Spoil Management

The quantity of peat and non-peat material (spoil) requiring management for the proposed development has been calculated, as presented in Table 3-7 of Chapter 3 (Description of the Proposed Development) of the EIAR. These quantities were calculated as part of the PSMPin Appendix 9.2 of this EIAR.

The proposed methodology for the management of peat and spoil, as outlined in the PSMP(Appendix 9-2 of the EIAR), is summarised in Section 3.1.16 of this CEMP.

3.3.8 Proposed Site Drainage

The proposed development is located within a former peat extraction site. An extensive network of drainage channels are present throughout the peatland which is managed under IPC licence P0504-01 Mountdillon Bog Group.

Temporary (for the duration of the construction phase) and permanent drainage infrastructure will be installed as part of the proposed development

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

The existing and preliminary site drainage concept for the proposed wind farm is outline in Sections 3.6 (Surface Water Management) of Chapter 3 (Description of the Proposed Development) of the EIAR.

A Surface Water Management Plan (SWMP) has been developed and is included as Appendix 10-3 of the EIAR.

3.3.9 Turbine Hardstand, Foundations and Erection

Construction of the turbine bases will require excavation of the surrounding soil or peat from the foundation and crane hardstanding area to founding level with access being provided from adjacent tracks at or near the surrounding ground level.

Each wind turbine will require piled foundations, bored foundations or a gravity foundation of reinforced concrete (RC) foundation comprising a base slab bearing onto rock or other competent substrata with a central upstand to support the tower. The foundations for each turbine will be designed by the appointed Civil Designer. Piled foundation, bored foundations and gravity foundation bases are generally 24-26 m in diameter with detailed foundation design being dictated by the local ground conditions.

Each wind turbine is secured to a reinforced concrete foundation that is installed below the finished ground surface. The size of the foundation will be dictated by the turbine manufacturer, and the final turbine selection will be the subject of a competitive procurement process. Different turbine manufacturers use different shaped turbines foundations, ranging from

circular to hexagonal and square, depending on the requirements of the final turbine supplier. The turbine foundation transmits any load on the wind turbine into the ground. After the foundation level of each turbine has been formed using piled foundations, bored foundations or a gravity foundation, the bottom section of the turbine tower or "cage" is levelled. Reinforcing steel is then built up around and through the cage, and the outside of the foundation is shuttered with demountable formwork to allow the pouring of concrete.

Piled foundations, bored foundations and gravity foundations are shown on Planning Drawings 11399-2042 to 2044.

Hardstand areas consisting of levelled, compacted hardcore and are required around each turbine base to facilitate access, turbine assembly and turbine erection. The hard-standing areas are typically to accommodate cranes used in the assembly and erection of the turbine, offloading and storage of turbine components, and generally provide a safe, level working area around each turbine position. The hard-standing areas are extended to cover the turbine foundations once the turbine foundation is in place.

The turbine hardstanding areas are shown on Planning Drawing 11399-2031 and shown on the site layout drawings (Planning Drawing 11399-2010 to 2016) included with the Planning Application in Appendix 1-2 of the EIAR. The hardstanding areas shown represent a design based on manufacturer's requirements and seeks to accommodate a number of different turbine types and models.

3.3.10 Grid Connection

The proposed 110 kV substation will be connected to the national electricity grid via a loop-in connection to the nearby Lanesborough-Richmond 110kV Overhead Line (OHL) Network, located approximately 250 m south of the proposed substation. The loop-in connection will comprise of high voltage underground cables connecting the substation to the Lanesborough-Richmond 110kV OHL.

All new build transmission infrastructure required for the proposed development is contained within the proposed wind farm site, while the proposed underground cables will cross under the N63 National Road which is located between the substation and Lanesborough-Richmond OHL. The proposed grid connection requires approximately 460 m of 110 kV underground cable (UGC) installation from the 110 kV onsite substation to the existing OHL to the south. The entire UGC has been assessed throughout this EIAR.

The 110 kV cable route as shown on Planning Drawing 11399- 2017 from the proposed substation to the existing Lanesborough-Richmond 11 0kV OHL requires both trenching and horizontal directional drilling (HDD) construction methods. The location, description and methodology amendments are summarised in Table 3-9 below and detailed in Appendix 3-3 (TLI Outline Construction Methodology_110kV Substation and connections).

Further detail on the grid connection methodologies is provided in Section 3.9.5 of Chapter 3 (Description of the Proposed Development) of the EIAR. Refer to Planning Drawings 11399-2024 and 11399-2017. The various elements of the grid connection are summarised below.

3.3.11 Electrical Substation Compound

It is proposed to construct a 110 kV substation compound within the site to house the two control buildings; Transmission System Operator (TSO) substation and the Independent Power Producer (IPP), at the location shown on Planning Drawing 11399-2018 (refer to Section 3.3.7),

and electrical apparatus necessary to facilitate the generated power from the wind turbines to export onto the transmission system. The layout of the proposed substation is shown on Planning Drawing 11399-2018. The construction and electrical components of the substations will be to ESB and EirGrid specifications within the parameters assessed. Further details regarding the connection between the substation and the national electricity grid are provided in Section 3.3.9. The footprint of the proposed substation compound is approximately 132 m in length by approximately 101 m. Refer to Planning Drawings 11399-2020 for the substation elevations.

3.3.12 Battery Storage

Provision has been made for a battery energy storage system. This includes 20 no. containerised modules with the following dimensions 13.5 m x 4.7 m x 2.8 m. The containerised modules will be similar in appearance to shipping containers and will be mounted on concrete foundations. Based on existing technology each of the containers could have a storage capacity of 2MW. Refer to Planning Drawing 11399-2019 and 11399-2021 for details.

3.3.13 Substation Control Buildings

Two control buildings (TSO and IPP control buildings) will be constructed using traditional techniques for constructing small buildings (i.e. concrete block walls, timber and slate tile roof). Foundations will be built for all of the proposed electrical infrastructure. All the electrical equipment will be installed to EirGrid/ESB requirements. Perimeter fencing will be constructed around the substation compound for security and safety purposes.

The TSO and IPP control buildings will be located within the substation compound. The TSO control building will measure approximately 25 m x 18 m and approximately 9.7 m in height. The IPP control building will measure approximately 19 m x 12 m and approximately 7.0 m in height. Layout drawings of the control buildings are shown on Planning Drawings 11399-2022 and 11399-2023.

Both control buildings will include welfare facilities for the staff. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the proposed development, there will be a very small water requirement for occasional toilet flushing and hand washing and therefore the water requirement of the proposed development is minimal. It is proposed to install a groundwater well adjacent to the substation in accordance with the Institute of Geologists Ireland, Guide for Drilling Wells for Private Water Supplies (IGI, 2007). The well will be flushed to the ground and covered with a standard manhole.

A pump house is not currently required as an in-well pump will direct water to a water tank within the roof space of the control building (subject to final design). It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewater being tankered off-site by a permitted waste collector to a wastewater treatment plant. It is not proposed to treat wastewater on-site.

The proposed wastewater storage tank will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying. The wastewater storage tank alarm will be integrated with the on-site electrical equipment for alarm notification that will be monitored remotely 24 hours a day, 7 days per week. Only waste collectors holding valid waste collection permits under the Waste Management (Collection Permit) Regulations, 2007 (as amended), will be employed to transport wastewater away from the site.

Each turbine will be connected to the proposed on-site 110 kV substation via underground Medium Voltage (MV) cables. Fibre-optic cables will also connect each wind turbine to the wind turbine control system located within the IPP Control Building. The electrical and fibre-optic cables running from the turbines to the substation compound will be run in cable ducts approximately 1.2 m bgl within the proposed wind farm internal roadways, as shown on Planning Drawing 11399-2025.

Further information and drawings of the substation and electrical infrastructure are provided Appendix 3-3 (TLI Outline Construction Methodology - 110kV Substation and connections) of the EIAR.

3.3.14 Crossing Methodology – Horizontal Directional Drilling (HDD)

The proposed underground cables will cross under the N63 National Road which is located between the substation and Lanesborough-Richmond OHL. The 110 kV cable route as shown on Planning Drawing 11399- 2017 from the proposed substation to the existing Lanesborough-Richmond 110 kV OHL requires both trenching and horizontal directional drilling (HDD) construction methods. A launch and reception pit are required for directional drilling, with each measuring approximately 1 m x 1 m x 2 m. A specialised directional drill machine will be anchored to the ground and will drill at a suitable shallow angle to allow it to achieve the required depth for the bore. If ground conditions are unfavourable, the drilling process may need to be repeated using progressively larger drill heads until the required size is achieved.

Further details of the HDD crossing method are provided in Section 3.1.6.5 of this CEMP, Section 3.9.6 in Chapter 3 (Description of the Proposed Development) of the EIAR and Appendix 3-3 (TLI Outline Construction Methodology – 110 kV Substation and connections) of the EIAR.

3.3.15 110kV Underground Cable Trenches

The cables will be installed primarily within the site as indicated on the detailed site layout drawings included in Planning Drawings 11399-2010 – 11399-2016, Volume 3, Appendix 1-2 of the EIAR. It should be noted that works within the public road corridor will also be subject to further consents/agreements with local authorities, for example a Road Opening Licence as appropriate. The methodology and management of the installation of the underground cables and trenching is outlined in Section 3.1.15 of this CEMP.

Further details on the design for the grid connection cable trenches are provided in Appendix 3-3 (TLI Outline Construction Methodology - 110kV Substation and connections) of the EIAR.

3.3.16 Turbine Delivery Accommodation Work Areas

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

Where a temporary surface is needed for the turbine delivery route, works will start with the clearing of any vegetation, and the topsoil will be stripped and used locally for landscaping purposes/bermed for later use in reinstatement. Where local use for landscaping does occur, it will be smoothed off with the back of a bucket and seeded with a suitable grass seed mix. Silt control curtains will also be employed within 50 m of a stream. Topsoil material will not be used locally within 50 m of a stream, and peat material will not be used if found to be present at any location. It is anticipated that the majority of material will be taken to the wind farm site for

borrow pit reinstatement. It may also be taken to a local licensed/permitted waste facility if found to contain any contaminants such as bitumen. Suitable fill material (broken stone and clause 804) will be used to create a firm running area for the passage of turbine delivery vehicles. After the delivery of turbines to site, the points of interest (POI) along the TDR route will be re-instated to the original condition with removal of the temporary surface, and any removed vegetation will be reseeded/replanted with a similar native species composition.

3.3.17 Permanent Meteorological Mast

Two permanent meteorological masts are proposed as part of the proposed development; one within Derryaroge bog and another within Lough Bannow bog. The met masts will be equipped with wind monitoring equipment at various heights. The masts will be located as shown on the site layout drawing in Figure 3-1 of Chapter 3 (Description of the Proposed Development) of the EIAR. Each mast will be a slender, free- standing lattice structure, each 120 m in height, as shown in Planning Drawing 11399-2038.

The masts will be constructed on a hardstanding area of approximately 744 m^2, sufficiently large to accommodate the crane that will be used to erect the mast, adjacent to the proposed site road.

The installation of the two meteorological masts will be carried out by a small crew, following a typical installation sequence as follows:

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

Decommissioning of Existing Meteorological Mast

The proposed development will include the decommissioning of the existing 100 m high meteorological mast on the site. This work will include the following steps:

- Day One:
    - Mobilise on site with one tractor and trailer and one 13 tonne + excavator. Excavated soil will be appropriately tested and transported off site by a licensed waste transfer hauler as required;

  - Establish safe working area around mast; and
  - Climb mast and remove instruments and logger box.
- Day Two:
  - On one side of the mast, transfer guy ropes from ground anchors to the 13 Tonne + excavator;
  - Cut guy rope attached to 13 T+ excavator to allow mast to fall; and
  - Excavate mast anchors and anchor bases making good the ground.
- Day Three:
  - Dismantle and remove mast components and accessories from site using trailer; and
  - Demobilise from the site.

3.3.18 Amenity Car Parks and Access Tracks

Three new permanent amenity car parks will be provided. Two of these car parks are located within the construction compounds (Compound No.1 and Compound No. 3) which will be converted into permanent amenity carparks following completion of the construction phase. The remaining carpark is located along the local access road on the Western boundary of Derryaroge bog as shown in Figure 3-2 of Chapter 3 (Description of the Proposed Development) of the EIAR and Planning Drawing 11399-2050. The existing amenity carpark area at Corlea Bog (L1136 Local Road) adjacent to the proposed amenity track in Lough Bannow Bog will accommodate amenity car parking access to the proposed development. Additionally, the carpark of the Midlands Trail Networks project (Planning Reference No: 24/60132), which is located across the local road, will connect to the proposed amenity access track north of Derryaroge Bog and will accommodate for amenity car parking access to the proposed development.

Planning Drawing 11399-2050 illustrates the configuration of the proposed car parks, which includes for 15 no. car parking spaces, 3 no. disabled parking spaces, 1 no. bus parking area and suitable signage at each location.

A total of approximately 18 km of wind farm site roads within the proposed wind farm site will provide permanent amenity access (including pedestrian and cyclist access) once the proposed development construction phase has concluded. An additional approximately 7.5 km of dedicated amenity track is also proposed to provide connectivity to local roads and allow local access to the wind farm amenity areas. These amenity access tracks will have a gravel/crushed stone finish surface and will be approximate 3 m in width on average. Figure 3-1 (Site Layout Plan) of Chapter 3 (Description of the Proposed Development) of the EIAR outlines the final configuration of the wind farm site road with the additional dedicated amenity access tracks included in the layout plan.

The approximate 7.5 km of dedicated amenity access tracks will provide linkages between the proposed wind farm site roadways, royal canal greenway (to the east of the proposed wind farm site) and the Corlea Visitor Centre and amenity areas (to the south) and the Midlands Trail Networks project (Planning Reference No: 24/60132 (to the north).

The amenity access points to the proposed wind farm site are illustrated in the Amenity Plan in Appendix 3-1 and in Figure 3-2 (Construction/Operational and Amenity Access Location Map) of Chapter 3 (Description of the Proposed Development) of the EIAR.

Biodiversity Enhancement Measures

Habitat enhancement measures are recommended to increase the biodiversity value of the proposed wind farm site. The recommended enhancement measures are compliant with the objectives of the Longford County Development Plan 2021-2027 (LCC, 2021), as well as adhering to targets for plans by 2030 set in Ireland's 4th National Biodiversity Action Plan 2023-2030 (NPWS, 2024). The habitat enhancement measures proposed are set out in Chapter 7 (Biodiversity) of the EIAR, and include:

- Habitat Management;
  - Hedgerows;
  - Grassland areas.

4.0 ENVIRONMENTAL MANAGEMENT

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

4.1 ENVIRONMENTAL TRAINING AND AWARENESS

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

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the Contractor will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled. A baseline level of environmental awareness will be established though the site induction programme. Site inductions will cover the following as a minimum:

- Introduction to the Environmental Manager;
- The requirements of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Identification of environmental constraints and potential impacts of the work;
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment; and
- The benefits of improved environmental and sustainability performance; and the potential consequences of departure from specified procedures, work instructions and method statements.

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

- Protection of sensitive ecological habitats and key ecological receptors;
- Works close to sensitive water bodies;
- Areas of peat;

- Invasive species management;
- Water pollution and silt control;
- Water pollution in relation to cement and concrete handling;
- Spill prevention and control; and
- Dust management.

The Contractor (and their sub-contractors) would be selected with due consideration of relevant qualifications and experience. The Contractor will be required to employ construction staff with appropriate skills, qualifications and experience appropriate to the needs of the works to be carried out during construction.

4.2 MEETINGS

The Environmental Manager will be responsible for arranging and holding monthly meetings with the Employer and/or the Employer's Representative. The Environmental Manager would develop and distribute minutes on monthly meetings accordingly.

4.3 MONITORING AND INSPECTIONS

For the duration of the contract, the environmental performance of the Contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits will be specified in the contract. The Contractor will develop, implement and maintain an Environmental Inspections and Monitoring Plan.

Record of all inspections carried out should be recorded and all actions should be closed out in a reasonable time. If additional monitoring and inspections are required due to any subsequent planning conditions, these will be added to the CEMP.

4.3.1 Monitoring

Mitigation and monitoring will be carried out so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will need to be developed, implemented, documented and assessed in accordance with the specification outlined in the CEMP. Monitoring will be carried out as detailed within the EIAR, NIS and CEMP.

The results of all environmental monitoring activities would be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary.

4.3.2 Inspections

Inspections of construction activities will be carried out by the Environmental Manager on a daily basis to ensure all necessary environmental measures relevant to the construction activities are being effectively implanted by construction staff, ensuring legal and contractual conformity.

Daily Inspections

The daily inspections should include, but not be limited to, checking that:

- The site boundary is marked out and respected;
- All waste is appropriately stored and segregated;
- Waste skips are covered to prevent wind-blown litter;
- Drip trays are in place for all stored equipment and plant;
- All chemicals/fuels are stored with appropriate containment/bunds/cover;
- Construction noise is within permitted limits and does not create a nuisance;
- Dust does not create a nuisance; and
- Fencing/hoarding is secure.

Weekly Inspections

The inspections should include, but not be limited to confirming that:

- Daily checklists have been completed;
- Waste storage areas have been checked and there is no build-up of waste materials;
- Spill kits have been checked and contain all relevant materials;
- The performance of all pollution control equipment has been checked and the equipment is working effectively;
- Noise reduction/monitoring equipment has been checked and is operating effectively;
- Septic tanks are not overfull/discharging; and
- Special control measures identified in Permit/Planning Conditions and CEMP are adhered to

4.3.3 Non-conformity and Corrective and Preventive Action

The Contractor will establish, implement and maintain procedures to deal with actual and potential non-conformities and for taking corrective and preventative action.

- Non-conformities may be identified through:
- Internal contractor audits;
- Audits by the Employer and/or the Employer's Representative;
- Audits undertaken by external certification bodies;
- Audits undertaken by regulatory authorities; and
- General observations.

The Contractor procedures will define the requirements for:

- Identifying and correcting non-conformities;
- Mitigating the environmental impacts of non-conformities;
- Investigating non-conformities including identify root causes and implementing appropriate actions to avoid their reoccurrence;
- Evaluating the need for actions to prevent non-conformities and implementing appropriate actions designed to avoid their reoccurrence;
- Setting realistic timeframes for undertaking effective corrective and preventative actions;

- Recording the results of corrective and preventative actions taken;
- Reviewing the effectiveness of corrective and preventative actions; and
- All actions identified should be appropriate to the nature and magnitude of the issue and the environmental impacts encountered.

4.4 VEHICLE MANAGEMENT

Vehicles will be kept on site access roads for the vast majority of the construction phase, however in the initial construction phases, there will be some requirement for off-road vehicle movements (for ground works, etc.).

