Oweninny Wind Farm Phase 3

Environmental Impact Assessment Report

Appendix 3.1 Construction Environmental Management Plan

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BORD NA MÓNA POWERGEN LTD.

OWENINNY WIND FARM PHASE 3

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

MARCH 2023

OWENINNY WIND FARM PHASE 3

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

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Abbreviations

ABP – An Bord Pleanála

BCA – Building Control Authority

BCMS – Building Control Management System

C&D – Construction & Demolition

CEMP – Construction Environmental Management Plan

CER – Commission for Energy Regulation

DHPLG – Department of Housing, Planning and Local Government

DMP – Dust Management Plan

ECoW – Ecological Clerk of Works

EIA – Environmental Impact Assessment

EIAR – Environmental Impact Assessment Report

EMP – Environmental Management Plan

EPA – Environmental Protection Agency

ERP – Emergency Response Plan

ESBN – ESB Networks

GHG – Greenhouse Gas

GSI – Geological Society of Ireland

GWB – Groundwater Body

Ha - Hectares

HSA – Health and Safety Authority

HV – High Voltage

IAA – Irish Aviation Authority

IAQM – Institute of Air Quality Management

IFI – Inland Fisheries Ireland

IPP – Independent Power Producer

MCC – Mayo County Council

LV – Low Voltage

MV – Medium Voltage

MW – Megawatts

NBDC – National Biodiversity Data Centre

NHA – National Heritage Areas

pNHA – proposed National Heritage Areas

NIS – Natura Impact Statement

NPWS – National Parks and Wildlife Service

NRA – National Roads Authority

OPW – Office of Public Works

PMP – Peat Management Plan

PSCS – Project Supervisor Construction Stage

PSDP – Project Supervisor Design Process

SAC – Special Area of Conservation

SEPA – Scottish Environmental Protection Agency

SHEQ – Safety, Health, Environment and Quality Officer

SPA – Special Protection Area

SuDS – Sustainable Drainage System

TDR – Turbine Delivery Route

TIA – Traffic Impact Assessment

TII – Transport Infrastructure Ireland

TMP – Traffic Management Plan

ZoI – Zone of Influence

1.0 INTRODUCTION

Bord na Móna Powergen Ltd. is a subsidiary of Bord na Móna Plc, a publicly owned company. Bord na Móna was originally established in 1946 to develop and manage some of Ireland's extensive peat resources on an industrial scale, in accordance with government policy at the time. Bord na Móna's lands extend to approximately 80,000 hectares (ha) in total and are located mainly in the Irish midlands. Oweninny Bog is located in north County Mayo. The associated lands comprise primarily of cutaway bog, partly developed bog, yards, railway lines and areas of upland and undeveloped bog. The Oweninny Bog forms part of the 'Oweninny Group' which includes Bangor, Ballycroy and Loughnahelly Bogs (often referred to as the Bangor Bogs). These bogs are located further west of Oweninny Bog heading towards the Mayo coastline. The 'Oweninny Group' encompasses a total of 7,230 Ha of which 5,190 Ha comprise Oweninny Bog, Appendix 1.2 Drawing No. 10889-2000 of the EIAR.

Bord na Móna Powergen Ltd. currently manage and operate a portfolio of thermal and renewable assets that supply energy to the National Grid. These assets include; Edenderry Power Plant, a peat/biomass generating unit, Cushaling peaking plant, the Drehid landfill gas facility, Bellacorick Wind Farm, Bruckana Wind Farm situated on the borders of counties Tipperary, Kilkenny and Laois, Mountlucas wind farm in Co. Offaly and Oweninny Wind Farm Phase 1 (a joint venture with ESB) commissioned in 2019. Cloncreen Wind Farm in County Offaly, and Oweninny Phase 2 in County Mayo have recently completed construction. In addition, Timahoe North solar farm located in Co. Kildare commenced construction in 2022. Derrinlough Wind Farm in County Offaly was granted planning permission in 2021 and construction works commenced in 2022.

The Oweninny Bog illustrated in Drawing No. 10889-2000 is situated approximately 12km west of Crossmolina, 15km east of Bangor Erris, and just north of the N59 National Road. The closest settlement to the site is Bellacorick village which is located approximately 2km southwest of the proposed development extent. The land surrounding the Oweninny Bog is relatively sparsely populated. There are several sensitive receptors located within 2km of the redline boundary including residential and commercial properties, Special Protected Areas (SPA), Special Areas of Conservation (SAC), Natural Heritage Areas (NHA), proposed National Heritage Areas (pNHA) and recorded architectural heritage sites. The closest SACs are Lough Dahybaun SAC, which is located on the southern boundary of the site, and Bellacorick Iron Flush SAC, which is located within the bog boundary to the north of the site and outside the Oweninny Phase 3 wind farm boundary.

Bord na Móna Powergen Ltd. (hereafter referred to as the Developer) intend to apply for planning permission to develop Oweninny Wind Farm Phase 3 and all associated infrastructure at this approximately 2282 Ha site in North County Mayo. The proposed grid connection infrastructure is located within the townlands of Bellacorick and Moneynierna, in County Mayo. To the east of the site a local road (L5292) runs northwards from the N59 to the townlands of Shanvolahan and Formoyle. Other townlands within the are Laghtanvack, Croaghaun (also known as Croaghaun West), Corvoderry, Dooleeg More and Shanvodinnaun, Co. Mayo.

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 (EIAR) and Natura Impact statement (NIS) have been prepared to accompany the planning application and incorporate all elements of the proposed project works including the main wind farm site, the electrical grid connection, the road/junction

accommodation works to facilitate the abnormal load deliveries. Collectively this is referred to as the Oweninny Wind Farm Phase 3.

This Construction Environmental Management Plan (CEMP) has been prepared to outline 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 of the construction project, and the measures to ensure compliance with legislation and the requirements of statutory bodies, all as detailed in the EIAR and NIS.

This CEMP will be a live document and will be reviewed and updated, as necessary. Upon appointment, the Main Contractor for construction of the proposed development shall update this document to produce a Final CEMP which will account for any additional requirements set out in Planning Conditions.

The following relevant guidance has been referenced in the preparation of this CEMP:

- Environmental Protection Agency (EPA), *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (2022)
- Department of Housing, Planning and Local Government (DHPLG), *Draft Revised Wind Energy Development Guidelines* (2019)
- Department of Housing, Planning and Local Government (DHPLG), *Wind Energy Development Guidelines* (2006)

1.1 PROPOSED DEVELOPMENT

Permission is sought for wind turbines within a defined range with specific characteristics. The turbines will have a tip height of 200m above the top of foundation level and will be accessible from internal access routes within the Bord na Móna Site.

The rotor diameter will be 158m. These rotor diameters correspond to a maximum blade length of 77.5m. The hub height will be 121m.

The proposed development will comprise the following:

- 18 no. wind turbines (including tower sections, nacelle, hub, and rotor blades) and all associated foundations and hard-standing areas in respect of each turbine;
- Decommissioning and removal of 21 no. existing Bellacorick Wind Farm wind turbines (including tower sections, nacelle, hub, and rotor blades);
- New internal site access roads (permanent and temporary), passing bays, car parking and associated drainage.
- An amenity route through the site from the N59 at the main site entrance to the existing Visitors Centre, and access from a local road off the N59 near Dooleeg.
- 2 no. borrow pits.
- 5 no. peat deposition areas.
- 1 No. permanent Meteorological Mast 120m high, and the decommissioning and removal of an existing 100m Meteorological Mast on site.
- 4 no. temporary construction compounds, including material storage, site welfare facilities, and site offices.
- 1 no. 110kV electrical substation compound. The electrical substation will have 2 No. control buildings, a 36m high telecommunications tower, associated electrical plant and equipment and a wastewater holding tank.
- All associated underground electrical and communications cabling connecting the wind turbines to the proposed substation;

- All works associated with the connection of the proposed wind farm to the national electricity grid, including a 110kV underground electrical cable from the proposed on-site electrical sub-station to the existing sub-station at Bellacorick;
- All related site works and ancillary development including (but not limited to):
    - Earthworks;
    - Peat management works;
    - Site security;
    - Groundwater and surface water management;
    - Overburden (soils/peat) storage and management; and
    - Site reinstatement, landscaping and erosion control.
- A 10-year planning permission and 30-year operational life from the date of commissioning of the entire wind farm.

The proposed development layout is shown in Appendix 1-2 Drawing No. 10889-2000 which shows the proposed development boundary including the proposed turbine locations and grid connection route. All elements of the proposed project as listed above, including grid connection and any works required on public roads to accommodate turbine delivery, have been considered and are addressed in detail as part of the EIAR.

1.2 SCOPE OF THIS CEMP

This CEMP addresses all relevant environmental aspects of the management of site preparation and construction work within the proposed development works area as set out in Section 1.1. The scope of this CEMP includes:

- All construction elements of the proposed development.
- The decommissioning and appropriate disposal of the existing 21 Bellacorick Wind Farm wind turbines.
- 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.

This CEMP contains:

- 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.

This CEMP should be read in conjunction with the EIAR, NIS and supporting documentation. In the unlikely event of any contradiction between this CEMP and the EIAR/NIS, the EIAR/NIS shall take precedence.