For ground works and other off-road activity, the use of specialist vehicles that are tracked or use large low ground pressure tyres or bog mats which distribute their weight evenly across a large surface area will be used. These will minimise ground disturbance, particularly where there is a presence of peat (albeit very shallow on this site) and therefore minimise the risk of sediment entering downstream watercourses.

All vehicles will be restricted to the areas where works are required, and unnecessary off-road movements around the wider site will be avoided. Where there are any sensitive habitats present around a proposed work area, these areas will be marked out so that vehicles will not enter and damage them.

4.4.1 Traffic Management

Traffic management measures will be implemented in accordance with those included in the Chapter 15 (Traffic and Transportation) of the EIAR and a Traffic Management Plan (TMP (Appendix 15-2 of the EIAR) will be agreed with Longford County Council. Mitigation measures set out with Chapter 15 (Traffic and Transportation) of the EIAR are included in Table 5.1 in Section 5.0 of this CEMP.

4.5 NOISE AND VIBRATION CONTROL

The appointed Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures when deemed necessary to comply with the recommendations of British Standard BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites* – Noise and BS 5228-2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites* – Vibration[2].

During the construction phase of the proposed development, supervision of the works will include ensuring compliance with the limits detailed in Chapter 12 (Noise and Vibration) the EIAR using methods outlined in the aforementioned BS 5228-1. This approach calls for the designation of an Noise Sensitive Location (NSL) into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. A threshold noise value is applied to each category. Exceedances (construction noise only) of the threshold value, at the facade of a NSL during construction, indicates a potential significant noise impact associated with the construction activities. The threshold values recommended by BS 5228-1 are depicted in Table 4-1.

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

Table 4-1: Example Threshold Potential Significant Effect at Dwellings

Assessment category and threshold value period (T)	Threshold value, in $L_{Aeq,T}$ dB		
	Category A [Note A]	Category B [Note B]	Category C [Note C]
Night-time (23:00 to 08:00hrs)	45	50	55
Evenings and weekends [Note D]	55	60	65
Daytime (08:00 – 20:00hrs) and Saturdays (08:00 – 13:00hrs)	65	70	75

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

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

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

Note D 20:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

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

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

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

The Transport Infrastructure Ireland (TII) (formerly National Roads Authority (NRA)) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (NRA, 2004) also contains information on the permissible construction vibration levels during the construction phase, these levels are depicted in Table 3-2 below.

Table 4-2: Allowable Vibration at Sensitive Properties (NRA, 2004)

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

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

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

- No plant used on site will be permitted to cause an on-going public nuisance due to noise;
- Regular and proper maintenance of plant and machinery, will be employed to minimise the noise produced by on site operations;
- Plant with low inherent potential for generation of noise and/ or vibration will be selected where practicable;
- Noisy / vibratory plant will be placed as far away from sensitive properties as permitted by site constraints;
- Where practicable, all vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools will be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- Any plant, such as generators or pumps, which is required to operate before 08:00 hrs or after 20:00 hrs will be surrounded by an acoustic enclosure or portable screen.
- Channels of communication will be established between the contractor/applicant, Local Authority, and residents;
- A site representative responsible for matters relating to noise and vibration will be appointed.

Where rock breaking is employed, the following are examples of measures that will be considered, where necessary, to mitigate noise emissions from these activities:

- Fit suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency;
- Ensure all leaks in air lines are sealed;
- Erect acoustic screen between compressor or generator and noise sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured;
- Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation.

Mitigation measures set out with Chapter 15 (Traffic and Transportation) of the EIAR are included in Table 5.1 of Section 5.0 below.

4.6 DUST SUPPRESSION / MANAGEMENT

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

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

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

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

Potential effects arising from dust and exhaust emissions will be minimised through the implementation of the following best practice measures:

- Minimisation of extent of working areas;
- Stockpiling of excavated materials will be limited to the volumes required to practically meet the construction schedule;
- Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level;
- Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found;
- Provision of dust suppression measures (e.g., sweeps/covers/water bowsers) will be used on stockpiles and the road surface during periods of extended dry weather;
- If necessary, water will be taken from settling ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and site compounds to prevent the generation of dust;

- Silty or oily water will not be used for dust suppression, because this will transfer the pollutants to the haul roads and generate polluted runoff or more dust;
- Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff;
- Traffic coming to site will only use the specified haul routes;
- Onsite borrow pits will be used to minimise quantities of stone material being brought to site;
- Best practice (including industry recognised dust suppression techniques/equipment) will be used to minimise the potential for dust production during the extraction of rock from the borrow pits and excavations elsewhere;
- Vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction;
- Vehicles will not be left running unnecessarily and low emission fuels will be used where possible;
- A wheel wash will be provided near the main site entrance and used to prevent the transfer of dust from vehicles used during construction works on to public roads - The drawings in Appendix 1-2 of the EIAR include typical details and proposed location of a proposed self-contained wheel-wash system;
- A road sweeper will be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed development.

In periods of extended dry weather, dust suppression may be necessary along haul roads and around the borrow pit area(s) to ensure dust does not cause a nuisance. If necessary, water will be taken from settlement ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and site compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.

The TA Luft/VDI 2119/Bergerhoff Method of dust emission monitoring has become the most commonly used method. This method involves using a direct collection pot to standardised dimensions of either glass or plastic. The system benefits from being a direct collection method i.e. less transferring of material and consequent reduction in sampling errors. This method is defined as an internationally recognised standard and has been adopted by the Environmental Protection Agency (EPA) as the method of choice for licensed facilities. The compliance threshold limit is 350mg/m2/day as recommended by the TA Luft/VDI 2119/Bergerhoff Method. Dust monitoring will be carried out pre-construction to establish the baseline dust environment and during construction to monitor any potential increases in dust emissions.

4.7 PRE-EMPTIVE SITE-DRAINAGE MANAGEMENT

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

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

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

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

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

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

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

4.8 REFUELLING – FUEL AND OIL MANAGEMENT

Any easily manoeuvrable road-going vehicles (i.e. cars, jeeps, lorries etc) will be refuelled off-site. For any vehicles which are slow moving or tracked or those for whom regular trips off-site to refuel will not be practical, on-site fuelling will be required.

No refuelling of machinery will occur within 50 m of surface water features. Refuelling of machinery will be carried out using a mobile double skinned fuel bowser to allow for ease of work. The fuel bowser will be re-filled off site or at the contractors site compound and will be towed around the site by a 4x4 jeep to where machinery is located. Spill kits (fuel absorbent material and pads) will be stored in the event of any accidental spillages. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. Only designated trained and competent operatives will be authorised to refuel plant on site.

A limited amount of fuel will need to be stored on the site within the construction compounds for this purpose, and this will be within a double skinned and bunded mobile tank. This will be stored in the construction compound when not in use.

A spill kit in the form of a supply of fuel absorbent material and mats and a drip tray will be kept with the tank at all times. The drip tray and fuel absorbent mats will be used at all times during refuelling. Similar spill kits will be stored in each construction compound, and at the on-site substation in case of emergency.

No refuelling of machinery will occur within 50 m of surface water features. Refuelling of machinery will be carried out using a mobile double skinned fuel bowser to allow for ease of work. The fuel bowser will be re-filled off site or at the contractors site compound and will be towed around the site by a 4x4 jeep to where machinery is located. Spill kits (fuel absorbent material and pads) will be stored in the event of any accidental spillages. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. Only designated trained and competent operatives will be authorised to refuel plant on site. The fuel bowser will be parked on a level impermeable area in either of the construction compounds when not in use.

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

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

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

4.9 SPILL CONTROL AND RESPONSE

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

In the event of a leak or accidental fuel spill in the field, the source of the spill will be fixed, and the fuel will be contained and cleaned as quickly as possible using the spill kits to contain and absorb the pollutant and prevent any further potential contamination. The absorbed pollutants and contaminated materials will be placed into leak proof containers and transferred to a

suitable waste container for hazardous materials in the construction compounds. Where a leak has occurred from machinery, the equipment will not be permitted to be used further until the issue has been resolved. The incident will be reported to the Construction/Site Manager and Environmental Manager, and appropriate remediation will be carried out i.e. soil removal for safe disposal by licensed waste collectors.

The SHEQ Officer (or equivalent appointed person) will be notified of any spills on-site and will determine the requirement to notify the authorities as set out in Section 4.3.2 (Incidents / Complaints).

4.10 HORIZONTAL DIRECTIONAL DRILLING

Horizontal Directional Drilling (HDD) will be required for the two circuits of underground cable to cross the N63 road.

The drilling process involves pumping a drilling fluid through the drill head, which is inert, natural and biodegradable (e.g., Clear BoreTM). This fluid will be used sparingly and only as required to avoid an excess and will be appropriately stored when not in use. This fills voids locally around the drill head and enables the drill to progress without the hole collapsing. Should any excess drilling fluid occur, it will be contained and removed for disposal at a licensed waste facility. The duct will be positioned, and the launch and reception pits will be refilled.

The construction methodology for the HDD crossing is summarised as follows:

- Work areas will be fenced on both sides of the HDD away from the N63 road;
- The drilling rig and fluid handling units located on one side of the crossing will be stored on double bunded 0.5 mm PVC bunds which will contain any accidental fluid spills and storm water run-off;
- Entry and exit pits (1 m x 1 m x 2 m) will be excavated; the excavated material will be temporarily stored within the works area and used for reinstatement or disposed of to a licensed facility;
- A 1 m x 1 m x 2 m steel box will be placed in each pit. This box will capture any drilling fluid returns from the borehole;
- The drill bit will be set up by a surveyor, and the driller will push the drill string into the ground and will steer the bore path under the stream-ways and the forestry;
- A surveyor will monitor drilling works to ensure that the modelled stresses and collapse pressures are not exceeded;
- The drilled cuttings will be flushed back by drilling fluid to the steel box in the entry pit;
- Once the first pilot hole has been completed a hole-opener or back reamer will be fitted in the exit pit and will pull a drill pipe back through the bore to the entry side;
- When all bore holes have been completed, a towing assembly will be set up on the drill and this will pull the ducting into the bore;
- The steel boxes will be removed, and the drilling fluid disposed of to a licensed facility;
- The ducts will be cleaned and proven and their installed location surveyed;
- The entry and exit pits will be reinstated as per the landowners' requirements.

Further details of this crossing method are provided in Appendix 3-3 (TLI Outline Construction Methodology - 110kV Substation and connections) of the EIAR.

4.11 UNDERGROUND CABLE TRENCHING

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

- The main Contractor, and their appointed Site Manager, will prepare a targeted Method Statement concisely outlining the construction methodology and incorporating all mitigation and control measures included within the planning application and accompanying reports and as required by planning conditions where relevant;
- All existing underground services will be identified on site prior to the commencement of construction works: The area where excavations are planned will be the subject of a confirmatory survey, prior to the commencement of works, with a cable locating tool;
- A verification condition survey will be carried out for all parts of the route within the public road. Details of this survey will be agreed with the local authority in advance of the survey;
- A trench will be opened using an excavator to accommodate the formation required;
- At watercourse crossings, contractor(s) will be required to adhere to the environmental control measures outlined within the planning application and accompanying reports, and this CEMP, and best practice construction methodologies;
- Where the cable route intersects with culverts, the culvert will remain in place (where possible) and the ducting will be installed either above or below the culvert to provide minimum separation distances in accordance with ESB and Irish Water specifications;
- In the event that culverts require removal for ducting installation, it is proposed that a suitable method of damming the water source and pumping the water around the work area would be set out in a method statement and agreed with the relevant stakeholders. Once the ducts are installed the culvert will be reinstated to match existing levels and dimensions. If works of this nature are required, the appointed main Contractor will liaise with Inland Fisheries Ireland in advance of works;
- Traffic management measures will be implemented in accordance with those included in the Traffic Management Plan will be prepared and agreed with Longford County Council;
- Excavated material will be employed to backfill the trench where appropriate and any surplus material will be stockpiled in the peat deposition area. This material will not be stored in the vicinity of any watercourse and will be smoothed with the back of an excavator bucket to minimise runoff. It will be cast on the upgradient side of the trench, so if any runoff did occur it will run into the down gradient trench. Excess material will be used on the site of the proposed development for local landscaping, borrow pit reinstatement;
- The excavated trench will be dewatered if required, from a sump installed within the low section of the opened trench. Where dewatering is required, dirty water will be fully and appropriately attenuated, through silt bags, before being appropriately discharged to vegetation or surface water drainage feature;
- Silt fences will be installed alongside the road/works areas as required near watercourses;
- Clay dams/plugs will be installed at regular intervals (depending on the gradient) to prevent conduit flow of water within the trench;

- Works will not be carried out during periods of heavy precipitation. In the event that some surface water does accumulate in the trench, this will be allowed to percolate into the ground naturally;
- The trench will be surfaced as per the road surface specifications of the local public road, the wind farm road or (in the case of off road section) an EirGrid/ESB specification gravel access track capable of supporting maintenance vehicles if required;
- It is anticipated that construction will be carried out by a single team (with plant items likely to include excavators and dumpers) along the route, but there is a possibility to use two separate teams to speed up the construction. The excavation, installation and reinstatement process will take on average of 1 no. day to complete a 100 m section;
- No more than a 100 m section of trench will be opened at any one time. The second 100 m will only be excavated once the majority of reinstatement has been completed on the first;
- Where required, grass will be reinstated by either seeding or by replacing with grass turves.

4.12 PEAT AND SPOIL MANAGEMENT

The site which is generally flat consists predominantly of bare, locally re-vegetated cutaway peat and shallow peat with an established drainage network. The site has historically been harvested by Bord na Móna using mechanical harvesting equipment. Bord na Móna has experience managing peat in similar terrain, both during peat extraction operations and during wind farm construction projects, which have demonstrated safe and effective methods for peat management and storage.

The proposed methodology for the management of peat and spoil, as outlined in the PSMP (Appendix 9-2 of the EIAR).

The following general guidelines for good construction practice as per the PSMP:

Inappropriate handling and management of excavated peat and overburden, as well as uncontrolled loading of peat material, is considered one of the leading causes of peat instability and landslide event triggers during the wind farm construction process. Managing and controlling these activities is key to de-risking peat stability at the wind farm site. It is required that the construction method statements for the proposed development t also take into account, but not be limited to, the guidance documents listed in Section 1 and the recommendations and requirements outlined throughout this document. The general requirements for the management of peat and spoil materials and the mitigation of peat instability at the site will be:

- A Project Geotechnical Engineer will be appointed for the construction stage to oversee peat excavation and management;
- Placement of peat and spoil material, including temporary and side casting, be carried out in the permitted areas only;
- Excavated peat and spoil will not be stored on-site and will be immediately moved to the designated Peat Deposition Area or borrow pit areas with the exception of the deposition required for the opening of the initial borrow pit as outlined in Section 7.1. Acrotelm (upper) peat material will be used as landscaping material where topography allows, and the detail designer has assessed the stability risk;

- Peat and spoil will only be placed in the proposed deposition areas or re-used for landscaping purposes. The velocity of water flows within drainage systems will be controlled using check damns, and the uncontrolled release of water onto slopes can create a landslide risk and must be avoided;
- All construction requiring cut and fill earthworks requires a robust monitoring and inspection programme. The details of this inspection programme will depend on the purpose and methodologies of the works and the ground conditions;
- A method statement and risk assessment (RAMS), which considers the potential causes and mitigations of peat instabilities and landslides, is required and must be regularly communicated to all site staff. An observational approach by all site staff to the ground conditions and the risks will be promoted, and any changes in the ground or site conditions will be reported and the risk dynamically assessed.

Regular briefing of all site staff (e.g. toolbox talks) to provide feedback on construction and ground performance and to promote reporting any observed change in ground conditions.

Specific measures regarding the handling and placement of excavated peat and spoil are outlined in the PSMP (Appendix 9-2 of the EIAR) and are included in Table 5-1 (Table of Mitigation Measures), Section 5.0 of this CEMP.

The quantity of peat and non-peat material (spoil) requiring management for the proposed development has been calculated, as presented in Table 3-7 of Chapter 3 (Description of the Proposed Development) of the EIAR. These quantities were calculated as part of the PSMP in Appendix 9-2 of the EIAR.

4.13 BORROW PITS

There are four borrow pit locations identified to produce excavated material to provide fill material for roads (for permanent roadways and amenity), passing bays, hardstands, upfill to foundations and temporary compounds, dependent on testing results. The borrow pits are all located within Derryadd Bog (i.e., centre of the proposed wind farm site as per Planning Drawing 11399-2010).

Using the average borrow pit depth of 5.5 m bgl, the available volumes of useable material is 648,379 m^3, which includes sand, gravel and stone. Refer to Chapter 9 (Land, Soils and Geology) of the EIAR for details. No blasting is proposed for extracting material from these borrow pits. Rock breaking, crushing and screening will be required for some of the material won from borrow pits, with some limited rock ripping. Extraction from borrow pits will be from above and below the water table.

No refuelling of machinery will occur within 50 m of surface water features. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.

Given the volumes of material available from these borrow pits, it is possible that they will fulfil a large portion of the material requirements for the proposed development. The use of on-site borrow pits will reduce the environmental effect of other aspects of the development by reducing the need to transport material to the site.

Post-construction, the borrow pit area will be partially backfilled with overburden and excavated material from elsewhere on the site and permanently secured. A 2.4 m high chain-link security fence will be erected around the perimeter to prevent access as necessary, as per

Planning Drawing 11399-2060 to 11399-2063. Appropriate health and safety signage will also be erected on the security fence and at locations around the borrow pits.

In summary, the construction of the borrow pits will follow a standard sequence as follows:

- Prior to work commencing, an extensive GPR scan for hidden services will be carried out and services will be relocated where required;
- The working area will be cordoned using temporary fencing;
- Extraction plant and vehicles on low loaders will be mobilised to site;
- An interceptor drain will be installed upslope of the borrow pit, where necessary. This drain will divert any surface water away from the borrow pit and hence prevent water from ponding and lodging during construction and when reinstated;
- Peat layer will be stripped and stored in the peat deposition area adjacent to the borrow pit. Other extracted materials deemed unsuitable following testing, for re-use will be temporary stored in the adjacent deposition area;
- Peat and spoil materials will be stored separately but spoil material can be used in cell berms to contain excavated peat material. Slopes of a maximum of 1(H):3(V) will be used in peat material and 1(H):2(V) in spoil material. However suitable drainage will be required;
- Material will be extracted using excavators:
    - A large rock breaking excavator progressively breaks out the solid rock from the ground in the borrow pit areas;
    - A smaller rock breaker, in the 30-40 tonne size range, then breaks the rocks down to a size that can then be fed into a crusher;
    - Other extracted materials deemed unsuitable following testing, for re-use will be reinstated within the borrow pits.
- Material will be processed to crush cobbles and boulders by using a mobile crusher and screener. The extracted, broken rock is loaded into a mobile crusher using a wheeled loading shovel and crushed down to the necessary size of graded stone required for the on-site civil works;
- The processed material will be stockpiled in designated areas within the borrow pit;
- A site access road to the borrow pit will be constructed to tie in with the internal site road infrastructure;
- Processed material will be loaded into lorries or articulated dumpers and transported to areas within the site for the construction of internal roads, hardstand, compound and other infrastructure which require stone fill;
- Temporary excavation side slopes will be designed by a geotechnical engineer;
- Temporary control of groundwater within the borrow pits may be required and measures will be determined as part of the ground investigation programme. A temporary pump and suitable outfall locations will be required during construction;
- Settlement ponds have been designed at the lower side/outfall location of the borrow pits;
- Upon completion, all faces of excavation will be constructed to safe permanent side slopes to be designed by a geotechnical engineer;
- Infilling of the peat and spoil will commence at the back edge of the borrow pit and progress towards the borrow pit entrance;

- The acrotelm layer will be placed with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the peat and spoil;
- Extraction plant and vehicles on low loaders will be demobilised via internal site roads and main site entrance.