1.3 IMPLEMENTATION OF THE CEMP

Key to the implementation of this CEMP is the delegation of responsibility for the CEMP to the Construction Environmental Manager/Safety, Health, Environmental and Quality (SHEQ)

Officer, or other suitably qualified appointed person on behalf of the Contractor, who will regularly liaise with and update the Developer on all environmental issues relating to the project during the construction phase. As part of the appointment of a Contractor and agreement of Contracts, the Developer will determine the lines of communication for environmental compliance with the local authorities and relevant stakeholders.

In terms of overall environmental responsibility, everyone on-site is responsible for ensuring that their actions constitute good environmental practice and will be provided with site specific information to ensure compliance as part of the site induction. All site personnel tasked with adhering to best practice and encouraged to provide feedback and suggestions for improvements. All site personnel are also required to ensure compliance with the requirements of this CEMP and subsequent revisions thereof.

1.4 AIMS AND OBJECTIVES

The key project aims are:

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

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

- Appointment and delegation of responsibility to an individual for monitoring environmental compliance and adherence to this CEMP.
- Updating the CEMP on a continuous basis in accordance with regular environmental auditing and site inspections.
- Providing adequate environmental training and awareness to all project personnel.
- Establishing documented schedules and records for monitoring and inspections.
- Establishing reporting procedures for any incidents on site with potential to impact on the environment.
- Providing opportunities for site staff, operatives and community feedback and submission of complaints; and
- Adopting a sustainable and socially responsible approach to construction.

1.5 REVISIONS OF THE CEMP

All the elements of this CEMP will be included in the final CEMP, which will be produced prior to construction by the contractor. In addition, the final CEMP will implement conditions attached to any planning permission granted. The CEMP will be subject to ongoing review (throughout the construction phase of the proposed development), through regular environmental auditing and site inspections.

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

- Details of emergency plan including personnel and contact numbers.
- Details of fuel storage areas (including location and bunding).

- Temporary Construction lighting details.
- Site and traffic signage; and
- Method statements.

1.6 ENVIRONMENTAL TRAINING AND AWARENESS

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

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

- Protection of sensitive ecological habitats and key ecological receptors.
- Works close to water bodies.
- Water pollution and silt control.
- Water pollution in relation to cement and concrete handling.
- Spill prevention and control.
- Dust management.
- Sensitive archaeological sites; and
- Waste management.

2.0 OVERVIEW OF THE EXISTING SITE

2.1 SITE LOCATION

The proposed wind farm site is in north County Mayo and its lands comprise primarily of cutaway bog, partly developed bog, yards, railway lines and areas of upland and undeveloped bog. The proposed wind farm site is approximately 8.5km long in the north/south direction and is approximately 5.9km wide in the east/west direction at its widest point. As mentioned elsewhere, Bellacorick village is the closest settlement to the site, situated approximately 2km from the southwestern extents of the proposed development. To the east of the site a local road (L5292) runs northwards from the N59 to the townlands of Shanvolahan and Formoyle. Other townlands within the proposed wind farm site are Laghtanvack, Croaghaun (also known as Croaghaun West), Moneynieran, Corvoderry, Dooleeg More and Shanvodinnaun, Co. Mayo. The River Owenmore is located approximately 350m to the west of the proposed wind farm site at its nearest point.

The proposed grid connection will be connected to the national grid at the existing 110kV Bellacorick substation via underground medium voltage (MV) cables and will export power via the existing 110 kV overhead line infrastructure from Bellacorick substation.

It is proposed to construct one 110 kV substation compound within the site to house the Transmission System Operator (TSO) substation and the Independent Power Producer (IPP) substation, at the location shown on Planning Drawing 10889-2003. The layout of the proposed substation is shown on Planning Drawing 10889-2015. The construction and electrical components of the substations will be to EirGrid specifications, see Drawing No. 10889-2015.The substation footprint will include two control buildings and electrical apparatus necessary to facilitate the generated power from the wind turbines to export onto the transmission system.

Two substation control buildings will be located within the substation compound. Control Building 1 (Asset Owner Control Building) will measure approximately 25 metres by 18 metres and approximately 9.7 metres in height. Control Building 2 (IPP Control Building) will measure approximately 19 metres by 12 metres and approximately 7 metres in height. Layout drawings of the control buildings are shown on Planning Drawings 10889-2017 and 10889-2018.

2.2 EXISTING LAND, SOILS AND GEOLOGICAL ENVIRONMENT

The project site is relatively flat lying, with cutover blanket peat overlying glacial till that in turn overly sedimentary bedrock of mixed lithology. Information on the bedrock geology was obtained from the Geology of North Mayo, Sheet No. 6 (1:100,000) and accompanying booklet published by the Geological Survey of Ireland (GSI).

The proposed site is underlain by the Downpatrick Formation which is comprised of Carboniferous cross-bedded sandstone and siltstone. The underlying bedrock geology is composed of a sequence of interbedded rock types comprising near shore marine mudstones and siltstones; alluvial and deltaic sandstones and siltstones; and fully marine bioclastic limestones interbedded with calcareous shales.

No significant groundwater resources are present at the site, although localised perched groundwater may be associated with areas of granular overburden. No significant geological resources are known at the site and geological heritage is limited to the banks of the Bellacorick River.

Due to the relatively flat, drained and cutaway nature of the site, Peat stability risk is limited to discrete areas of the site. The outline design of the proposed development has sought to minimise peat stability risks and these risks will be further investigated and considered at the detail design stage. Further details on the Land, Soils and Geological Environment are provided in Chapter 9 of the EIAR.

2.3 EXISTING HYDROLOGICAL AND HYDROGEOLOGICAL ENVIRONMENT

The proposed development site is located in North Mayo, west of Crossmolina and east of Bangor Erris, just north of the N59 road. According to the GSI/EPA Source Protection Zone Map (www.gsi.ie), there are no Source Protection Zones within the study area or in the surrounding region. Crossmolina Eskeragh Group Scheme source protection zone is c. 7 km south-east of the proposed site at Ballinlabaun (IE_WE_34A350930).

Five no. boreholes for water abstraction were identified within 1km of the proposed development. These are associated with the former Bellacorick Power Station, with 3 no. wells drilled in 1989 and 2 no. drilled in 1998. Only 1 no. well appears to have generated a 'Good' yield and was drilled to a depth of 160 m (GSI Well ID 0831SEW005). This well is identified as being for industrial use, with the use for the 4 no. unproductive wells being described as 'Other'.

The Water Framework Directive (www.wfdireland.ie) describes the groundwater quality status of the proposed development in the area. The Muing River and Cloonaghmore River are of 'Good'' status. The Owenmore River has 'High' status and the Shanvolahan River is at 'moderate' status in the 2013-2018 WFD assessment.

The groundwater body (GWB) is the management unit under the WFD. Groundwater bodies are subdivisions of large geographical areas of aquifers so that they can be effectively managed in order to protect the groundwater and linked surface waters. The GWB is defined as a distinct

volume of groundwater, including recharge and discharge areas with little flow across the boundaries. The proposed development is underlain by the Belmullet GWB and the Bellacorick -Killala GWB. The groundwater body descriptions are available from the GSI website and the 'status' is obtained from the WFD website and the EPA website. The GWBs underlying the site are classified as being at good status. The site is underlain by the Belmullet groundwater body. The Belmullet groundwater body and Bellacorick-Killala GWB is comprised of generally low transmissivity and storativity rocks.

Much of the site consists of blanket peat subsoil which contributes to moderate groundwater vulnerability. Some areas within the site e.g., east of Lough Dahybaun are characterised by highly permeable glaciofluvial sand and gravels making up the subsoil which are overlain by poorly drained soil/ peat. These areas where peat overlays highly permeable sand and gravels results in high groundwater vulnerability.

The groundwater vulnerability map for the region is dominated by 'Moderate' vulnerability in the study area, correlating with areas of blanket peat cover. However, areas where alluvial deposits are found along the Bellacorick River and areas where gravels derived from sandstones and limestone are located are described as having 'High' vulnerability. In addition, there are some lesser areas along the site boundaries that are described as having 'Low' groundwater vulnerability.

Three sub catchments are located across the proposed development site. These are the Cloonaghmore_SC_010 sub catchment located to the northeast of the site. This sub catchment is around the Moy and Killala Bay catchment. The west of the site lies within the Owenmore [Mayo]_SC_020 sub catchment which falls under the Blacksod-Broadhaven catchment. The southeast of the site is within the Deel [Crossmolina]_SC_010 sub catchment which is a part of the Moy and Killala Bay hydrometric area.

Local groundwater flows are likely to be varied reflecting the local drainage patterns. Across much of the site, it is assumed that the groundwater flow is towards local drains and streams, reflecting the general flow direction of the various catchments. Limited recharge and discharge is likely to occur due to the extensive peat deposits and deep subsoils.

The above detail is further discussed in Chapter 10 (Hydrogeology) of the EIAR.

2.4 EXISTING ECOLOGICAL ENVIRONMENT

This section presents a high-level summary of the existing ecological environment at the proposed development site. A more detailed description of desktop studies, field studies and species encountered is provided in Chapter 7 (Biodiversity) and Chapter 8 (Ornithology) of the EIAR.