4.14 CONCRETE DELIVERIES AND POURING

Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. When concrete is delivered to site, only the chute of the delivery truck will require cleaning, using the smallest volume of water necessary, before leaving the site. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place.

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

The areas are generally covered when not in use to prevent infill of rainwater. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste.

Due to the volume of concrete required for each turbine foundation (approximately 950 m^3), and the requirement for the concrete pours to be continuous, deliveries are often carried out outside normal working hours in order to limit the traffic impact on other road users, particularly peak period school and work commuter traffic. Such activities are limited to the day of turbine foundation concrete pours.

The risks of pollution arising from concrete deliveries will be further reduced by the following:

- Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout other than the delivery chutes;
- Site roads will be constructed to a high standard to allow transport of the turbine components around the site, and hence, concrete delivery trucks will be able to access all areas where the concrete will be needed. No concrete will be transported around the site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of turbine bases will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed;
- The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site full washout and discussing emergency procedures;
- Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site.

Because of the scale of the main concrete pours that will be required to construct the proposed wind farm, the main pours will be planned weeks in advance, and refined in the days leading up to the pour. Special procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution. These may include:

- Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast;
- Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete;
- Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets;
- Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain;
- Disposing of surplus concrete after completion of a pour will be off-site.

4.15 WORKS NEAR WATERBODIES

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

Near-stream construction work will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2004) guidance document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites", that is, May to September inclusive. This time period coincides with the period of lowest expected rainfall and, therefore, minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses.

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

It is proposed, that during the ground clearance of the proposed development, the appointed main Contractor will implement water control measures to limit the effect on water quality using standards measures as set out in the. Brash will be used along harvesting and extraction routes for soil protection. The forwarder will be loaded to the manufacturer's maximum specification and no more to avoid overloading and unnecessary soil compaction.

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

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

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

4.15.1 Monitoring

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

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

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

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

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

4.16 WASTE MANAGEMENT

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

4.16.1 Waste Management Plan

All waste generated from the Derryadd Wind Farm development construction phase will be managed in accordance with the provisions of the Waste Management Act 1996 as amended and associated Regulations. Prior to construction commencement, the appointed Contractor will prepare a detailed C&D Resource and Waste Management Plan (RWMP) in accordance with the relevant following guidance 'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects' (EPA, 2021). The Construction RWMP will provide a mechanism for monitoring and auditing waste management performance and compliance for the duration of the proposed development. The document will also provide a detailed overview of key waste management considerations for the proposed development and will be fully implemented onsite for the duration of the construction phase of the proposed development.

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

The Act requires that any waste related activity has to have all necessary licenses and authorisations. The main Contractor will appoint a Resource and Waste Manager. It will be the duty of the Resource and Waste Manager on the site of the development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits for any waste streams they are removing from site and to ensure that the waste is delivered to an appropriately licensed or permitted waste facilities. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits/licenses and authorisations.

The Resource and Waste Manager will also ensure that all parts of the RWMP will be implemented onsite. The RWMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the main Contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The RWMP can then be adapted with changes that are seen through record keeping.

Measures outlined in the RWMP will be implemented on site by the appointed main Contractor and Resource and Waste Manager for the duration of construction, and will typically include:

- The appointed main Contractor will ensure all excavated topsoil and subsoils will be reused within the site boundary, insofar as possible, primarily for reinstatement of the borrow pits. Any excess material which cannot be reused in creating berms or reinstating the borrow pits will be transferred off-site to a licensed waste facility. Similarly, any excess or unsuitable rock material which cannot be reinstated in the borrow pits will be transferred off-site. However, it is not anticipated that any excess material will not be suitable for reuse within the site;
- The appointed main Contractor will ensure that any excess material which cannot be reused will be transferred off-site to a suitable licensed waste facility. Similarly, any excess or unsuitable soil / rock material which cannot be reinstated will be transferred off-site. However, it is not anticipated that any excess material will not be suitable for reuse within the site;
- The appointed main Contractor will ensure typical waste streams (such as metals, paper, cardboard, plastics, wood, rubber, textiles, bio-waste, packaging, WEEE (electronic waste, batteries, accumulators and construction waste) will be managed, collected, segregated and stored in separate area(s) at the site before being removed off site by a licensed waste management contractor at regular intervals for the duration of the construction works;
- The appointed main Contractor will provide skips and bins of appropriate sizes onsite in a designated area(s) and used to maximise source segregation of waste materials. This will include food and packaging waste from canteen and welfare facilities. Appropriate control of food waste in the compound will minimise the potential for pests and rodents to visit the area;

- Any contaminated materials used for spills and equipment maintenance works will be separately stored in a suitable container for collection by the appointed authorised hazardous waste contractor(s);
- The appointed main Contractor will encourage all staff to minimise waste generation and to maximise the segregation of waste at source. Material wastage will be avoided by delivering only the required quantities of material to site and utilising off-site manufacturing of materials as much as possible;
- The appointed main Contractor will establish 'just-in-time deliveries to avoid excess material storage at the site which can lead to waste generation. Delivery drivers will be encouraged to remove any excess packaging from materials delivered to site and remove unused timber pallets where possible;
- Reusable formwork for concrete pouring will be used where possible, in preference of non-reusable options. Other opportunities for material reuse across the site will be sought by the appointed main Contractor;
- Due to the current nature / use of the site, it is not anticipated that there will be contaminated soils or materials encountered during the excavation works. No contaminated soils were identified during the site investigation works;
- Where illegal dumping is discovered, appropriate communication and measures will be taken to try and identify the source of the illegal waste. The appropriate authorities will be notified, and the materials will be removed from site by authorised waste collection contractors and transferred to suitably licensed waste facilities;
- The Environmental Manager / SHEQ Officer, or other appropriate person, will be chosen by the appointed main Contractor as the Resource and Waste Manager for the duration of the proposed development in accordance with the general guidance set out in the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*[3], published by the EPA in November 2021;
- At the pre-construction phase, the appointed construction and demolition (C&D) Waste Manager will be in a position to require fellow designers to take full advantage of all reasonable C&D waste prevention, reuse and recycling opportunities;
- During construction, the practicalities of waste prevention, salvaging re-useable materials, and the need to synchronise the recycling of waste materials through the timing of their use in the new construction works will be emphasised by the appointed Resource and Waste Manager; and
- The appointed Resource and Waste Manager will be responsible for auditing waste handling and storage, and all waste collections and records of waste movement throughout the proposed development, and for advising construction personnel on best practices.

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

4.17 VEHICLE WASHING

Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. Internal site roads will be already formed using on-site materials before other road- going vehicles begin to make regular or frequent deliveries to the site (e.g., with steel, ducting or concrete). The site roads will be well finished with compacted hardcore, and so the public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. Refer to Planning Drawing 11399-2041 for details.

However, in the interest of best practice and to avoid the potential for the transfer of invasive plant species into the site, it is proposed to install a self-contained wheelwash systems at the proposed wind farm site. Planning Drawing 11399-2041 includes typical details of a proposed self-contained wheelwash system which will be installed as part of the construction phase of works. Wheelwash systems will be located at all construction and delivery entrances of the site (Site Access A, B and C), off the R392, N63 and R398, as shown on Planning Drawings 11399-2012 and 11399- 2015.

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

5.0 EMERGENCY RESPONSE PLAN / PROCEDURES

5.1 HAZARD IDENTIFICATION

In order to establish the type of potential emergencies that may occur, the hazards outlined in Table 4-1 have been identified as being potential situations that may require an emergency response they occur.

Table 5-1: Potential Hazards Identified

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

5.2 ROLES AND RESPONSIBILITIES

An indicative organisational chart which identifies the typical roles and associated responsibilities for the construction of the proposed development is provided in Section 2.3 of this CEMP. This will be subject to specific contractual agreements upon appointment of a Main

Contractor and any additional/further appointments required in compliance with a grant of permission.

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

5.3 EMERGENCY RESPONSE PROCEDURES

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

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

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

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

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

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

5.4 SITE EVACUATION AND FIRE DRILLS

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

- Details regarding the notification of emergency situations to all those on site including use of a siren/horn to notify all personnel;
- Details of assembly point(s) and signage;
- Details of the roll call procedure to account for all personnel on site;

- Communication process between the Site Security Officer and the Site Manager during the procedure (i.e. notification of roll count etc.);
- Course of action to be undertaken by the Site Manager.

5.5 SPILL RESPONSE AND CONTROL

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

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

5.6 OTHER ENVIRONMENTAL INCIDENTS

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

5.6.1 Excessive Peat Movement

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

5.6.2 Peat Slide

A detailed procedure will be developed and finalised within the appointed main Contractor's CEMP at construction phase outlining the steps to be followed in the event of the onset of or detachment of peat onsite, which will include details regarding, alert of peat slide, cessation of

construction, diversion of resources, mitigation procedures, actions to prevent a peat slide reaching watercourses via on-land prevention measures (e.g. installation of check barrages), watercourse check barrages, stabilisation by rock infill where applicable/required. The procedure will also detail assessment requirements to be undertaken by the geotechnical engineer and stabilisation procedures implemented, as well as monitoring, as appropriate, until such time as movements have stopped.

5.7 INCIDENTS / COMPLAINTS

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

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

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

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

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

- The complainant, Applicant and other stakeholders will be kept informed of the progress in resolving the complaint.

5.8 EMERGENCY CONTACT DETAILS

A provisional list of emergency contacts based on a review of the locality is presented in Table 4-2 below. The appointed contractor will review this list and update accordingly prior to construction commencing. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities.

Table 5-2: List of Emergency Contacts

Contact	Telephone
Emergency Services – Ambulance, Fire, Gardaí	112 / 999
Lanesborough Garda Station	0433321102
Kenagh Garda Station	0433322102
Longford Garda Station	0433350570
Lanesborough Fire Brigade	0433347136
Longford County Fire & Rescue Service	(043)3347136
Health Centre, Rathcline Road, Lanesborough	043 3321832
College Medical Centre, Longford Town	043 3348884
Centenary Medical Centre, Longford Town	043 3341879
Station Medical Centre	043 3336182
Ballymahon Medical Centre	0906432146
Primary Care Centre (Longford)	0433339701
Primary Care Centre (Roscommon)	0906665000
Longford Health Centre	043 335 0169
Roscommon University Hospital	0906626200
ESB Faults / Emergencies	1850 372 999
Gas Networks Ireland 24hr Emergency Line	1850 20 50 50
Site Manager / Construction Manager / Site Supervisor	TBC
Client: Derryadd Wind Farm / Bord na Móna	TBC
Ecological Clerk of Works (ECoW)	TBC
SHEQ Officer	TBC
Project Supervisor Design Stage (PSDS)	TBC
Project Supervisor Construction Stage (PSCS)	TBC
Health and Safety Authority Ireland (HSA)	TBC
Inland Fisheries Ireland (IFI)	TBC
Project Engineer	TBC
Project Ecologist	TBC
Project Hydrologist	TBC
Project Geotechnical Engineer / Geologist	TBC
Project Archaeologist	TBC

5.9 EMERGENCY COMMUNICATION PROCEDURE

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

5.10 PERSONNEL TRACKING PROCEDURE

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

5.11 INDUCTION CHECKLIST

Table 4-3 below provides a list of items highlighted in the Emergency Response Procedure (ERP) which must be included in the induction or gathered from all personnel that will work on the proposed development during the mandatory site induction. This will be revised throughout the various stages of the proposed development. This list will be updated and expanded on within the appointed main Contractor's CEMP.

Table 5-3: Site Induction Checklist

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

6.0 MITIGATION PROPOSALS

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

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

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

Table 5.1: Table of Mitigation Measures

Ref No.	Related to	Location	Mitigation Measure
			Pre-construction Phase
MM1	Construction Phase Monitoring and Oversight	EIAR Chapter 3 / CEMP	This CEMP will be updated prior to the commencement of the construction of the wind farm, to ensure that all mitigation measures, conditions and / or alterations to the EIAR and application documents that may emerge during the course of the planning process are included. Following the update, the CEMP will be submitted to the Planning Authority for written approval. All of the mitigation measures specified in the EIAR, NIS, CEMP and any other documents enclosed in the planning submission will be implemented, and the construction contractor will be responsible for actioning and communicating the requirements with all staff on-site. The implementation of the mitigation measures will be overseen by the supervising Ecological Clerk of Works (ECoW), ecologists, archaeologists and/or geotechnical engineers, as appropriate.
MM2	Health and Safety	EIAR Chapter 3	A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction phase. All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting site access during construction. Appropriate warning signs will be posted, directing all visitors to the site manager.
MM3	Health and Safety: PSDP	EIAR Chapter 3	The PSDP appointed for the construction stage shall be required to perform their duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): • Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project; • Where possible, eliminate the hazards or reduce the risks; • Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan; • Ensure that the work of designers is coordinated to ensure safety; • Organise co-operation between designers; • Prepare a written Safety and Health Plan; • Prepare a safety file for the completed structure and give it to the client; and • Notify the Authority and the client of non-compliance with any written directions issued.
MM4	Traffic Management	EIAR Chapter 15 and 19 / TMP	Road traffic accidents will be mitigated by the Traffic Management Plan (TMP) developed as part of the EIAR assessment (Appendix 15-2 of the EIAR). The TMP Outlines minimum road safety measures to be undertaken at site access / egress locations, during the works and including approaches to such access / egress locations. The Contractor shall prepare/develop a Construction Stage Traffic Management Plan (CSTMP) which will take account of the commitments imposed within the TMP and further develop such measures with agreement from the Roads authorities prior to works commencing on site.

MM5	Pre-Construction Pavement Surveys	EIAR Chapter 15	The proposed development will result in slight increase in traffic volume in particular HVs during the construction phase. The weighted loading of the HVs to the proposed wind farm site has the potential to impact on the road network surface (i.e. the N63) causing deterioration of the road pavement. To capture suitable mitigation works the developer will undertake pre-construction visual pavement surveys on the N63. Where the surveys conclude that damage to the road surface is attributable to the construction phase of the proposed development, the developer will fund the appropriate reinstatement works to bring the road surface back to pre-construction condition as a minimum, details for which will be agreed with the Local Authorities Roads Department.
MM6	Biodiversity: Badger	EIAR Chapter 7	**Pre-construction survey -** • No more than 10-12 months ahead of any construction works, a survey of Badger setts will be undertaken within 50 m of either side of the construction works area boundary to determine the current status of known badger setts (i.e. active or inactive), and/or to determine the establishment of any new setts; • Badger surveys are most effective when undertaken between November and April, although they can be carried out at any time of the year. However, until mid-January, Badger is less active (i.e. during colder weather) and setts can appear less well-used (NRA, 2009); • The survey results will be kept on file, in the form of a summary report.
MM7	Invasive Alien Plant Species (IAPS): Pre-construction survey	EIAR Chapter 7	**All construction works in the proximity of the Rhododendron stand:** **Pre-construction survey -** • A pre-construction dedicated IAPS survey at the proposed wind farm site will be undertaken by the appointed ECoW, particularly focused to the areas near the Mount Dillon Works, where the Rhododendron stand has been identified. All IAPS individual plants/stands present at the site will be identified, counted and georeferenced.
MM8	Ornithology: Pre-construction Survey	EIAR Chapter 8	**Pre-construction survey -** • If it will not be possible to avoid the breeding bird nesting season, the ECoW will undertake a pre-construction survey of all the areas for vegetation clearance; • The ECoW will particularly search for 'Confirmed' breeding activity (see Table 8.4 of Chapter 8 of the EIAR) within the areas to be cleared of vegetation, with particular regard for ground-nesting species; • If any active nest is found, the nest will be clearly marked, and a protection zone with a radius equal to the respective MAD extent (Table 8.20 of Chapter 8 of the EIAR) will be clearly demarked, if possible; • Where avoidance of the nest is not possible, the nest will only be removed once the chicks have fledged, or the ECoW has confirmed the nesting has failed; • The ECoW will keep a log of the pre-construction survey findings, number of nests, their locations (on a map, or with coordinates), species, and actions undertaken for the protection of nests found (e.g. demarcation of a protection zone, approximate dimension of the protection zone).
MM9	Underground Services	EIAR Chapter 19	A confirmatory survey of all existing services will be carried out prior to construction to verify the assumptions in Chapter 16 (Material assets - Telecommunications, Aviation & Other) of the EIAR and identify the precise locations of any services. Liaising with the service providers will occur prior to construction where such services are identified. Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage. Where the works would directly impact on an asset, diversion strategies would be developed and agreed with asset Owners.