2.4.1 Designated Areas

The Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network. The potential impacts of the proposed development on European sites (sites designated as Special Areas of Conservation [SACs] or Special Protection Areas [SPAs] that form part of the Natura 2000 network) in the Zone of Influence (ZoI) have been evaluated. This appraisal is presented separately in the form of a Natura Impact Statement (NIS) (which accompanies the Planning Application documentation as a standalone document however, for the purposes of this CEMP a brief overview of the Biodiversity and Ornithology chapters and their associated elements are present below:

There are five NHAs and ten pNHAs located within the 15km buffer of the proposed development site or those over 15km away but where a potential pathway for effect was identified, such as surface water connectivity. All NHAs and pNHAs are illustrated in Chapter 7 Biodiversity Table 7-5. Other sites of nature conservation within the ZoI or within 15km of the proposed development site are discussed hereunder:

- There is one National Park (Ballcroy National Park) located within 15km of the proposed development site.
- Three Nature Reserves; Owenduff Catchment Nature Reserve, Owenboy, Nephin Mor Forest Nature Reserve and Knockmoyle, Sheskin Nature Reserve occur within 15km of the proposed development site.
- Three RAMSAR sites; Owenduff Catchment, Owenboy, and Knockmoyle/Sheskin occur within 15km of the proposed development site.

Several watercourses occur within the proposed development site boundary. The Oweninny River (Waterbody Code: IE_WE_33O040050) flows to the west of the proposed development site and the Owenmore River (Waterbody Code: IE_WE_33M010100) flows through the southwest corner of the site. The Cloonaghmore river (Waterbody Code: IE_WE_34C030100) crosses the north of the proposed development site and the Shanvolahan river (Waterbody Code: IE_WE_34S010400) flows through the southeast of the proposed development site. Lough Dahybaun (Waterbody Code: IE_WE_34C030100) is also found within the proposed development site.

The Mayo County Development Plan 2022-2028 identifies sites of ecological importance at the county level in or near the proposed wind farm.

2.4.2 Habitats

As mentioned previously, the proposed development site is dominated by cutover blanket bog which was harvested commercially between the 1950s and the early 2000s. There are many remnant bog areas which lie scattered throughout the site. Although these remnant areas are dominated by lowland blanket bog, they also contain areas of dry heath and wet heath and patches of transition mires and quaking bog. Various lakes and ponds, some of recent origin, occur scattered through the proposed development site. In the western and central areas of the site there are several areas dominated by commercial conifer plantation on peat.

A multi-disciplinary walkover survey following the methodology outlined by 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (NRA, 2009b) was undertaken at the proposed turbine locations including all hardstand areas, proposed met mast locations, substation location, grid connection routes and internal haul roads. Multi-disciplinary walkover surveys were undertaken during August 2020. These visual surveys were deemed to be adequate to assess habitats of low ecological interest (following methodology outlined in Smith et al., 2011). These surveys aimed to record the habitats, and flora and fauna present within the survey area, a comprehensive description of the existing habitats encountered at the site is provided in Section 7.7.2 of Chapter 7 (Biodiversity) of the EIAR.

2.4.3 Flora

A vegetation survey was carried out at key infrastructure elements, the results of which are detailed in Section 7.7.1.2.1 of Chapter 7 (Biodiversity) of the EIAR.

Protected Flora

No botanical species listed under Annex II of the EU Habitats Directive or listed under the Flora Protection Order (FPO), or red list of vascular plant species were recorded within the footprint of the proposed development site.

2.4.4 Bats

The bat reports detailing all the surveys undertaken by Bat Eco Services at the proposed development site in 2020, 2021 and 2022, see Appendix 7-2 of the EIAR and a summary of the main findings of the reports are provided in Chapter 7 of the EIAR. The survey design followed the following methodologies: desktop study, deployment of static detectors, walked transects, point counts and driven transects, roost surveys, as well as monitoring of climatic conditions as per SNH guidance document. A total of eight bat species were recorded utilising the proposed development site during the transect and static detector surveys. Further details of the survey results are provided in the EIAR.

2.4.5 Other Fauna

Records of terrestrial mammals within the vicinity of the wind farm site, obtained from the National Biodiversity Data Centre (NBDC) and National Parks and Wildlife Service (NPWS), are presented in Table 6-4 of Chapter 6 (Biodiversity) of the EIAR. These include badger, bank vole, brown rat, fallow deer, fox, Irish hare, Irish stoat, pine marten, rabbit, red squirrel, and wild boar.

2.4.6 Aquatic Ecology

The existing aquatic environment is further discussed Chapter 7 (Biodiversity) of the EIAR.

2.4.7 Ornithology

A detailed description of the findings of the bird surveys is presented in Section 8.3 of Chapter 8 (Ornithology) of the EIAR.

3.0 OVERVIEW OF THE CONSTRUCTION WORKS

3.1 DURATION AND PHASING OF THE PROPOSED DEVELOPMENT

It is anticipated that the overall construction phase of the development will take approximately 24 - 30 months from starting on-site to completion of the commissioning of the turbines. Pending planning approval, an arbitrary start date of January 2025 has been selected for commencement of construction. All vegetation clearance that is required during construction works will commence outside the breeding birds' season, which runs from the 1st of March to the 31st of August.

The construction phase can be broken down into six main phases as follows:

- Bellacorick Decommissioning – 3 months
- Civil engineering works – 18 months
- Electrical works – 18 months (will commence shortly after civil works and will then run in parallel); and
- Turbine delivery – 8 months
- Turbine installation – 8 months (will commence shortly after delivery and will then run in parallel); and
- Substation and turbine commissioning – 4 months

Figure 3-1 presents an indicative schedule for the construction works.

Ref	Task Name	Task Description	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26
1	Site Health & Safety																									
2	Site Compounds	Site compounds, site access, fencing, gates																								
3	Site Roads	Construct roads, install drainage measures, install culverts, install water protection measures																								
4	Bellacorick decommissioning	Decommission Bellacorick turbines and remove turbine components from site, decommission existing meteorological mast																								
5	Turbine Hardstands	Excavate base, construct hardstand areas																								
6	Turbine Foundations	Fix steel, erect shuttering, concrete pouring																								
7	Substation Construction & Electrical Works	Construction substation, underground cabling between turbines, cabling from new substation to Bellacorick substation																								
8	Backfilling and Landscaping																									
9	Turbine Delivery and Erection																									
10	Substation Commissioning																									
11	Turbine Commissioning																									

Figure 3.1 Construction Schedule

The main tasks to be completed in line with the above phases are:

Bellacorick Wind Farm Decommissioning Works:

- Disconnect turbines from the grid.
- Dismantle and removal by competent contractor
- Cranes will be erected on hardstand areas left after the construction phase.
- Turbine to be dismantled fully from blade tip to top of foundation.
- Firstly the rotor blades and hub will be taken down and then the nacelle (incl. generator) will be taken down.
- Depending on Original Equipment Manufacturer (OEM) requirements the generator may need to come down first and temporary works are sometimes utilised to hold hub and blades in place whilst it comes down.
- Sequence above might alter slightly from above depending on OEMs requirements and crane company's lift plan.
- The tower sections will be removed section by section and lowered to the ground.
- Finally all parts will be transported by road to its final destination either wholly intact or in more transportable components and will be either properly disposed or reused.
- The turbines will be removed from site by articulated trucks as part of the proposed Traffic Management Plan and Transport Management Plan which will be finalised post consent.
- Upon dismantling of turbines, the concrete foundation will remain in situ.
- The 21 no. turbine foundations will infilled with peat and where the foundation is above ground locally that ground will be built up to cover the foundation.
- The MV cable will be removed from the ducting at joint bay locations and ducting will remain in the ground.
- The cable will be disposed of in an orderly fashion by an approved contractor and the joint bays will be backfilled after excavation and post cable removal.
- All electrical equipment will be removed from the control building . The building structure will remain in-situ and will be maintained as part of the operational maintenance of the Oweninny Phase 3 wind farm.
- The transport route for turbine components will be assessed and subject to that assessment any required temporary modifications will be agreed with the local authority in advance of works.
- The components involved in decommissioning will be re-used, recycled or sent for waste disposal and these include, but not limited, to cables, metals, fibreglass and hydrocarbons.
- A waste management plan will be produced prior to works commencing on site.

Civil Works:

- Any tree felling required to facilitate the proposed development will be carried out in advance of the civil works.
- Construct secure construction site boundary fencing as required.
- Construct new site roads, drainage ditches and culverts.
- Carry out necessary improvement works to existing site roads, drainage ditches and culverts.
- Clear and construct hardcore area for temporary construction compounds and associated parking areas and install facilities.
- Prepare excavation areas at three proposed borrow pit locations as required.
- Construct remaining road infrastructure, hard-standing areas and crane pads.
- Install ducting in the roads for electrical and telecommunications cables.
- Prepare on-site substation compound and associated drainage ditches and culverts.