MM10	Ground Investigation	EIAR Chapter 19	Extensive and detailed ground investigation will be undertaken by the appointed Contractor to inform the detailed design and appropriate construction technologies and plant to be deployed. Contractors with a proven track record in delivering work of the scope required by the works will be appointed.
MM11	Cultural Heritage: Pre-Construction /Post Consent Advance Works Stage	EIAR Chapter 14	Some parts of the bog are overgrown preventing a full assessment (Section 14.3.10 of Chapter 14 (Cultural Heritage) of the EIAR). The following mitigation measures involve; • Clearance of drains to allow for a full inspection of potential archaeology; • Archaeological monitoring of tree felling; • Archaeological resolution of archaeological feature identified in Lough Bannow Bog; and • Archaeological pre-development testing in areas where large excavations will be undertaken (turbine hardstands, construction compounds, substation, battery storage, entrances to the bogs and amenity carparks) with peat depths greater than 0.5 m, see Chapter 9 (Land, Soils and Geology) of the EIAR for details of peat depths. These works will require monitoring by a suitably qualified archaeologist working under licence as issued by the minister (DHLGH) under section 26 of the National Monuments Acts (1994-2014). In the event of archaeological features, finds and/or deposits been encountered during the course of the monitoring and/or testing, the relevant authorities should be notified immediately. Preservation by record (through archaeological excavation) will only occur if it is established that preservation in situ cannot be achieved, and such excavations are agreed with National Monuments Service.
Construction Phase			
MM12	Health and Safety	EIAR Chapter 3 and Chapter 6 / CEMP Section 2.4	All activities carried out by the appointed Contractor on the proposed development will be in accordance with the requirements of the *Safety, Health and Welfare at Work Act 2005* as amended and Regulations made under this Act. Health and safety plans will be developed before any construction commences. A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed further at construction stage. All hazards will be identified, and risks assessed. The proposed TDR to allow for the transport of the turbines to the wind farm site will involve some minor works as discussed in Chapter 3 (Description of the Proposed Development) of the EIAR. These works will be carried out to the relevant construction and road safety guidelines. When the turbine components are being transported, they will have a Garda escort and will be carried out at night when there is less traffic on the road. The proposed turbine delivery works will allow for the proposed turbine dimensions. Once appropriate health and safety guidelines are adhered to and the CEMP is complied with throughout the construction phase, the potential for health and safety related issues are greatly minimised.
			The proposed development will be designed, constructed, operated and decommissioned in accordance with all relevant Health and Safety Legislation, including: • Safety, Health and Welfare at Work Acts 2005 to 2014; • Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2020; • Safety, Health and Welfare at Work (Construction) Regulations 2013; and • Safety, Health and Welfare at Work (Work at Height) Regulations 2006. Aspects of the proposed development that will present health and safety risks include:

			• Health and safety aspects of construction activities; • General construction site safety (e.g. slip/trip, moving vehicles etc); • On site traffic safety (during construction and operational phases) associated with high road embankments; • Traffic safety during the transport of oversized loads to the site; • Lifting of heavy loads overhead using cranes; • Working at heights; and Working with electricity during commissioning.
MM13	Health and Safety: PSDP	EIAR Chapter 3 / CEMP Section 2.3	The PSCS appointed for the construction stage shall be required to perform their duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to): • Development of the Safety and Health Plan for the construction stage with updating where required as work progresses; • Compile and develop safety file information; • Reporting of accidents / incidents; • Weekly site meeting with PSCS; • Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out; • Induction of all site staff including any new staff enlisted for the project from time to time; • Toolbox talks as necessary; • Maintenance of a file which lists personnel on site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date; • Report on site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance; • Monitor the compliance of contractors and others and take corrective action where necessary; and • Notify the Authority and the client of non-compliance with any written directions issued.
Biodiversity / Ecology			
MM14	Best Practice/Industry Standards/Guidance	EIAR Chapter 7 / NIS	All works and activities to be undertaken during the proposed development's Construction and Operation Phases will fully comply with Best Practice/Industry Standards, such as from IFI (2016), Irish Wind Energy Association (Fehily Timoney & Company, 2012), Construction Industry Research and Information Association (CIRIA) , and 'Guidance for Pollution Prevention' documents (GPPs) , particularly in respect of the protection of water quality, and the reduction of emissions, such as: • CIRIA Report C502 Environmental Good Practice on Site; • CIRIA Report C532 Control of Water Pollution from Construction Sites; • CIRIA Report C648 Control of Pollution from Linear Construction Project; Technical Guidance; • CIRIA Handbook C650 Environmental good practice on site; • CIRIA Handbook C651 Environmental good practice on site checklist; • CIRIA Report C609 – SuDS – hydraulic, structural & water quality advice; • CIRIA Report C697 – The SuDS Manual; • GPP 1: Understanding your environmental responsibilities – good environmental practices;

			• GPP 2: Above ground oil storage tanks; • GPP 5: Works and maintenance in or near water; • GPP 6: Working at construction and demolition sites; • GPP 8: Safe storage and disposal of used oils; • GPP 13: Vehicle Washing and Cleaning; • GPP 21: Pollution incident response planning; and • GPP 22: Dealing with spills.
MM15	Ecological Clerk of Works (ECoW)	EIAR Chapter 7 / NIS	An Ecological Clerk of Works (ECoW), experienced in the management of peatland habitats, will be employed by the appointed contractor to oversee construction works and monitor any possible sources for significant effects on European sites. The ECoW will guarantee the Construction Phase of the proposed development will be undertaken in strict agreement with the methods described in Appendix A of the NIS, and the mitigation measures in set out in Chapter 7 (Biodiversity) of the EIAR, the NIS and the CEMP, and will have the power to stop the works in case any activities/works are not compliant. The supervision and implementation of all of these mitigation measures will be supervised, noted, and approved by the assigned ECoW.
MM16	Aquatic Ecology - Contamination	EIAR Chapter 7 / NIS	**Storage of contaminants at the Construction Compounds - Designation of Storage Area:** • Fuels storage will be minimised onsite; • However, because it might not be practical to refuel all vehicles and machinery offsite, areas will be designated for contaminant storage at each Construction Compound; • The designated areas for contaminant storage will be enclosed, appropriately signed, and demarked from the remainder areas of the Construction Compounds; • Any diesel, fuel, hydraulic oils, paints or any other type of contaminant that will require to be kept onsite, will be stored in bunded storage tanks, only at the designated areas within each of the four Construction Compounds; • Each bund area will have a volume of at least 110% of the volume of the respective stored contaminant(s); • Each container within the bund area will be appropriately labelled and sealed; • Only authorised and appropriately trained personnel may access the contaminant storage designated area; • The designated area for contaminant storage will be provided with a log book. The log book will be a register of: o the number of containers for each contaminant; o volume of each container; o approximate volume of each contaminant stored; o date/time contaminants are taken off/stored in the designated area, and respective destination; o Signature of the authorised person responsible for the log entry; o Stock of spillage containment material (e.g. spill kits). • The ECoW will make a daily verification of the log books, confirming the accuracy of the information logged in; • The designated contaminant storage areas will also keep a stock of absorbent materials (e.g. oil binder granules), pads/mats, and drip trays to be made available if needed.

			Refuelling at the Construction Compounds: • At each Construction Compound, an area will be designated as "Refuelling Area"; • The Refuelling Area will be delineated at an easily accessible location by vehicles and mobile machinery, and in the immediate vicinity of the designated area for contaminant storage; • The Refuelling Area will be appropriately demarked and signed, for easy identification; • When refuelling, drip trays and fuel absorbent mats will be used to capture any potential spills.

			Refuelling with mobile bowser - Specific Characteristics:
			• The mobile bowser will be custom-built, and consist of a double skinned, double-axel fuel bowser;
			• It will be towed around the site by a 4x4 vehicle to where machinery is located;
			• It will be re-filled at the designated Refuelling Area at the Construction Compound, or off site;
			• The 4x4 vehicle will be provided with a log book, where every refuelling operation will be noted:
			  ○ Date and time;
			  ○ Refuelled vehicle/machinery unique identification;
			  ○ Description of any spillages;
			  ○ Description of containment measures;
			  ○ Any inspection of the bowser itself.

			Refuelling with mobile bowser -Operation Conditions: • The fuel bowser will be parked on a level area in the construction compound when not in use; • The fuel bowser will be inspected by the ECoW at the end of each day for leaks and fitness for purpose; • No refuelling of machinery will occur within 50 m of surface water features. Refuelling of machinery will be carried out using a mobile double skinned fuel bowser to allow for ease of work. The fuel bowser will be re-filled off site or at the contractors site compound and will be towed around the site by a 4x4 jeep to where machinery is located; • Only designated, trained and competent operatives will be authorised to refuel vehicles and machinery on site; • The 4x4 vehicle will carry fuel absorbent material (e.g. oil binder granules) and pads/mats in the event of any accidental spillages; • While refuelling, drip trays and fuel absorbent mats will be used to capture any spills; • The vehicle logbook will be inspected by the ECoW every day, and any spillage incidents will be verified by the ECoW as soon as possible. The ECoW will determine the efficacy of the containment measures employed, or decide if further measures are required.
			Machinery and vehicle movement and operation: **Regular Maintenance of vehicles and machinery -** • The ECoW will undertake weekly checks for spillages to all machinery and vehicles used onsite;

			• The ECoW will maintain a logbook to register all checks undertaken, and required maintenance to eliminate leaks, **Spill containment equipment -** • All vehicles and machinery will be provided with emergency drip trays and spill kits.
MM17	Habitat Loss	EIAR Chapter 7	**Earthworks, excavations, general construction - Creation and management of alternative habitat:** • As compensation for the loss of Hedgerow and Treelines habitats, the edges of the tracks will be planted with native shrub and tree species, i.e. Blackthorn, Grey Alder, Grey Willow , Elder, Hawthorn, Holly, Hazel; • The new linear habitat should have a minimum extension of 1,200m in total; • These linear habitats will be managed and maintained until the end of the Construction Phase, or until the planted shrubs and trees will be considered sustainable by the ECoW; • No fertilisers will be used.
MM18	Spread of IAPS	EIAR Chapter 7	**All construction works in the proximity of the Rhododendron stand:** **Biosecurity Area -** • A strict biosecurity demarcation area will be installed by the ECoW within the zone where scheduled IAPS (e.g. Rhododendron) are present - 10m from each stand (unless it is not feasible for Health & Safety reasons – e.g. roadside); • Only works outside the biosecurity area will be allowed to proceed. **Invasive Species Management Plan (ISMP) -** • If any of the proposed works will be required to break the biosecurity area mentioned above, a specific and detailed Invasive Species Management Plan (ISMP) will be developed by the contractor; • The ISMP will detail a strategy of uprooting the Rhododendron plants, currently present at the proposed wind farm site, the most effective management measure for the control of this species (NRA, 2010).
			Vehicles and machinery accessing the site: **Vehicle and machinery cleaning -** • Prior to arrival on site, the contractor's vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65 °C, in addition to the removal of all vegetative material; • Items difficult to soak/spray will be wiped down with a suitable disinfectant (e.g. solution of 1% Virkon® Aquatic); • The contractor will establish and clearly delineate a bunded cleaning/washing areas at the Construction Compounds, where gravity will not drive untreated washed material towards local drains; • Evidence that all machinery has been cleaned will be required to be on file for review by the statutory authorities and the appointed ECoW. The level of evidence required of the Contractor will be, registration plates of vehicles onsite and a register of when, how and where each of these were cleaned before they arrived on site; • Spot checks on the adequacy of cleaning will be carried out by the ECoW.

MM19	Badger Habitat Loss	EIAR Chapter 7	**Any construction works - Monitoring, exclusion and/or evacuation:** • In case a Badger sett is found during the pre-construction survey (or at any time during the Construction Phase), confirmation of its activity will be carried out. Trial camera(s) pointing at the sett entrance(s) will be placed for a minimum of 7 days. • For the setts recorded during the field surveys, or if a sett is recorded during the pre-construction survey, the methodology prescribed by the NRA (2009b) will be followed, in which: • If within the period between July to November (inclusive), and the sett recorded during the pre-construction survey is deemed inactive, the sett will then be 'soft-blocked', i.e. the sett entrance will be lightly blocked with vegetation and a light application of soil. If after a minimum of five days the vegetation and soil have not been moved, the sett will be destroyed using a mechanical digger; • If still in the period between July to November, but the sett recorded during the pre-construction survey is deemed active, the sett will need to be evacuated. One-way gates (system that allows individuals to exit, but not to get in) will be installed at any active entrances for three days, while inactive entrances will be soft (initially) and they hard-blocked (as above); • If a sett is recorded during the period of January to May, or deemed active (upon confirmation with the trial cameras) during this period, any construction works within 150m of the sett will be halted until the end of this period. In the following June, trial camera(s) will be installed to confirm the sett's activity, and one of the procedures detailed above will be followed. • All monitoring, exclusion and/or evacuation actions will be undertaken by the ECoW, who will report any actions and findings to the contractor, and file them in the form of a report.
MM20	Otter - Pollution, Siltation/Contamination	EIAR Chapter 7	**Refuelling:** • Similar to measures proposed to prevent effects to aquatic ecology. **Movement of vehicles and machinery:** • Similar to measures proposed to prevent effects to aquatic ecology. **Storage of contaminants:** • Similar to measures proposed to prevent effects to aquatic ecology.

MM21	Otter – Direct mortality	EIAR Chapter 7 / NIS	**Movement of vehicles and machinery - Onsite speed limit:**
			• A temporary speed limit of 20km/h will be set for all vehicles transiting the proposed wind farm site for the duration of the Construction Phase;
			• Appropriate signs will be placed at the tracks used by vehicles and machinery, with the following specifications (adapted from Department of Transport, 2024):
			  ○ Sign reference: RUS 065;
			  ○ Normal sign diameter: 450mm;
			  ○ Repeater sign diameter: 300mm;
			  ○ Spacing between repeaters: 500m.

MM22	Bats - Collison risk	EIAR Chapter 7	**Buffer Zone around Turbines:** • A zone of >92.76m around the wind turbines (from the tip of the blade) will be cleared of tall vegetation (shrubs, trees, scrub, etc.) to reduce favourability of this zone for foraging and commuting bats (see Figure 7.20 of Chapter 7 (Biodiversity) of this EIAR). The vegetation clearance as a mitigation measure for the prevention of likely significant effects on bats requires further assessment of the significance of the loss of these habitats for bats; • Complete clearance works at least six months prior to installation of wind turbines. Studies have shown that bats are attracted to clear felled forestry areas due to increase insect loading. This has been shown to occur for a period of 3-6 months before the insect loading reduces to pre-cleared felled levels (Kirkpatrick *et al.*, 2017).
			Bat Roost Survey: • The ECoW will undertake a Potential Bat Roost (PBR) survey of any trees proposed to be felled.
			Curtailment: • Operate the High Risk wind turbines from 30 minutes prior to sunset to 30 minutes after sunrise at a cut-in speed of 5.5 m/s during specified weather conditions and during the active bat season (April to October) when air temperatures are 10oC or more at the nacelle; • Undertake a carcass search for 3 years post operation of the wind farm to determine whether a higher cut-in speed of the blades is required.
Ornithology			
MM23	Ornithology: General	EIAR Chapter 8	The proposed development has been designed to incorporate current industry best practice with regards to construction and operation of wind farms, which is described in detail in Chapter 3 (Description of the Proposed Development) of this EIAR. Best practice measures incorporated into the design aim to avoid significant effects on the surrounding biodiversity. A CEMP has been developed to provide a framework for how significant effects on the environment will be avoided during the construction phase. A suitably qualified Ecological Clerk of Works (ECoW) with extensive experience in ornithology, will be appointed by the Contractor and will be required full time on site during the construction works. The ECoW will ensure that all mitigation measures outlined within this Chapter are implemented correctly during the construction phase. Regular toolbox talks with construction staff on disturbance to relevant bird species during construction will be organised. These will be of mandatory presence to staff members and will be run at the beginning of each season: in February, in preparation to the breeding season; and in August, in preparation to the non-breeding season. These toolbox talks will include the description of the main ecological features staff should note, particularly the identification of KARs and signs of proximity to sensitive locations (e.g. raising awareness to alarm calls during the breeding season; description of ground-nesting species), and the processes of reporting any findings to the ECoW.
MM24	Habitat Loss; Disturbance/ displacement	EIAR Chapter 8	**Restriction of period for vegetation clearance -** The vegetation clearance during the Construction Phase of the proposed wind farm will be timed to avoid the breeding birds nesting season, from 1st of March to 31st of August, if possible;
			Interruption of works -

			• In the event of any bird nest(s) being found within the works areas during the Construction Phase, the finding will be immediately reported to the ECoW; • The works will immediately cease, and the ECoW will survey the nest(s) (avoiding disturbance); • The nest will be clearly marked, and a protection zone with a radius equal to the respective MAD extent (Table 8.20 of Chapter 8 of the EIAR) will be clearly demarked, if possible; • The ECoW will report the survey findings to the competent authority and the developer will engage with NPWS; • The ECoW will log the finding(s0 in the logbook.
			Development of grassland habitat (Section 8.9.2.1.1) - ~100ha • A total of approximately 100ha will be managed for grassland habitat creation (Figure 7.25 of Chapter 7 of the EIAR), in line with McCorry et al. (2012): • Any scrub will be cleared from these areas. No vegetation will be cleared outside the areas in Figure 7.25 of Chapter 7 of the EIAR: • Scrub clearance will be undertaken yearly, in September, extending into the Operation Phase; • In the first year, the scrub clearance will be undertaken with the use of an excavator (for larger shrubs/trees), and chainsaw (form smaller plants); • Felled scrub will be placed in existing onsite drains, and on the boundaries of the plots; • The clearance works will be carried out under the supervision of the ECoW/Suitably qualified Ecologist. The ECoW/Suitably qualified Ecologist will identify the plants to be removed, direct the excavator/chainsaw operator, and the staff transporting the felled scrub to the drains and boundaries; and • The ECoW/Suitably qualified Ecologist will also confirm the requirement of the excavator use in subsequent years, having in consideration that manual/chainsaw clearance would be a preferable method to avoid ground disturbance.
			Development of Hedgerows (~1,300m) • Hedgerows (Figure 7.24) will be planted with native shrub and tree species, i.e. Blackthorn, Grey Alder, Grey Willow , Elder, Hawthorn, Holly, Hazel; • The new linear habitat will have a total extension of 1,337m; • These linear habitats are managed and maintained until the end of the Construction Phase, or until the planted shrubs and trees will be considered as fully established by the ECoW/Suitably qualified Ecologist (if it extends into the Operation Phase); • No fertilisers will be used.
			Development of woodland habitat (~3.20ha) • An area of 3.23ha in the Lough Bannow bog is selected for the management of 'Oak-ash-hazel woodland' habitat: • Only Pedunculate Oak (Quercus robur), Ash (Fraxinus excelsior), and Hazel (Corylus avellana) trees will be planted; • All planting material must be derived from seed sources within Ireland and accompanied by a Plant Passport attesting the good health status of the plant(s), compliant to the EU Plant Health Regulation (2016/2031). This measure is of particular importance in view of the control of the Ash dieback disease (DAFM, 2022);

			• However, if it is not possible t source planting material from within Ireland, acceptable plant origins must follow the order of preference set by the Department of Agriculture, Food and the Marine (DAFM, 2024b, sec. 2.7.1); • The planting material (bare-rooted trees - whips) will be 0.45 to 100cm tall; • The planting procedure will be a simple process, consisting of: • Digging a hole sufficiently large and deep (i.e. planting depth is indicated by the soil on the root collar) as to allow the whole root of the plant to be spread out evenly. Topsoil will be placed aside; and • Place the soil over the roots ensuring no roots or bark are damaged. • If the location of the hole for plantation is occupied by ruderal scrub species (e.g. Holly, Bramble), these plants will be cleared before the tree plantation; • No other trees and/or vegetation will be cleared to accommodate the tree plantation; • No herbicides and/or fertilisers will be used.
			Screen Fencing ▪ Visual screening fences will be installed at selected locations along the amenity roads and tracks (illustrated in Figure 8.11 of Chapter 8 of this EIAR), to prevent disturbance to breeding and non-breeding birds using the site during the operation phase (occasional movement of people, dogs); ▪ The screen fences will be specifically targeted to stretches of the tracks holding no screening vegetation (e.g. hedgerows); ▪ The screening fence will be approximately 1m high, mounted with Willow and Chainlink; The screening fence will be regularly inspected regularly by a Suitably qualified Ecologist, who will determine necessary maintenance actions to be employed (e.g. erection of fallen posts; reinstating of damaged mounted panels).
MM25	Habitat Loss: TDR	EIAR Chapter 8	**Restriction of period for vegetation clearance -** • The vegetation/tree clearance for the works at the POIs of the TDR will be timed to avoid the breeding birds nesting season, from 1st of March to 31st of August.
Land, Soils and Earthworks			
MM26	General Construction Mitigation	EIAR Chapter 9	Many of the mitigation measures have been based on CIRIA (Construction Industry Research and Information Association, UK) technical guidance on water pollution control and on current accepted best practice, (CIRIA report ref. C532, 2001). General construction mitigation includes: • Good site practice will be applied to ensure no fuels, oils, wastes or any other substances are stored in a manner on site in which they may spill and enter the ground; • Dedicated, bunded storage areas will be used for all fuels or hazardous substances; and • All works will be managed and carried out in accordance with this Construction and Environmental Management Plan (CEMP), which will be updated by the civil engineering contractor and agreed prior to any site works commencing.
MM27	Vehicle Washing	EIAR Chapter 3	Wheels or vehicle underbodies are often washed before leaving sites to prevent the build-up of mud on public (and site) roads. Site roads will be already formed using on-site materials before other road- going vehicles begin to make regular or frequent deliveries to the site (e.g., with steel, ducting or concrete). The site roads will be well finished with compacted hardcore, and so the

			public road-going vehicles will not be travelling over soft or muddy ground where they might pick up mud or dirt. Refer to Planning Drawing 11399-2041 for details. However, in the interest of best practice and to avoid the potential for the transfer of invasive plant species into the site, it is proposed to install a self-contained wheelwash systems at the proposed wind farm site. Planning Drawing 11399-2041 includes typical details of a proposed self-contained wheelwash system which will be installed as part of the construction phase of works. Wheelwash systems will be located at all construction and delivery entrances of the site (Site Access A, B and C), off the R392, N63 and R398, as shown on Planning Drawings 11399-2012 and 11399- 2015. A road sweeper will be available if any section of the surrounding public roads becomes soiled by vehicles associated with the proposed development.
MM28	Peat Stability Risk Assessment (PSRA)	EIAR Chapter 9	Risks are outlined in the Peat Stability Risk Assessment (PSRA) and CEMP and any identified risks will be minimised by applying the principles of avoidance, prevention and protection. Slope stability will be addressed in greater detail with site specific measures identified during the detailed design phase. A detailed method statement will be prepared prior to any element of work being carried out and the methods are outlined in the CEMP. A bespoke Peat Stability Risk Assessment (PSRA) has been carried out for the proposed development and is included in Appendix 9.3 of the EIAR. This document has used the site investigation information, topographic mapping information and site walkover observations to assess the stability of the peat across the site and identify any hazardous conditions. The findings of this report including any proposed mitigation measures and/or works exclusion areas are outlined in the PSRA report in Appendix 9.3 of the EIAR. The peat stability risk assessment has yielded a negligible risk rating for each infrastructure location. The Scottish Government Best Practice Guidelines (2017) states the following for areas with negligible risk level: "Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate." All earthworks shall be designed by a competent geotechnical designer which shall be informed where necessary by a post consent detailed ground investigation campaign which will need to include intrusive methods such as trial pitting and borehole locations with a specified suite of insitu and geotechnical laboratory testing to further assessment the engineering characteristics of the infrastructure locations. Possible mitigation measures in relation to peat instability are considered below. Additional mitigation measures relating the handling and deposition of peat are outlined in the Peat and Spoil Management Plan (PSMP) in Appendix 9.2 of the EIAR.
MM29	Movement or Instability Observed in Monitoring Areas	EIAR Chapter 9	Where excessive movement has been observed in the installed monitoring, the following measures will be taken; • All construction activities will be suspended in the area; • The Contractors Geotechnical Engineer shall carry out an assessment of the peat instability including drainage. The Contractors Geotechnical Engineer shall compile a report outlining the surveys undertaken, the potential cause of the instability, assessment of any increased risk caused by the instability, and the further measures required to manage this risk; • An increased monitoring regime shall be specified including increase in number of monitoring post lines, decrease on monitoring post spacing and an increase in the frequency of monitoring post observations; • Should no further movement be detected, construction activities will be recommenced while maintaining the increased monitoring regime;

			• Should further excessive movement be detected, the Contractors design and project geotechnical engineer will need to be informed and the design of further reinstatement works will be required such as excavation of the disturbed material, installation of a granular berms or similar.
MM30	Emergency Response to a Landslide Event	EIAR Chapter 9	If the scenario of a landslide, bog burst or peat slide occurring at the site the following steps shall be carried out by the contractor: • All member of the project will be alerted immediately or as it is safe to do so; • All site works will be ceased, and all available resources will be used for the management and mitigation of the risks posed by the event; • The key initial activity will be to prevent displaced materials from reaching any watercourses or sensitive environments. Given the terrain of the Proposed Development Site, the key risk is the development of a propagation landslide or slip within topographic valleys and watercourses. Where possible, check barrage structures or catch ditches on land or within these topographic valley and watercourses shall be constructed to aid prevent further run out of the disturbed peat or spoil material.
MM31	Check Barrages / Catch Ditches	EIAR Chapter 9	Check barrages are permeable granular structures constructed within the path of a landslide to prevent the further downhill or downstream movement of the disturbed material. Typically, these will be constructed of locally generated stone material, often of large sizing. The large material sizing will allow water to pass through the check barrage material, avoiding a build-up in hydrostatic pressure while containing the debris within the slide. Check barrage will typically be a dam structure between 1 and 1.5m high, with slopes between 1(V):1.5(H) or 2(H), and constructed across the full section of topographic valley and/or water course. The check barrage is an emergency preventative measure only to restrict or reduce the movement of displaced material downslope and away from a watercourse. Further assessment and reinstatement works will likely be required should a landslide occur, and engagement and reporting of the incident will be required by all parties involved in the project. Should the check barrage no longer be required it may be removed and the area reinstated. The use of check barrages is only proposed for use in the unlikely event of a large landslide event. The proposed locations are only indicative, targeting potential topographic channels but will vary depending on the location and nature of the slide event. The Contractors will need to include an assessment of potential check barrage locations and method for their construction within the emergency procedures in their associated Method Statement documentation. Similarly, ditches may also slow or halt runout, although it is preferable that they are cut in non-peat material. Simple earthwork ditches can form a useful low-cost defence. Paired ditches and barrages have been observed (Tobin, 2003) to slow peat landslide runout at failure sites.
MM32	Vehicular Movements	EIAR Chapter 9	Vehicular movements will be restricted to the footprint of the proposed development boundary, particularly with respect to the newly constructed access roads. Vehicular movements will not be permitted outside of the proposed wind farm site boundary and will not move onto areas that are not permitted for the development. The soft ground nature of the site will inhibit vehicles deviating from access roads and tracks due to the low bearing capacity of the peat. Vehicular traffic on site is reduced through the use of extracting material from borrow pits on site as opposed to sourcing from external quarries.
MM33	General Site Management	EIAR Chapter 9 / CEMP Section 3.0	The CEMP will also include the checking of assets (plant, vehicles, fuel bowsers) on a regular basis during the construction phase of the proposed development. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network

			during earthworks operations. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. When concrete is delivered to site, only the chute of the delivery truck will require cleaning, using the smallest volume of water necessary, before leaving the site. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place.
MM34	Management of Fuel and Oil	EIAR Chapter 9 / CEMP Section 3.0	Fuel management measures have been prepared (and included in this CEMP) which incorporates the following elements: • Mobile bowsers, tanks and drums will be stored in secure, impermeable storage area, away from drains and open watercourses; • Fuel containers will be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores; • Fuels, lubricants and hydraulic fluids for equipment used within the proposed development, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice. All materials will be sufficiently bunded; • 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; • The contractor will have a dedicated area within the compound for refuelling plant or any other equipment that is bunded and has the necessary spill kit equipment and adsorbents available as and when required in line with any statutory IEPA & H&S legislations. Refuelling of machinery will be carried out using a mobile double skinned fuel bowser to allow for ease of work. The fuel bowser will be re-filled off site or at the contractors site compound and will be towed around the site by a 4x4 jeep to where machinery is located. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; • All machinery will be serviced before being mobilised to the proposed development; • Only designated trained operators will be authorised to refuel plant on site; • Procedures and contingency plans will to be set up to deal with an emergency accidents or spills; • An emergency spill kit with oil boom and absorbers will be kept on site in the event of an accidental spill. All site operatives will be trained in its use; • Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised in the proposed development are in good working condition. Any equipment not meeting the required standard will not be permitted for use within the proposed development. This will minimise the risk of soils and bedrock becoming contaminated through the proposed development activities; • The highest standards of site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively; and • In the highly unlikely event that ground contamination is encountered beneath the site during the construction works, all works will cease. Advice will be sought from an experienced contaminated land specialist and a phased environmental

			risk assessment (specifically to assess any associated potential environmental and/ or human health risks) will be undertaken in accordance with relevant EPA guidance *'Guidance On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites'* (EPA, 2013) and UK Environment Agency Guidance *'Land contamination risk management (LCRM)'* (UK EA, 2021).
MM35	Drainage and the Management of Sediment and Geological material	EIAR Chapter 9	The permanent road works will require a drainage network to be in place for the construction and operation phases of the proposed wind farm site. Fundamental to any construction phase is the need to keep water (i.e. runoff from adjacent ground upslope of the permitted development footprint) clean and manage all other run off and water from construction in an appropriate manner. This will necessitate the implementation of a Sediment and Erosion Control Plan, with associated settlement ponds and silt traps. The Sediment and Erosion Plan is part of the CEMP for the site. The good management of material on site will reduce any indirect risk to water. Drainage measures are considered in further detail in Chapter 10 (Hydrology and Hydrogeology) of the EIAR. The handling, storage and re-use of excavated materials are of importance during the construction phase of the proposed wind farm. Excavated topsoil will not be stored in excessive mounds on the site. Seeding of the work affected areas with indigenous species will occur, only where natural revegetation or the reuse of the upper vegetated layer is unsuccessful. The revegetation of these areas promotes stability, reduces desiccation, run-off erosion and susceptibility to freeze/thaw action.
MM36	Hydrocarbon Release	EIAR Chapter 9	Wherever there are vehicles and plant in use, there is the potential for a hydro-carbon release in the form of a spill that has the potential to directly pollute soil, and indirectly pollute water. This is due to the fact that soil may act as a pathway for the contamination. Any spill of fuel or oil would potentially present a moderate, long-term negative effect on the soil and geological environment. Good site practice as outlined in 9.5.3.7 above will mitigate any effect. Good site management by means of regular checks on plant, and diligent housekeeping of machinery reduce the potential of hydrocarbon release on site. It is important for personnel on site to have the correct training and expertise in the event that a hydrocarbon leak occurs.
MM37	Borrow Pits	EIAR Chapter 9	The PSMP attached as Appendix 9.2 of the EIAR sets out the guidelines for the construction and reinstatement of the on-site borrow pits. Upon the removal of the required volumes of granular material (for the construction of the infrastructure elements at the wind farm) from the borrow pits it is proposed to reinstate the pits using excavated peat and spoil. The borrow pits are designed and will be constructed in a way which will allow the excavated peat and spoil to be placed safely, with areas within the borrow pits designated for the storage of excavated peat. Other mitigation measures included in the design of the borrow pits are as follows: • Borrow pits will be developed with stable ground inclinations; • Exposed slopes will be left with irregular faces to promote re-vegetation; and, • Infilling of peat should commence at the back of the borrow pit and progress towards the pit entrance.
MM38	Natural Resources	EIAR Chapter 9	Bord na Móna has permanently ceased peat extraction at Derryadd since 2019. The potential for long term sterilisation of the borrow pit resource will be mitigated by diligent borrow pit design and appropriate material management. This would include detailed assessment of the material resource and borrow extent to ensure efficient exploitation of any borrow pits.
MM39	Drainage Measures	EIAR Chapter 9 / Chapter 10	The drainage measures outlined in Chapter 10 (Hydrology and hydrogeology) of the EIAR. Surface water drainage plans will be implemented to account for modified flows created by construction, which in turn may affect peat stability, pollution and wildlife interests. Drainage measures need to be carefully planned to minimise any negative impacts.

			Runoff will be maintained at the existing runoff rates. Controlled discharge will be maintained at existing pumping rates. The layout of the proposed wind farm site has been designed to collect surface water runoff from hard standing areas within the development and discharge to associated surface water attenuation lagoons adjacent to the proposed infrastructure. It will then make its way into the existing field drains and existing settlement ponds infrastructure before being discharged through existing discharge points by pump or gravity flow. From here the water will outfall at the appropriate existing run off rates. Where temporary excavations for turbines and borrow pits, water will be stored within the existing topographical depressions.
MM40	Karst Risk	EIAR Chapter 9	If karstic void features are identified within the footprint of infrastructure, the following mitigation measures will be implemented: **Access Road/Track Cuttings** • Slope Buttressing; • Choking and infilling of fissures and small sinkholes; • High strength geotextiles for larger sinkholes; • Bolting and meshing. **Access Road/Track Embankments** • Choking and infilling of fissures and small sinkholes; • High strength geotextiles for larger sinkholes. **Turbine/Substation Foundations** • Piling through the void / karstified zone; • Foundations to span voids.
MM41	Soil and Excavations Management	EIAR Chapter 9	The disturbance of soil, subsoil and bedrock is an unavoidable effect of the proposed wind farm, but every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum to limit the effect on the geological aspects of the site. The management of geological materials is an important component of controlling dust, and sediment and erosion control. The following mitigation measures will be implemented: • Excavated peat will only be moved short distances from the point of extraction and will be used locally for landscaping; • Landscaping areas will be sealed and levelled using the back of an excavator bucket to prevent erosion. Where possible, the upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the landscaped peat. These measures will prevent the erosion of peat in the short and long term; • Construction of settlement ponds will be volume neutral, and all excess material will be used locally to form pond bunds and surrounding landscaping; and • Peat, overburden, and rock will be reused where possible on site to reinstate borrow pits and other excavations where appropriate. A PSMP has been prepared for the proposed development which is included in Appendix 9.2 of the EIAR.
MM42	Excavations (Turbine, Hardstands, and Substation Foundations)	EIAR Chapter 9	**Excavation for Turbine Foundations** Three main foundation solutions have been identified: • Gravity Foundations; • Concrete driven piles; and • Bored piles.

			Mitigation measures to be adopted during excavation for the turbine foundations include: • A temporary works design for foundation excavations will be carried out by a competent designer; • The materials encountered in the trial pits across the GI phases are likely to be unstable during the excavation for the turbine bases. Where battering back of excavations to a safe angle (as determined by a detailed slope stability assessment by the competent designer) is not feasible, a physical barrier will be applied where required between the excavations and the potentially unstable material in the form of a granular berm or sheet piles. • The long-term stability of the area around the wind turbine foundations will be achieved by filling the area back up to existing ground level following installation of the foundation; • The design will be carried out by a suitably qualified and experienced geotechnical engineer and the management of the ground stability will be ongoing throughout the construction phase; • Each turbine foundation will be investigated before and during construction to identify any potential karst features; • Excavation works will be monitored by a suitably qualified and experienced geotechnical engineer or engineering geologist; • The earthworks will not be scheduled to be carried out during severe weather conditions; and • Any piling works will not produce significant volumes of spoil as the proposed piling system will be driven or bored piles. **Excavation for Hardstanding Foundations** The mitigation strategies for the hardstanding foundations follow similar procedures as the excavations for turbine and substation foundations (see Section 9.5.2.8 of Chapter 9 (Land, Soils and Geology) of the EIAR). All works will be monitored by suitably qualified and experienced geotechnical engineer or engineering geologist. **Excavation for Substation Foundations** The mitigation strategies for the substation foundations follow similar procedures as the excavations for turbine and hardstanding foundations (see Section 9.5.2.8 of Chapter 9 (Land, Soils and Geology) of the EIAR). All works will be monitored by suitably qualified and experienced geotechnical engineer or engineering geologist.
MM43	Peat and Spoil Management Plan	EIAR Chapter 9 / Peat and Spoil Management Plan Appendix 9.2	Inappropriate storage of excavated peat and overburden, as well as uncontrolled loading of peat material is considered one of the main causes of peat instability and landslide event triggers during the wind farm construction process. The management and control of these activities is key to de-risking peat stability at the proposed wind farm site. It is required that the construction method statements for the project also take into account, but not be limited, to the guidance documents listed and the recommendations and requirements outlined throughout Chapter 9 (Land, Soils and Geology) of the EIAR. A PSMP has been developed and is included in Appendix 9.2 of the EIAR. The PSMP outlines the guidelines and methodologies for the careful management, handling and storage of peat on the site. These mitigation measures include: • Appointment of experienced and competent contractors and designers - A competent Project Geotechnical Engineer shall be appointed for the construction phase to oversee peat excavation and management; • The construction works on site will be supervised by experienced and qualified personnel; • Allocate sufficient time for the project to be constructed safely with all peat stability mitigation measures included in the programme; • Prevent undercutting of slopes and unsupported excavations;

			• Prevent placement of loads/overburden on marginal ground; • Peat related works will be subject to additional detailed designed and checked by the relevant professionals, for example by a qualified geotechnical engineer, hydrologist, and/or drainage engineer; • Manage and maintain a robust drainage system. This will be the responsibility of the appointed contractor and their designer; • Uncontrolled placement of peat or loading of peat material must be avoided; • Placement of peat and spoil material, including temporary and side casting, will be carried out in the permitted peat deposition areas only; • Storage of peat material including temporary and side casting be carried out in the permitted areas only. • Excavated peat and spoil will be immediately moved short distances to the designated peat deposition area or borrow pit areas with the exception of the storage required for the opening of the initial borrow pit. Acrotelm (upper) peat material will be used as landscaping material where the topography allows, and the detail designer has assessed the stability risk; • Peat and spoil will only be placed in the proposed deposition area or re-used for landscaping purposes. Peat deposition areas are outlined in the PSMP in Appendix 9.2 of the EIAR and have been located only in areas where the peat instability risk allows; • Water flows within drainage systems will be controlled. The velocity of water flows within drainage systems will be controlled using check dams, and the uncontrolled release of water onto slopes can create a landslide risk and must be avoided; • All construction requiring cut and fill earthworks requires a robust monitoring and inspection programme. The details of this inspection programme will depend on the purpose and methodologies of the works and the ground conditions; • A method statement and risk assessment (RAMS), which considers the potential causes and mitigations of peat instabilities and landslides, is required and must be regularly communicated to all site staff. An observational approach by all site staff to the ground conditions and the risks will be promoted, and any changes in the ground or site conditions will be reported and the risk dynamically assessed. The RAMS will be reviewed for compliance with the PSRA, prior to acceptance by the developer; • Set up, maintain and report findings from monitoring systems, including sightline monitoring; • Maintain vigilance and awareness through Tool-Box-Talks (TBTs) on peat stability. Regular briefing of all site staff (e.g. toolbox talks) to provide feedback on construction and ground performance and to promote reporting any observed change in ground conditions. • Frequent monitoring of slopes associated with the proposed wind farm shall be undertaken during the construction phase, and where required, additional monitoring undertaken following heavy and/or prolonged rainfall events; • Installing movement monitoring posts is recommended for areas where works occur on or adjacent to identified peat depths greater than 2m and existing slope angles exceeding 5°. At those locations, monitoring posts are recommended to be installed upslope and downslope of the works areas; • Movement monitoring posts shall be observed at least once daily during the construction phase, with more frequent inspections where adjacent works are ongoing. Should movements be recorded, the frequency of these inspections will be increased. A record of all monitor post inspections will be kept with reference to date, time and relative movement between posts, if any. Any movement identified in the posts shall be recorded with reference to the post numbering system. The monitoring regime will be further developed and assessed during the detailed design phase; and, • The Contractor shall also develop a routine inspection of all areas surrounding work in peat, not just exclusively on the monitoring posts. These inspections shall include an assessment of ground stability and drainage conditions. These

			inspections will identify any cracking or deformation on the peat surface, an excessive settlement on structures, drain blockages or springs etc..