- Construct substation control buildings as well as bunds and plinths as necessary for transformers and electrical equipment. Erect security fencing around substation.
- Decommission Bellacorick turbines and remove above ground turbine components from site.
- Excavate/pile as required for turbine bases. Store excavated material locally for backfilling and re-use, where possible.
- Prepare turbine base areas. Store excavated material locally for backfilling and re-use, where possible. Place blinding concrete to turbine bases 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 and remove shuttering after a suitable number of days.
- Backfill around tower foundations and prepare the area to the specific requirements of the turbine supplier and installer.
- Excavate trench and install ducting for grid connection between the on-site substation and the proposed connection point to the existing overhead 110kV transmission line in, including stream crossings.
- Construct bases and steel towers for underground cable transition to overhead line at existing overhead 110kV transmission line connection point in Bellacorick.
- All improvements and temporary modifications required to facilitate delivery of the turbine components from several routes ending at Killybegs or Galway, the Galway route could also be used to access to Foynes. All of these ports have potential to be accessed.
- Install permanent meteorological mast;
- Upon completion of commissioning works, commence reinstatement works on surrounding lands as required.
- Remove temporary site offices, reinstate northern construction compound to pre-construction condition, provide secured site access and signage as required.
- Upgrade southern temporary construction compound to accommodate permanent public car park and install picnic/seating facilities and signage; and
- Complete landscaping works.

Electrical Works:

- Install internal and external electrical equipment at the on-site substation.
- Install MV electrical cabling and fibre-optic telecommunications cabling between the turbines and the on-site substation in the underground ducting; and
- Install electrical and telecommunications cabling from the on-site substation to the existing overhead 110kV transmission line in Bellacorick.

Turbine Delivery, Installation and Commissioning:

- Prepare transport delivery plan for the turbine components from routes ending at Killybegs or Galway, the Galway route could also be used to access to Foynes. All of these ports have potential to be accessed co-ordinate approval for deliveries with the relevant authorities.
- Backfill tower foundations and cover with suitable material.
- Erect cranes and associated equipment not required at this time.
- Erect tower sections and nacelle first, followed by the turbine blades.
- Complete electrical connection of each of the turbines to the installed MV electrical network - grid connection.
- Remove temporary site offices. Provide any gates, landscaping, signs etc. which may be required.
- Commence turbine commissioning and testing; and
- Complete commissioning and authorisation for wind farm to commence operations.

3.2 CONSTRUCTION HOURS

Construction activities will be carried out during normal daytime working hours (i.e., weekdays 0800 – 2000hrs and infrequent Saturdays 0800 – 1300hrs). The hours of construction activity will be limited to avoid unsociable hours, where possible. However, to ensure that optimal use is made of good weather period or at critical periods within the programme (e.g., 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 (including routine and unforeseen maintenance of plant & Machinery) will be agreed in advance with the Local Authority.

3.3 EMPLOYMENT

It is anticipated that approximately 100-120 persons will be directly employed during peak construction activities.

3.4 SUMMARY OF KEY PROJECT ELEMENTS

3.4.1 Wind Turbines

The proposed wind turbines will have a tip height of 200m. Detailed drawings, which accompany the planning application, show a typical turbine that may be used for the proposed development, however, the exact make and model of the turbine will be dictated by a competitive tender process of the various turbines on the market at the time. A drawing of the typical size of the proposed wind turbine is shown in Drawing No. 10889-2032.

The proposed development has an assumed rated electrical power output of between 4.5 – 6.5 megawatts (MW) per turbine which would result in an estimated installed capacity of between 81 – 117 MW for the Oweninny Phase 3 Wind Farm.

The turbines installed on the site will be the conventional three-bladed, tubular tower model with horizontal axis. The rotor blades are bolted to the central hub, which is connected to the nacelle. The nacelle typically holds the following turbine components as shown in Figure 3-2:

- Generator.
- Electrical components; and
- Aviation lighting to Irish Aviation Authority (IAA) specifications.

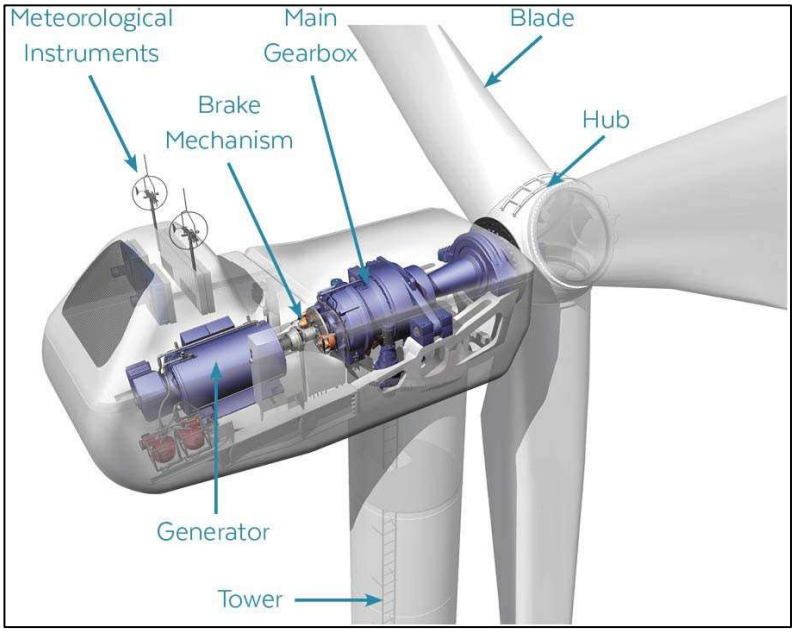

Figure 3.2 Typical turbine nacelle and hub components

The wind turbines will be geared to ensure that the rotors of all turbines always rotate in the same direction. The entire nacelle and rotor are designed to rotate, or 'yaw', to face the prevailing wind. A wind vane located on the nacelle of the turbine controls the yaw mechanism. A control unit is typically located at the base of the turbine and an internal lift or ladder leads up to the nacelle where the shaft, generator and gearbox are located.