MM44	Peat & Spoil Management – General Construction Practice	EIAR Appendix 9-2	• Care will be taken during peat excavation to ensure it is segregated from other soil types; therefore, particular care will be taken to review recorded peat depths. Peat will be separated and stored by type, namely the acrotelmic and catotelmic layers, where acrotelm is encountered. Given the nature of the historic peat extraction at the site, it is anticipated that nearly all of the peat excavation will consist of catotelmic peat:
			  ○ Acrotelm (defined in Section 2.1) is generally required for landscaping and will be stripped and temporarily stockpiled for re-use as required. Acrotelm stripping will be undertaken before the main excavations;
			  ○ Where possible, the acrotelm will be placed with the vegetation part of the sod facing the right way up to encourage the growth of plants and vegetation;
			  ○ All catotelm peat (defined in Section 2.1) will be transported immediately on excavation to the designated Peat Deposition Area or borrow pit reinstatement area;
			  ○ The careful handling and segregation of peat types will help to optimise the re-use of peat, aiding in the retention of structure and integrity of the excavated peat material;
			  ○ Uncontrolled placement of peat or loading of peat material must be avoided.
			• Depending on what vegetation is found on site, more fibrous material may be placed on steeper angles, up to 10%. Unconsolidated peat, generally comprising of catotelmic material, is often not suitable for general dressing, and any unconsolidated peat excavated must only be used for reinstatement where such re-use poses no risk of polluting water courses and evidence can be provided that the required water table at the chosen location can be maintained;
			• Construction sequence planning will minimise the time peat is stockpiled before re-use; however, some temporary peat placement may be required to manage spoil and separate spoil horizons before it can be placed in its reinstatement location. The principles on which the temporary placement of excavated peat will be based upon the placement and handling methodologies set out within this section. Temporary placement must be safe as it protects the structure and integrity of the excavated peat subject to prevailing local conditions. The peat will be reinstated during the Construction Phase at the earliest possible opportunity to avoid prolonged placement;
			• Any temporary placement locations must be in suitably wet conditions or be irrigated to prevent the peat from desiccating, and precautions will be taken to ensure that turves are not allowed to dry out before reinstatement. The condition of turves will be monitored throughout the duration of placement. Irrigation of peat turves will be agreed upon in advance with the Ecological Clerk of Works (ECoW). Should wetting of turves be required to prevent desiccation, mitigation will be adopted to prevent runoff or discharge to any adjacent watercourses;
			• Plant movements and haul distances related to earthworks activity and peat excavation will be kept to a minimum;
			• Peat Deposition Areas will not be allowed to substantially erode or become dry;
			• Material repositories will be located at least 50m away from watercourses to reduce the potential for sediment to be transferred into the wider hydrological system;
			• If possible, excavation will be timed to avoid very wet weather;
			• Peat and spoil deposition locations have been selected to limit re-handling as far as reasonably possible;
			• Excavated peat and spoil will be placed and re-used as close to the immediate area as possible;
			• The disruption of flow pathways will be minimised, and drainage will be designed to limit the risk of changing flow pathways and subsequently increasing peat slide risk;

			• All construction requiring cut and fill earthworks requires a robust monitoring and inspection programme. The details of this inspection programme will depend on the purpose and methodologies of the works and the ground conditions; • A method statement and risk assessment (RAMS), which considers the potential causes and mitigations of peat instabilities and landslides, is required and must be regularly communicated to all site staff. An observational approach by all site staff to the ground conditions and the risks should be promoted, and any changes in the ground or site conditions should be reported and the risk dynamically assessed; • Regular briefing of all site staff (e.g. toolbox talks) to provide feedback on construction and ground performance and to promote reporting any observed change in ground conditions; • If peat pipes are encountered in excavations, mitigation works (e.g. backfilling with free-draining fill) will be developed so that lateral groundwater movement is not impeded; • The Contractor will consult the ECoW to agree on locations for material stockpiles and consider minimising impacting sensitive ecological receptors; • All works will be supervised by a competent Geotechnical Engineer. The Contractor will consult the site Geotechnical Engineer and review and take into account the Peat Stability Risk Assessment (GDG, 2025) to avoid the risk of peat instability in peat excavations, peat stockpiling and all material stockpiling in areas underlain by peat; • Runoff from Peat Deposition Areas will be directed through the site drainage system, including silt fences, settlement ponds and other drainage measures as appropriate; The following particular recommendations/best practice guidelines for the placement of peat with respect to specific aspects of the wind farm will be considered and taken into account during construction. Excavated peat will be managed and placed in the following locations only: • Side-casting/reinstatement alongside access tracks and other infrastructure (See Section 3.2 of the PSMP); • One permanent Peat Deposition Area (1) (See Section 3.3 of the PSMP); • One temporary Peat Deposition Area (2) is to be used while BP1 is being excavated (See Section 7 of the PSMP); and • Reinstatement of borrow pits (See Section 6 of the PSMP).
MM45	Peat & Spoil Management – Access Roads, Hardstands and Other Infrastructure	EIAR Appendix 9-2	**Access Roads, Hardstands and Other Infrastructure** • Controlled quantities of peat and spoil will be side-cast adjacent to access roads and other infrastructure only where it can be placed in a stable formation, i.e. where the topography and ground conditions allow; • Side cast peat material will consist of the acrotelm (upper layer) only, and it will be landscaped and shaped to aid in reinstating the construction into the surrounding environment; • Peat and spoil will only be cast to safe heights and slope angles, considering the topography and the ground conditions. This height will be no more than 1m, and the slopes will be not greater than 1 (V): 3 (H) unless a site-specific assessment during detailed design indicates a greater height and angle is safe; • The effect of drainage or water runoff will be considered when placing landscaping rising adjacent to access roads. Landscaping material will not interfere with drainage, risk blocking of drainage systems or runoff into drainage systems.
MM46	Peat & Spoil Management Plan (PSMP)	EIAR Appendix 9-2	**Permanent Peat Deposition Area** • The permanent Peat Deposition Area (1) location has been designed by Tobin (Appendix D of the PSMP). The proposed location has been identified in an area where the topography (slope angle <5°), peat depth, resulting stability assessment

	– Permanent Peat Deposition Area		(FoS of >1.3 for 1.0m peat surcharge) and other environmental constraints (including 50m buffer from all watercourses) have allowed. The area is free of existing peat and drainage cuttings within the internal structure and is designated for the permanent placement of up to 1m of peat material. However, the Contractor will be required to conduct their own local and global stability assessment considering the influence of the existing drainage excavations outside of the stricture and any influence these could have on the proposed construction; • A cell berm will be constructed similarly to the Peat Deposition Area details outlined in Appendix D of the PSMP. This cell berm will help to prevent the flow of saturated peat material. The stone berm will be constructed with a sufficiently coarse granular material or rock to enable the drainage of the placed peat material and prevent any instabilities within the Peat Deposition Area; • The stone cell berm will require a geotextile separator. The stone cell berm should be constructed using low-ground pressure machinery working from bog mats where necessary. A competent engineer should inspect and approve the founding stratum for each stone buttress; • The height of the cell berm constructed will be greater than the height of the placed peat & spoil to prevent any surface peat runoff. Berms up to 1.25m in height will be required, subject to detailed design; • The cell berm is subject to the detail designer's specification; however, some peat excavation or installation of a shear key may be required to prevent global instabilities within the stored material. The shear key will comprise an excavation below existing ground level beneath the cell berm to provide resistance against lateral forces; • Where possible, the surface of the placed peat and spoil will be shaped to allow efficient runoff of surface water from the peat and spoil deposition areas; • Silting ponds will be required at the lower side/outfall location of the Peat Deposition Areas (see drainage drawing 20852-NOD-01-XX-DR-C-080). Intermediate berms or buttresses of spoil material may be installed within the Peat Deposition Area to aid in the placement and stability of the peat material. These berms will be shaped to align with the contours of the deposition area; • The Contractor will make every reasonable effort to promote growth in the Peat Deposition Areas following the placement of peat and completion of construction stage activities. Upper acrotelm layers will be placed on the surface the right way up to promote vegetation growth. This growth will aid in stabilising the placed peat material and help in preventing it from becoming saturated following heavy periods of rain.
MM47	TDR	EIAR Chapter 9	Any temporary accommodation works required along the turbine delivery route such as hedge or tree cutting, temporary relocation of powerlines/poles, lampposts, signage and local road widening (See Chapter 15 (Traffic and Transport) of the EIAR) will be carried out in advance of turbine deliveries and following consultation and agreement with Longford County Council. All temporary accommodation works will be designed by and monitored by suitably qualified and experienced geotechnical engineer or engineering geologist.
Water Quality Management			
MM48	Groundwater Management	EIAR Chapter 3	Dewatering will be required intermittently during the 2-year construction period. The anticipated dewatering for borrow pits is 1 year and 2-3 months for turbine bases. Groundwater inflows to excavations will need to be pumped out, resulting in short term localised drawdown of the water table and potential discharges to the surface water.

			Interceptor cut-off drains around the borrow pits will be provided to divert overland flows and prevent these flows from entering the borrow pits. These flows will discharge diffusely overland, creating a buffer before entering the existing surface water management infrastructure
MM49	Surface Water Management	EIAR Chapter 3	The surface water drainage system will require regular inspection during construction works and during operations to ensure that it is working optimally. The surface water management plan (Appendix 10-3 of the EIAR) details the monitoring procedures to be followed during the construction phase. Where issues arise, the works should be stopped immediately and the source of potential impacts on the surface water quality investigated. Records of all maintenance and monitoring activities associated with the construction site will be retained by the Contractor on-site.
MM50	Surface Water Quality: Hydrocarbon and Concrete	EIAR Chapter 10	**Hydrocarbon and Concrete:** Concrete is required for the construction of the turbine bases, met masts and substation foundations. After concrete is poured at a construction site, the chutes of ready mixed concrete trucks must be washed out to remove the remaining concrete before it hardens. Wash out of the main concrete bottle will not be permitted on site; wash out is restricted only to chute wash out. Wash down and washout of the concrete transporting vehicles will take place at an appropriate facility offsite i.e., at the premises of the concrete supplier. The best management practice objectives for concrete chute washout are to collect and retain all the concrete washout water and solids in leakproof containers or impermeable lined washout pits so that the wash material does not reach the soil surface and then migrate to surface waters or into the groundwater. The collected concrete washout water and solids will be emptied on a regular basis at a waste licence facility. With regard to on-site storage and handling of potentially pollutant materials: • All on-site refuelling will be carried out by a trained competent operative; • Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; • The contractor will have a dedicated area within the compound for refuelling plant or any other equipment that is bunded and has the necessary spill kit equipment available; • The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out onsite and therefore these aspects will not pose a risk to the waterbodies or sensitive receptors present, namely any exposed groundwater, the onsite surface water settlement ponds or onsite groundwater monitoring wells; • Mixer washings and excess concrete will not be discharged directly into the drainage network, or any drainage ditches, surface water bodies, the onsite surface water settlement pond or onsite groundwater monitoring well; • Surplus concrete will be returned to batch plant after completion of a pour; • No refuelling will take place within 50 m of any water body. Refuelling of machinery will be carried out using a mobile double skinned fuel bowser to allow for ease of work. The fuel bowser will be re-filled off site or at the contractors site compound and will be towed around the site by a 4x4 jeep to where machinery is located. Spill kits (fuel absorbent material and pads) will be stored in the event of any accidental spillages. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. Only designated trained and competent operatives will be authorised to refuel plant on site. • All equipment and machinery will have regular checks for leakages and quality of performance, and will carry spill kits; • Any servicing of vehicles will be confined to designated and suitably protected areas such as construction compounds;

			• Additional drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site; • Fuels, lubricants, and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice; • Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling; • All fuel /oil deliveries to the onsite storage tanks will be supervised with records of delivery dates and volumes retained on site; and • Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of groundwater becoming contaminated through site activity. Generators and associated fuel tanks to be used at the site will either be placed within bunds as per fuel storage tanks or will be integrated units (i.e., fuel tank and generator in one unit) that are intrinsically bunded. No external tanks and associated fuel lines will be permitted on the proposed wind farm site unless these are housed within a fixed bund with the generator. The temporary contractor's compounds will incorporate a bund for the storage of small vehicles and oil filled equipment, such as hand portable generators, pumps, etc. Storage of small volume oils or chemicals, in barrels, IBCs, etc, will be stored in a covered bunded area. Where barrels or other containers are required at work locations these shall be stored in enclosed bunded cabinets, and drip trays shall be used where distribution of the material is required. The main storage areas for oil filled equipment, vehicles, plant, etc, shall be impermeably surface and the discharge of surface water from these areas will be via oil interceptors. An oil spill response plan will be developed for the construction works and appropriate containment equipment will be available at work locations in the event of a spillage. Oil spill response will form part of site personnel induction and training at the site. A response procedure will be put in place by the Contractor to deal with any accidental pollution events. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contamination removed from the proposed development and disposed of in accordance with all relevant waste management legislation. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on site in close proximity to any fuel storage tanks or bowsers during proposed site development works. The works programme for the construction phase of the development will also take account of weather forecasts and predicted heavy rainfall events in particular. Large excavations and movements of peat/subsoil or peat stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.
MM51	Surface Water Quality: Wastewater	EIAR Chapter 10	The presence of construction workers at the proposed wind farm site will lead to the generation of foul sewage from toilets and washing facilities. Welfare facilities will be provided at the temporary construction compounds during the construction phase. Wastewater will be contained in an alarmed and sealed wastewater tank.
MM52	Flow Alteration	EIAR Chapter 10	As required by the IPC Licence (P0504-01) there are existing IPC settlement / slit ponds upstream or downstream of the external pumping stations to allow sediment to settle out of the water before it is discharged to the external streams and rivers which ultimately flow into the River Shannon and Lough Ree. These will remain in operation during the proposed construction and

			operational phase. There are no streams within 50 m of proposed turbines or borrow pits. Interceptor drainage will be provided on the upgradient side of the road to collect the drains crossed by the proposed internal access site roads and amenity access tracks. All stockpiled material will be side cast, battered back and profiled to reduce the rainfall erosion potential. The stockpiling of materials will be carefully supervised as per the mitigation measures listed in Chapter 9 (Lands, Soils and Geology) of the EIAR. Traffic on site will be kept to a minimum. No haul roads will be used other than the proposed access tracks and roads. Where haul roads pass close to watercourses, silt fencing will be used to protect the streams. This will be utilised for the crossing of the Rappareehill and Derrygeel streams to the west and southwest of Derryadd Bog. As stated previously, to maximise the erosion and sediment control benefits of natural vegetation soil cover, stripping of peat is to be kept to a minimum and confined to construction areas only. Where practical, construction works will be staged to minimise the extent and duration of disturbance, e.g. plan for progressive site clearance, only disturbing areas when they are scheduled for construction work.
MM53	Dewatering	EIAR Chapter 10	Dewatering will be required intermittently during the 2-year construction period. The anticipated dewatering for borrow pits is <1 year and 3 months for turbine bases. Groundwater levels on the proposed wind farm site are between 1 and 5 mbgl based on the 2018, 2021 and 2022 and 2023 Site Investigations (see Appendix 9.1.1, 9.1.5 to 9.1.10 of the EIAR). Based on the ground investigation the proposed foundations will be a combination of piled, bored and gravity foundations. The mitigation strategies for the borrow pits follow similar procedures as the excavations for turbine and hardstanding areas. Interceptor cut-off drains around the borrow pits will be provided to divert overland flows and prevent these flows from entering the borrow pits. These flows will discharge diffusely overland, creating a buffer before entering the existing surface water management infrastructure. Dewatering of borrow pits and turbine bases will be required on site. Borrow pit areas for example, which are up to ca. 5.5 m deep, will encounter groundwater. Gravity, bored or piled turbine bases will be 3.6 – 4m bgl. Groundwater inflows to excavations will need to be pumped out, resulting in short term localised drawdown of the water table and potential discharges to the surface water. The water pumped by sumps will first pass through silt bags before being discharged into swales and settlement ponds ensuring no net loss of water from the hydrological system. The quantities that will be managed at turbine bases will generally be less than 10 m3/hr, although shorter term pumping can be higher, especially after significant rainfall events. Based on the above principles and a Transmissivity value of 20 to 50 m2/day, the upper rate of groundwater discharge rates of 1,800 m3/day to 2,300 m3/day are obtained for the borrow pits. Gravity turbine, bored foundation and piled foundation bases will be ca. 3.6 - 4 m bgl. Groundwater inflows to excavations will need to be pumped out, resulting in short term localised drawdown of the water table and potential discharges to the surface water. Based on a drawdown of 3.5 m, the empirical estimate calculates a 0m drawdown at 100 m. Where deep soils are present such as T03, T05, T06, T15-T21, the drawdown distance is <25 m. Average depth to bedrock on the site is ca. 5 m. There are no wells within 500 m of the turbines or the borrow pits. Therefore, the pre mitigation potential effect is localised, temporary, slight and likely. There are no significant effects of the proposed piling works. The overflow areas are self-contained basins and of sufficient cross-sectional area to minimise erosion. As foundations are excavated, water will enter the excavations by direct rainfall and via groundwater seepage once the groundwater level is reached/intercepted. The water inside the excavations will collect in sumps and the water will be pumped out using sump pumps.

			The pumped water will be directed to swales which will lead the water to settlement ponds before overland flow to the surface water ponds. The discharge water from sumps may contain suspended sediments and concentrations of ammonia will be elevated since the water originates from the surrounding peat and shallow groundwater environment. Groundwater quality monitoring indicated ammonium concentrations are <0.1 mg/l. The swales and settlement ponds will serve to significantly attenuate ammonium and suspended solids. A summary of the mitigation measures are included in Table 10-26 of Chapter 10 (Hydrology and Hydrogeology) of the EIAR.
MM54	Watercourse crossings	EIAR Chapter 10	Potential effects on surface water flow during the construction phase of the proposed wind farm site are mitigated by the proposed drainage design, which has been designed to minimise disturbance to the current hydrological regime, by maintaining diffuse flows. All access tracks will utilise the existing roads/culverts including the crossing of Derrygeel stream (26_593) to the east of T15. Culverts are to be of a size adequate to carry expected peak flows. Culverts will be installed to conform to the natural slope and alignment of the stream or drainage line. Where required, culverts will be buried at an appropriate depth below the channel bed and the original bed material placed in the bottom of the culvert. Embedded culverts should be buried to a depth of 0.3 m or 20% of their height (whichever is greatest) below the bed. No culverts are required on an EPA waterbody. No instream works are proposed. There will be no discharge of suspended solids or any other deleterious matter to watercourses. Water crossings are to be constructed in accordance with the requirements of the Office of Public Works (OPW) Section 50 Consent requirements (if required) and in accordance with the CEMP. Crossing construction will be carried out, in so far as is practical, with minimal disturbance to the drainage bed and banks. If they have to be disturbed, all practicable measures will be taken to prevent soils from entering the watercourse. Cement and raw concrete will not be spilt into watercourses. Where practicable, crossings should be adequately elevated with low approaches such that water drains away from the crossing point. Existing stream crossings must be protected against erosion e.g. by re-vegetation or rock surfacing etc.. Table 10-25 of Chapter 10 (Hydrology and Hydrogeology) of the EIAR details measures agreed to manage the hydrological environment associated with each component of the proposed development.
MM55	Concrete Management	EIAR Chapter 3 CEMP Section 3.10	Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. When concrete is delivered to site, only the chute of the delivery truck will require cleaning, using the smallest volume of water necessary, before leaving the site. Concrete trucks will be washed out fully at the batching plant, where facilities are already in place. The small volume of water that will be generated from washing of the concrete lorry's chute will be directed into a temporary lined impermeable containment area, or a concrete wash unit. This type of unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site at an appropriate waste facility. Where temporary lined impermeable containment areas are used, such containment areas are excavated and lined with an impermeable membrane. The areas are generally covered when not in use to prevent infill of rainwater. In periods of dry weather, the areas can be uncovered to allow much of the water to be lost to evaporation. At the end of the concrete pours, any of the remaining liquid contents is tankered off-site. Any solid contents that will have been cleaned down from the chute will have solidified and can be broken up and disposed of along with other construction waste.

			Due to the volume of concrete required for each turbine foundation (approximately 950 m3), and the requirement for the concrete pours to be continuous, deliveries are often carried out outside normal working hours in order to limit the traffic impact on other road users, particularly peak period school and work commuter traffic. Such activities are limited to the day of turbine foundation concrete pours. The risks of pollution arising from concrete deliveries will be further reduced by the following: • Concrete trucks will not be washed out on the site but will be directed back to their batching plant for washout other than the delivery chutes; • Site roads will be constructed to a high standard to allow transport of the turbine components around the site, and hence, concrete delivery trucks will be able to access all areas where the concrete will be needed. No concrete will be transported around the site in open trailers or dumpers so as to avoid spillage while in transport. All concrete used in the construction of turbine bases will be pumped directly into the shuttered formwork from the delivery truck. If this is not practical, the concrete will be pumped from the delivery truck into a hydraulic concrete pump or into the bucket of an excavator, which will transfer the concrete to the location where it is needed; • The arrangements for concrete deliveries to the site will be discussed with suppliers before work starts, agreeing routes, prohibiting on-site full washout and discussing emergency procedures; • Clearly visible signage will be placed in prominent locations close to concrete pour areas specifically stating washout of concrete lorries is not permitted on the site.
MM56	Concrete Pouring	EIAR Chapter 3 CEMP Section 3.10	Because of the scale of the main concrete pours that will be required to construct the proposed wind farm, the main pours will be planned weeks in advance and refined in the days leading up to the pour. Special procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution. These may include: • Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast; • Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete; • Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets; • Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain; • Disposing of surplus concrete after completion of a pour will be off-site.
MM57	Refuelling	EIAR Chapter 3 and Chapter x / CEMP Section 3.10	Wherever possible, vehicles will be refuelled off-site. This will be the case for regular, road-going vehicles. However, for construction machinery that will be based on-site continuously, a limited amount of fuel will have to be stored on site. No refuelling of machinery will occur within 50 m of surface water features. Refuelling of machinery will be carried out using a mobile double skinned fuel bowser to allow for ease of work. The fuel bowser will be re-filled off site or at the contractors site compound and will be towed around the site by a 4x4 jeep to where machinery is located. Spill kits (fuel absorbent material and pads) will be stored in the event of any accidental spillages. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations. Only designated trained and competent operatives will be authorised to refuel plant on site.
Noise & Vibration			

MM58	Noise	EIAR Chapter 12 / CEMP Section 3.1.9	The contract documents will specify that the Contractor undertaking the construction works will be obliged to adopt best practice noise abatement measures contained in British Standard BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration.
Air Quality / Dust			
MM59	Dust Suppression and Exhaust Emissions Management	EIAR Chapter 3 / Chapter 11	Best practice (including industry recognised dust suppression techniques/equipment) will be used to minimise the potential for dust production during construction including, but not limited to, IAQM (2024) and the Good Practice Guide for Construction and Demolition (Dublin City Council, 2018).The main contractor will be responsible for the coordination, implementation and ongoing monitoring of dust management measures. In periods of extended dry weather, dust suppression may be necessary along haul roads and around the borrow pit area(s) to ensure dust does not cause a nuisance. If necessary, water will be taken from settlement ponds in the site's drainage system and will be pumped into a bowser or water spreader to dampen down haul roads and site compounds to prevent the generation of dust. Silty or oily water will not be used for dust suppression, because this would transfer the pollutants to the haul roads and generate polluted runoff or more dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.
MM60	General Site Management	EIAR Chapter 11	Good site management will also include the ability to respond quickly to adverse weather conditions through effective control measures or restricting operations on-site before the potential for nuisance occurs. During periods of high wind (gales) particular care should be taken as these are conditions are where potential for significant dust emissions is most high. In general the prevailing meteorological conditions in the area of the proposed wind farm are favourable for dust suppression for significant part of the year. However, there will be times when care is needed to ensure no dust nuisance occurs. The Principal Contractor will be responsible for adherence to all dust control measures contained here and ensure that any other contractors working onsite demonstrate full compliance. The following measures shall be taken to ensure no dust nuisance at the site and site entrances: • Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses; • The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details; • A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out; • Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found; • Review of the measures across the site to ensure they are appropriate and working.
MM61	Site Activities	EIAR Chapter 11	The movement and storage of materials are important aspects to consider when managing site activities with regard to potential source of dust nuisance. The moisture content of materials stored and moved within the wind farm site should also be considered. The following measures shall be taken during construction within the proposed wind farm site:

			• Minimisation of the extent of working areas; • Stockpiling of excavated materials will be limited to the volumes required to practically meet the construction schedule; • Only ready-mix concrete will be used on site and all concrete will be delivered in enclosed trucks which will reduce the potential for dust emissions; • Soil and rock excavation and rock breaking during periods of high winds and dry weather conditions can be a significant source of dust. During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and rock and thus suppress dust. During periods of very high winds (gales), construction activities likely to generate significant dust emissions should be postponed until the gale has subsided; • Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level; • Provision of dust suppression measures (e.g., sweeps/covers/water bowsers) will be used on stockpiles and the road surface during periods of extended dry weather; • Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; • Onsite borrow pits will be used to minimise quantities of stone material being brought to site; • Sporadic wetting of loose stone surface in the borrow pits will be carried out during the construction phase to minimise movement of dust particles to the air; • The transport of construction materials from the borrow pits around the site will be undertaken in tarpaulin or similar covered vehicles, where necessary; • Vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction; • Machinery will be switched off when not in use; • Vehicles will not be left running unnecessarily and low emission fuels will be used where possible; and • Aggregate materials for the construction of site access tracks and all associated infrastructure will all be locally sourced, where possible, which will further reduce potential emissions.
MM62	Site Traffic on Public Road and Site Entrance	EIAR Chapter 11	Movement of vehicles along the road network to the proposed wind farm site and on the site roads are considered a potential source of dust nuisance and the following measures are to be take: • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic; • Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions; • Traffic coming to site will only use the specified haul routes; • Vehicles using site access tracks will have their speed restricted, and this speed restriction must be enforced rigidly. On any unsurfaced site access track, this will be 20 kph, and on hard surfaced access tracks as site management dictates; • The use of a wheelwash near the site entrance (will prevent the transfer of dust from the construction works onto public roads). Vehicles exiting the site shall make use of the wheel wash facility where appropriate, prior to entering public roads;

			• Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary; and • During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions. At all times, these procedures and those outlined within the CEMP will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.
Traffic Management			
MM63	Haul Routes	EIAR Chapter 15	To mitigate the effects of the construction traffic, the proposed development will utilise all available resources within the existing site to reduce the requirement for importation of materials to site. Excavation of stone material from the borrow pits within the proposed wind farm site to provide construction material will reduce the HV volumes as described in the Chapter 3 (Description of the Proposed Development) of the EIAR. The largest traffic volume effect is associated with the haulage of the materials for the combined construction activities for Month 3 of the proposed construction programme. Key deliveries during this period are aggregate and stone. The internal site access roads have been designed to utilise existing access tracks where feasible, reducing the volume of materials required for importation to the proposed wind farm site. The second largest volume traffic effect is associated with the concrete pours for the turbine foundations. Other scheduled construction activities, per the proposed construction program will continue during these concrete pours, but only essential deliveries will be scheduled to occur on the same days as the concrete pours. To mitigate this effect, liaison with local authorities and the community in advance of the foundation pours will occur as well as minimising other works/deliveries as noted.
MM64	Post-Construction Pavement Surveys	EIAR Chapter 15	The proposed development will result in slight increase in traffic volume in particular HVs during the construction phase. The weighted loading of the HVs to the proposed wind farm site has the potential to impact on the road network surface (i.e. the N63) causing deterioration of the road pavement. To capture suitable mitigation works the developer will undertake post-construction visual pavement surveys on the N63. Where the surveys conclude that damage to the road surface is attributable to the construction phase of the proposed development, the developer will fund the appropriate reinstatement works to bring the road surface back to pre-construction condition as a minimum, details for which will be agreed with the Local Authorities Roads Department.
MM65	Traffic Management Plan (TMP)	EIAR Chapter 15 / TMP Appendix 15-2	The successful completion of the proposed development will require co-ordination and planning in order to minimise the effects of the additional traffic generated by the proposed development which are outlined in the Traffic Management Plan (TMP). The TMP is a comprehensive set of mitigation measures that will be put in place by the Contractor before and during the construction phase of the proposed development to minimise effects. The purpose of the TMP is to capture the mitigation measures in this EIAR as discussed with RCC and LCC during scoping and any future traffic mitigation as they may arise during the proposed development. The TMP proposed for the Derryadd Wind Farm is included as Appendix 15-2 of the EIAR. The following mitigation measures has been incorporated into the TMP: • Haul route selection to avoid sensitive receptors and preference for national road infrastructure over regional and local road. • The existing and widened internal access roads facilitate queuing of construction vehicles off the public road.

			• Traffic Management Operatives (TMOs) will be provided by the principal contractor in accordance with their Traffic Management Plan at the site access during peak construction traffic activities, refer to the TMP. • Traffic Management Operatives (TMOs) will be provided by the principal contractor in accordance with their Traffic Management Plan for the turbine delivery, refer to the TMP. • A wheel wash will be provided within the site. • Passing bays on the internal access roads and a loop layout within the proposed wind farm site to facilitate safe passing of vehicles, vehicles travelling in a forward direction (reducing higher risk reversing manoeuvres)
MM66	Road Opening Licenses and Agreements	EIAR Chapter 15	To avoid delays to the proposed programme all required road opening licenses and agreements with the Local Authorities and an Garda Síochána to facilitate movement of AILs will be sought by the appointed Contractor in a timely manner.
Cultural Heritage and Archaeology			
MM67	Protection of the Archaeological Heritage	EIAR Chapter 14	The current state policy as detailed in the Framework and Principles for the Protection of the Archaeological Heritage (1999), is that preservation in situ of archaeological material is the preferred option. Where this cannot be achieved then appropriate measures need to be adopted to ameliorate the impacts that the proposed development may have on features of archaeological, architectural and/or cultural heritage within the study area during both the construction and operational phases of the works. Following consultations with the National Monuments Service, DHLGH, it was recommended that a Post Consent Advance Stage Works be implemented.
MM68	Ground Disturbance / Encountering Archaeological Features, Finds Or Deposits	EIAR Chapter 14	The following mitigation measures will be implemented during the construction phase: • All ground disturbance associated with the construction of the proposed development will be monitored by a suitably qualified archaeologist working under licence as issued by the minister (DoHLGH) under section 26 of the National Monuments Acts (1994-2014). • In the event of archaeological features, finds and/or deposits been encountered during the course of the monitoring and/or testing, the relevant authorities should be notified immediately. Preservation by record (through archaeological excavation) will only occur if it is established that preservation in situ cannot be achieved and such excavations are agreed with National Monuments Service.
Waste Management			
MM69		EIAR Chapter 3	The Contractor will prepare a detailed Construction Resource and Waste Management Plan (RWMP) in accordance with the relevant following guidance 'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects' (EPA, 2021). The Construction RWMP will provide a mechanism for monitoring and auditing waste management performance and compliance for the duration of the proposed development. The document will also provide a detailed overview of key waste management considerations for the proposed development and will be fully implemented onsite for the duration of the construction phase of the proposed development. The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

			The Act requires that any waste related activity must have all necessary licenses and authorisations. It will be the duty of the Resource and Waste Manager on the site of the development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits/licenses and authorisations. The RWMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The RWMP can then be adapted with changes that are seen through record keeping
MM70	Waste Management	EIAR Chapter 9 / Chapter 16 16 / CEMP Section 3.1.21	The following mitigation measures will be implemented during the construction phase to manage effects on waste; • A specific PSMP (Appendix 9.2 of the EIAR) is in place for the site for the management of peat and spoil generated during excavations; • Excavated bedrock that will not be required will be stockpiled within the red line boundary and removed for offsite disposal to a suitably licenced / permitted waste facility and will be appropriately sampled and tested prior to offsite removal. This material will be classified in accordance with the EPA Guidance Document 'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (2015). It will be the Contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation; • Prior to construction commencement, the appointed Contractor will prepare a detailed C&D Resource and Waste Management Plan (RWMP) in accordance with the relevant following guidance 'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects' (EPA, 2021); • It will be the Contractors responsibility to ensure that a project specific Detailed Resource and Waste Management Plan (developed in accordance with relevant 2021 EPA Guidance) is fully implemented onsite for the duration of the project; • The Construction RWMP will provide a mechanism for monitoring and auditing waste management performance and compliance for the duration of the proposed development. The document will also provide a detailed overview of key waste management considerations for the proposed development and will be fully implemented onsite for the duration of the construction phase of the proposed development; • Segregation of waste will be carried out on site to maximise recycling potential and minimise potential effects on waste services. Waste streams (including material-related streams such as metals, paper and cardboard, plastics, wood, rubber, textiles, bio-waste and product-related streams such as packaging, electronic waste, batteries, accumulators and construction waste) will be managed, collected, segregated and stored in separate areas at the temporary compound and removed off site by a licensed waste management contractor at regular intervals during the works in line with condition 7 of the IPC Licence (P0504-01). Any waste generated from construction on site will be removed to the nearest appropriate licenced waste processing facility; • All waste management procedures implemented onsite during the construction phase will be in accordance with the CEMP submitted as part of this planning application, The RWMP to be prepared by the Contractor, will take account of

			the relevant requirements of the CEMP, the EIAR, NIS and any relevant planning conditions etc., and will be prepared by the Contractor in advance of the commencement of any construction works; • The contractor will supply all waste containers / skips, as required, for each of the identified waste streams. Waste will be segregated and removed to licenced facilities by licenced haulers and all containers will be emptied before they are full to avoid overflowing. The contractor is to provide a waste forecast for waste types and quantities expected to be generated. • Good working practices and take back schemes will be used to reduce the amount of waste generated, as an initial step, with waste management routes for each waste stream to be recorded in the site Waste Management Plan. In order to reduce waste generation as far as possible, off cuts, surplus materials and packaging is to be returned to suppliers for closed loop recycling, single used plastics are to be avoided where possible and all materials are to be stored correctly to avoid waste generation from damage and contamination of incorrectly stored materials. • All waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. All waste will be removed from site by one or more waste haulage contractor(s) who hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All waste materials generated during the construction phase will be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility. All waste removed offsite will be appropriately characterised (under the correct LoW / EWC code), transported and disposed of in accordance with relevant waste management legislation (including but not limited to the Waste Management Act of 1996 and 2001, as amended and all subsequent waste management regulations). All waste management and disposal / recovery records will be maintained onsite throughout the proposed development and will be made available for viewing by the Client, Employer's Representative and statutory consultees (LCC, RCC, EPA) as required. • Scheduling and planning the delivery of materials will be carried out on an 'as needed' basis to limit any surplus materials; • Materials will be ordered in sufficient dimensions so as to optimise the use of these materials onsite, and will be carefully handled and stored so as to limit the potential for any damage; • Where feasible, sub-contractors will be responsible for the provision of any materials they require onsite in order to help reduce any surplus waste; • Secure lockable and controlled storage to be provided for the storage of chemicals and other hazardous materials; and • The construction compounds will include adequate temporary welfare facilities; • A wastewater holding tank (twin-hulled) will be used for the temporary welfare facilities and managed by a licensed contractor. Any introduced seminatural (road building materials) or artificial (PVC piping, cement materials, electrical wiring) materials will be taken off site at the end of the construction phase. Any accidental spillage of solid state introduced materials will be removed from the site by the appropriate means. In the unlikely event that soil material is unsuitable for use/ excess soil is generated, all waste soils (including made ground) will be appropriately sampled and tested prior to offsite removal and classified in accordance with the EPA Guidance Document 'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (2015). It will be the Contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.
Material Assets – Utilities			

MM71	Utilities	EIAR Chapter 16	The following mitigation measures will be implemented during the construction phase to manage effects on services (electrical/ESB, water/Uisce Éireann, gas/Gas Networks Ireland (GNI)); • Prior to construction, Ground Penetrating Radar (GPR) surveys will be undertaken to accurately locate existing utilities along the boundaries, within the proposed wind farm site and within the public road network. Bord na Móna Powergen Ltd., will liaise with the service provider where such services are identified. Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage; • All proposed works being carried out on overhead or underground electricity cables will be done in consultation with ESB/EirGrid, as required, and will comply with their guidance and best practice; • Goal posts will be established under the overhead line for the entirety of the construction phase; • All staff will be trained in operating voltages of overhead electricity lines running within the proposed development. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the sites are made aware of the location of lines before they come on to the proposed development; • Information on safe clearances will be provided to all staff and visitors; • Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on site; • All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan; • All newly installed utilities/ services will be assessed, tested and certified as required prior to being fully commissioned; • A copy of all available existing, and as built utility plans will be maintained on site during the construction of the proposed wind farm. Any underground power lines and foul and water mains, located onsite will be clearly marked and all site personnel will be made aware of the known location of any onsite underground or over ground services during the construction phase.
Material Assets – Aviation and Telecommunications			
MM72	Aviation	EIAR Chapter 16	The findings from field and desktop surveys indicate that no significant mitigation measures would be required. The following construction phase mitigation measures will be implemented: Should the proposed development proceed, it would be a requirement to submit the as-constructed turbine locations (in WGS84 format) and height above ground level and sea level of each turbine (to blade tip) and met masts to the IAA so that they are added to the IAA Aeronautical Electronic Obstacle Data Set as soon as erected. The Applicant is also required to notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection. In addition, in the event of a grant of planning consent the IAA-ANSP (Irish Aviation Authority – Air Navigation Service Provider) would require to be made aware of the detail on the lighting of the proposed wind turbines in the interest of aviation safe-guarding as the proposed development may be considered as an en-route obstacle. The applicant would be required to implement suitable aeronautical obstacle warning lights in agreement with the IAA-ANSP.

			For civil aviation, it is recommended that lighting requirements should be in accordance with Chapter Q – Visual Aids for denoting Obstacles; CS ADR.DSN.Q.851 and GM.ADR.DSN.Q.851 (Pages 729/730) of the EASA Easy Access Rules for Aerodromes (Reg (EU) No. 139/2014). In addition to the civil aviation light scheme requirements, the Department of Defence (DoD) have made specific observations regarding an Aeronautical Obstacle Warning Light Scheme for the Irish Air Corps (IAC). The appropriate IAC Aeronautical Obstacle Warning Light Scheme is subject to a detailed technical assessment and further consultations with the DoD/IAC should the proposed development be consented.
MM73	Telecommunications	EIAR Chapter 16	No telecommunication effects are anticipated for the construction phase of the proposed development. Therefore, no specific mitigation measures related to telecommunications are proposed apart from the mitigation by avoidance which was carried out. In order to ensure there are no issues with construction, all telecom operators will be contacted in advance of construction to check that they have no new links in operation at that time. Prior to construction, Ground Penetrating Radar (GPR) surveys will be undertaken to accurately locate existing underground infrastructure. In the unlikely event that a communication underground cable or link is damaged or interfered with during construction, the operator will be contacted to agree to arrange a repair which will be carried out as soon as possible at the developers' cost. In addition, the developer will sign an agreement with 2RN prior to construction to commit to restoring service to any end users that may have their service disrupted as a result of the proposed development. This is standard industry practice and will eliminate any potential effects in this regard.

7.0 MONITORING PROPOSALS

All Monitoring proposals relating to the pre-construction phases of the proposed development were set out in various sections of the EIAR, and NIS prepared of the planning Application.

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

Table 6-1: Table of Monitoring Proposals

Ref No.	Related to	Location	Monitoring Measure
			Pre-construction Phase
MP1	Biodiversity: Badger Biodiversity: Badger	EIAR Chapter 7	**Pre-construction survey -** • No more than 10-12 months ahead of any construction works, a survey of Badger setts will be undertaken within 50 m of either side of the construction works area boundary to determine the current status of known badger setts (i.e. active or inactive), and/or to determine the establishment of any new setts; • Badger surveys are most effective when undertaken between November and April, although they can be carried out at any time of the year. However, until mid-January, Badger is less active (i.e. during colder weather) and setts can appear less well-used (NRA, 2009); The survey results will be kept on file, in the form of a summary report.
MP2	Invasive Alien Plant Species (IAPS): Pre-construction survey	EIAR Chapter 7	**All construction works in the proximity of the Rhododendron stand:** **Pre-construction survey -** A pre-construction dedicated IAPS survey at the proposed wind farm site will be undertaken by the appointed ECoW, particularly focused to the areas near the Mount Dillon Works, where the Rhododendron stand has been identified. All IAPS individual plants/stands present at the site will be identified, counted and georeferenced.
MP3	Ornithology: Pre-construction phase monitoring	EIAR Chapter 8	**Pre-Construction Phase Monitoring: Protecting Nesting Birds** Before any work begins, construction activities are scheduled to avoid the bird nesting season (from March 1st to August 31st) the most sensitive time of year for many species. However, if construction does overlap with this period in future seasons, a dedicated pre-construction survey will be triggered. This involves four site visits between April and July, where a qualified ornithologist will conduct breeding bird transects both on-site and within a 500-metre radius of the site boundary. If breeding activity is detected, nest locations will be mapped, and a 500-metre no-work buffer will be enforced. These areas will be physically marked and communicated to all staff through toolbox talks and on-site mapping to ensure strict compliance. This action ensures that no construction will proceed in areas where birds are nesting, reducing the risk of disturbance during critical breeding periods.
			Construction Phase
MP4	Biodiversity: Badger	EIAR Chapter 7	In case a Badger sett is found during the pre-construction survey (or at any time during the Construction Phase), confirmation of its activity will be carried out. Trial camera(s) pointing at the sett entrance(s) will be placed for a minimum of 7 days. For the setts recorded during the field surveys, or if a sett is recorded during the pre-construction survey, the methodology prescribed by the NRA (2009b) will be followed, in which: • If within the period between July to November (inclusive), and the sett recorded during the pre-construction survey is deemed inactive, the sett will then be 'soft-blocked', i.e. the sett entrance will be lightly blocked with vegetation and a light

			application of soil. If after a minimum of five days the vegetation and soil have not been moved, the sett will be destroyed using a mechanical digger; • If still in the period between July to November, but the sett recorded during the pre-construction survey is deemed active, the sett will need to be evacuated. One-way gates (system that allows individuals to exit, but not to get in) will be installed at any active entrances for three days, while inactive entrances will be soft (initially) and they hard-blocked (as above); • If a sett is recorded during the period of January to May, or deemed active (upon confirmation with the trial cameras) during this period, any construction works within 150m of the sett will be halted until the end of this period. In the following June, trial camera(s) will be installed to confirm the sett's activity, and one of the procedures detailed above will be followed. • All monitoring, exclusion and/or evacuation actions will be undertaken by the ECoW, who will report any actions and findings to the contractor, and file them in the form of a report.
MP5	Bird Monitoring Programme	EIAR Chapter 8 / NIS	In line with best practice, a Bird Monitoring Programme (detailed in Appendix N of the NIS) will be implemented. The Bird Monitoring Programme will be undertaken at the proposed wind farm site and results of the monitoring will be submitted to the competent authority and NPWS. Monitoring objectives will include the following: • Prevent disturbance to breeding birds during the construction phase; • To record usage of the site by birds and interaction with operating turbines during the post-construction phase of the development; • To monitor short-term and long-term effects on bird populations with a particular emphasis on wintering and breeding birds deemed to be of high conservation concern (Annex I; EU Birds Directive and BoCCI red list species); • To undertake collision monitoring and corpse searches for potential bird fatalities as a result of collision with turbine blades, and document any bird fatalities. • Report on findings of post construction monitoring at the end of each monitoring year (Year 1, 2, 3, 5, 10 and 15 of the lifetime of the proposed development), to inform mitigation and adaptive management over time.
MP6	Ornithology: Post-construction monitoring	EIAR Chapter 8	**Post-Construction Monitoring: Long-Term Environmental Monitoring** Once the wind farm becomes operational, a robust, long-term monitoring regime begins, continuing across the first 15 years of the wind farm's life (in years 1, 2, 3, 5, 10, and 15). A variety of complementary surveys will be carried out to monitor bird behaviour, assess potential turbine interactions, and evaluate any population changes or displacement effects. **1. Vantage Point (Flight Activity) Surveys** These surveys are conducted monthly in designated operational years. Observers stationed at key vantage points record bird flight paths, height, and behaviour near turbines. This helps determine if birds are avoiding or flying dangerously close to turbine blades — vital for understanding collision risk.

			2. Breeding Bird Surveys A suite of breeding bird surveys — including raptors, woodcock, waders, and the breeding bird census surveys — is carried out to track any shifts in nesting behaviour or territory usage caused by the wind farm and supporting infrastructure. These surveys help detect subtle displacement effects that may not be immediately obvious. **3. Winter Bird Surveys** To capture seasonal variation, winter surveys including I-WeBS counts, winter transects, and Hen Harrier roost monitoring (despite no records of roosting Hen Harrier during the field study – see Section 8.8.2.21 of Chapter 8 of the EIAR) are conducted during the same operational years. These are especially important for species like Whooper Swan and Hen Harrier, which are of European conservation concern and use the site outside the breeding season. **4. Fatality Monitoring** A detailed collision monitoring programme is also in place. Trained dogs are used to search for bird carcasses around turbines, increasing the likelihood of detection. Carcass removal trials are conducted to understand scavenger interference, and all findings are calibrated to estimate actual fatality rates. This ensures any bird deaths linked to turbine operation are documented and used to guide mitigation if necessary.
MP7	Ornithology: Reporting and Adaptive Management	EIAR Chapter 8	At the end of each monitoring year, a comprehensive report will be submitted to the NPWS and the planning authority, no later than March 31st. These reports include all survey data, analysis of bird-turbine interactions, flight maps created with GIS software, and recommendations for mitigation where needed. This transparent reporting structure supports accountability and allows for adaptive management over time, should changes be required.
MP8	Air Quality: Dust	EIAR Chapter 11	The German TA-Luft Air Quality standard sets a maximum permissible emission level for dust deposition of 350 mg/m2/day, averaged over a one-year period, at any receptors outside a project's boundary based on the Bergerhoff Method11 of measuring dust deposition with dust nuisance. Based on this, the 2004 Planning Guidelines (Quarries and Ancillary Activities - Guidelines for Planning Authorities) from the Department of the Environment, Heritage and Local Government (DEHLG 2004) recommend applying the Bergerhoff Method of measuring dust deposition and the limit of 350 mg/m2/day at site boundaries near quarry developments. The Bergerhoff Method uses dust deposition gauges to measure the total PM / dust that is deposited into a collection container. The total amount of dust deposited in the container during the monitoring period is determined by laboratory analysis. The average monthly deposition is expressed as the weight of dust that has been collected per unit area per day. The guidance value 350 mg/m2/day can be implemented with regard to dust impacts from the construction of the project. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of dust management measures.

MP9	Surface Water Drainage	EIAR Chapter 10	The surface water drainage system will require regular inspection during construction works and during operations to ensure that it is working optimally. The surface water management plan (Appendix 10-3 of the EIAR) details the monitoring procedures to be followed during the construction phase. Where issues arise, the works should be stopped immediately and the source of potential impacts on the surface water quality investigated. Records of all maintenance and monitoring activities associated with the construction site will be retained by the Contractor on-site.
MP10	Surface Water Quality Monitoring	EIAR Chapter 10	A comprehensive monitoring and supervisory regime including visual monitoring of all excavations and any exposed groundwater as required will be put in place by the Contractor. In the event that dewatering works are required during the construction phase, a temporary works design including key details such as estimated volumes of water, onsite water treatment required, disposal arrangements and permit / licence requirements as well as water quality monitoring requirements will be prepared by the Contractor and agreed with in advance of commencement of dewatering works. Surface water features in the immediate vicinity of the proposed wind farm boundary are monitored pre-construction and during construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed development. Inspections of silt traps are critical after prolonged or intense rainfall while maintenance will ensure maximum effectiveness of the proposed measures. Stockpiles will be evaluated and monitored and kept stable for safety and to minimise erosion. Inspections and maintenance are critical after prolonged or intense rainfall while maintenance will ensure maximum effectiveness of the proposed measures. A programme of inspection and maintenance will be designed and dedicated construction personnel assigned to manage this programme. A checklist of the inspection and maintenance control measures will be developed, and records kept of inspections, and maintenance. Regular checks and maintenance of the proposed surface water drainage system will be implemented. Monitoring requirements that are stipulated under the IPC licence (P0504-01) will continue to be fulfilled for the lifetime of the licence. During the construction phase, water sampling and laboratory analysis of a range of parameters will be undertaken at adjacent watercourses on a monthly basis, specifically following heavy rainfall events (i.e. weekly, monthly and event based). The monitoring will be completed at the locations and for the parameters already specified in the IPC Licence (P0504-01). Monitoring will be undertaken at 10 no. locations around the proposed wind farm site as detailed in the SWMP Figure 3-1 of Appendix 10-3 of the EIAR. Monitoring proposals are included in the SWMP (Appendix 10-3 of the EIAR). The proposed monitoring for the construction phase will be completed at the following streams: • SM1 – Shannon (Upper)_100; • SM2 –Ballynakill_010; • SM3 – Lough Bannow Stream_010; • SM4 – Ballynakill_010; • SM5 – Lough Bannow Stream_010; • SM6 – Lough Bannow Stream_010; • SM7 – Ballynakill_010; • SM8 - Ballynakill_010; • SM9 - Ledwithstown_010; • SM10 - Ballynakill_010.

			Monitoring records should include the date and time of the monitoring period and relate to the relevant consent conditions, where applicable. A written log of the environmental performance of the works will be maintained. A monthly monitoring report on the findings of the monitoring exercises will be prepared within two weeks of receipt of analytical results and submitted to the local authority. The monthly monitoring reports will cover the construction and post construction works.
MP11	Groundwater Monitoring	EIAR Chapter 10	The dewatering operations will be inspected once each day when dewatering water is ongoing to ensure that dewatering treatment controls are working correctly; to evaluate whether there are observable indicators of sediment discharges. Regular monitoring of groundwater (levels and quality) will take place using existing monitoring boreholes during the construction phase. The existing groundwater well on site will be monitored on site during construction and for a period following cessation of construction activities (to be agreed with the relevant authorities).
MP12	Archaeological Monitoring	EIAR Chapter 14	Works involving clearance of drains to allow for a full inspection of potential archaeology; archaeological monitoring of tree felling; archaeological resolution of archaeological feature identified in Lough Bannow Bog; and archaeological pre-development testing in areas where large excavations will be undertaken (turbine hardstands, construction compounds, substation, battery storage, entrances to the bogs and amenity carparks) with peat depths greater than 0.5 m (see Chapter 9 (Land, Soils and Geology) of the EIAR for details of peat depths) will require monitoring by a suitably qualified archaeologist working under licence as issued by the minister (DHLGH) under section 26 of the National Monuments Acts (1994-2014). In the event of archaeological features, finds and/or deposits been encountered during the course of the monitoring and/or testing, the relevant authorities should be notified immediately. Preservation by record (through archaeological excavation) will only occur if it is established that preservation in situ cannot be achieved, and such excavations are agreed with National Monuments Service.
MP13	Excavation Works	EIAR Chapter 9 and Chapter 16	Excavation works should be monitored and in the highly unlikely event that contaminants are encountered these will need to be segregated from all uncontaminated soils, temporarily stored (any stockpiles should be lined and covered by heavy duty 1000-gauge plastic), sampled and analysed for relevant parameters (Waste Acceptance Criteria suite e.g. Rilta Disposal Suite). Any contaminated soils must be characterised as per the requirements of the relevant Waste Acceptance Criteria (WAC) under the relevant European Communities Council Decision (EC) (92003/33/EC) and classified in accordance with the requirements of the EPA as set out in the following documents 'Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous' (EPA, 2018). Any contaminated soils must be transported by appropriately permitted hauliers and disposed of to an appropriate EPA licensed Waste Facility in accordance with all relevant waste management legislation.
MP14	Peat & Spoil Management	EIAR Chapter 9 / Peat & Spoil Management Plan (PSMP) EIAR Appendix 9-2	As stipulated in the PSMP (Appendix 9.2 of the EIAR), a monitoring regime for potential peat instability is recommended. Installing movement monitoring posts is recommended for areas where works occur on or adjacent to identified peat depths greater than 2 m and existing slope angles exceeding 5°. At those locations, monitoring posts are recommended to be installed upslope and downslope of the works areas and shall be as outlined: • Posts shall be 1m to 1.5m in length, installed at 5m intervals with no less than seven posts in each line of sight (~30m); • A string line shall in attached to the first and last post with all intermediate posts in contact with one side of the string line; • A numbering system shall be designs for the monitoring posts and a record shall be kept of this numbering system. Movement monitoring posts will be observed at least once daily during construction, with more frequent inspections where adjacent works are ongoing. Should movements be recorded, the frequency of these inspections is to be increased. A record of all

			monitor post inspections will be kept with reference to date, time and relative movement between posts, if any. Any movement identified in the posts will be recorded with reference to the post numbering system. The monitoring regime will be further developed and assessed during the detailed design phase. The Contractor will also develop a routine inspection of all areas surrounding work in peat, not just exclusively on the monitoring posts. These inspections will include an assessment of ground stability and drainage conditions. These inspections will identify any cracking or deformation on the peat surface, an excessive settlement on structures, drain blockages or springs, etc. Monitoring requirements that are stipulated under the IPC licence (P0504-01) for the peatlands will continue to be fulfilled for the lifetime of the licence. The monitoring will be completed at the locations and for the parameters already specified in the IPC Licence (P0504-01). The IPC Licence has been included as Appendix 7.1 of the EIAR.
MP15	Noise	EIAR Chapter 12	Commissioning noise surveys will be undertaken to ensure compliance with any noise conditions applied to the proposed development. It is common practice to commence surveys within six months of a proposed development being commissioned.

www.tobin.ie

TOBIN Consulting Engineers

@tobinengineers

Galway
Fairgreen House,
Fairgreen Road,
Galway,
H91 AXK8,
Ireland.
Tel: +353 (0)91 565 211

Dublin
Block 10-4,
Blanchardstown Corporate Park,
Dublin 15,
D15 X98N,
Ireland.
Tel: +353 (0)1 803 0406

Castlebar
Market Square,
Castlebar,
Mayo,
F23 Y427,
Ireland.
Tel: +353 (0)94 902 1401

Limerick
Unit 4, Crescent Court,
St Nessan's Road, Dooradoyle,
Limerick
V94V298
Ireland
Tel: +353 (0)61 976 262

Sligo
The Gateway Building, Floor 3
Northwest Business Park
Collooney, Sligo
F91W40H
Ireland
Tel: +353 (0)71 9318 844