The turbine tower is typically a conical steel tube with multiple layer paint finish. Towers generally comprise a steel ring at the base of the tower which is assembled on top of the concrete foundations. The first section is bolted to the steel base, which is cast into the concrete foundation. The tower is usually delivered to site in three to six sections. The base of the tower is typically around 4m in diameter, tapering to approximately 2m where it is attached to the nacelle. The tower is accessed by a galvanised steel hatch door, which will be kept locked except during maintenance. The nacelle is typically 4m in width and varies in length depending on the final hub height. The exact details of the turbine tower will be dictated by final selection of the turbine make and model but will be within the design envelope outlined above.

The blades of modern turbines are generally made of fibreglass or carbon fibre reinforced polyester and are aerodynamically shaped to improve efficiency and lower noise production.

The turbines are multi-ply coated to protect against corrosion. It is proposed that the turbines will be of an off-white or light grey colour to blend into the sky background.

3.4.2 Turbine Foundations

Construction of the turbine bases will require excavation of the surrounding soil from the foundation and crane hardstanding area to founding level with access being provided from adjacent roads at or near the surrounding ground level. The soil will be replaced with select granular fill where required.

Each wind turbine will require a reinforced concrete 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, see turbine

foundation Drawings 10889-2020 to 10889-2022. The exact size of these detailed foundations will be dictated by the local ground conditions and the turbine manufacturer.

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 on competent strata, the bottom section of the turbine tower or "can" is levelled (Figure 3-3). Reinforcing steel is then built up around and through the can as in Figure 3-3 and the outside of the foundation is shuttered with demountable formwork to allow the pouring of concrete.

Figure 3.3 Levelled turbine tower can (left) and steel reinforcement being added (right)

3.4.3 Access Roads and Hardstanding

An existing access to the existing Oweninny Wind Farm Phase 1 is available via a Priority T-Junction on the N59, located approximately 300m north of the junction of the N59 / R312. This access will be controlled by a security guard. The existing wind farm entrance on the N59 will be used to transport materials and equipment to the site including the AILs during the construction phase. During the operational phase this access will be used for maintenance and operations traffic and the amenity traffic. It is envisaged to be used at the decommissioning stage of the development.

No Road Safety Audit and no access works were required as the site access junction on the N59 is existing (as per Oweninny Phase 1) and is currently operating as a operation access. To access the development site, the existing internal access roads will be utilised with some widening and a new section of internal access road constructed, refer to Drawing No. 10889-2063 in the EIAR.

Internal access roads will be constructed as part of the initial phase of the construction of the wind farm. The layout of proposed new roads and road upgrades is shown on Drawing No. 10889-2003. Material will be sourced from both off site quarries and the proposed on-site borrow pits to provide the required base material for the internal roads.

Soil/Peat excavated as part of the construction of the internal roads will be sidecast, bermed and profiled on either side of the roadway or located in one of the designated Peat Deposition Areas. It is proposed that the majority of excavated material will be used for borrow pit reinstatement with the remainder used locally on-site for landscaping. All new roadways will be constructed with a 2.5% camber to aid drainage and surface water run-off. The surface water run-off management during both the construction and operational phases of the proposed development is designed to collect rainfall run-off from impermeable surfaces and direct it to

drains installed around new infrastructure and upgraded roads. Further details on surface water management during construction are provided in Section 5.3.

Hardstanding areas consisting of levelled and compacted hardcore will be constructed around each turbine base. The hardstanding areas are used mainly to accommodate large cranes used in the assembly and erection of the turbines, offloading and storage of turbine components, and generally provide a safe, level working area around each turbine. This area is designed primarily for the construction phase works but will also provide safe access for maintenance during operations. The hardstanding area at each turbine is extended to cover the turbine foundations once the foundation infrastructure is in place. The exact size, arrangement and positioning of hardstanding areas are determined by turbine supplier requirements but will be contained within the maximum dimensions described and assessed in the EIAR. A typical hardstanding layout is shown on Drawing No. 10889-2031.

Unbound, levelled assembly areas will be located adjacent to the hardstanding areas at each turbine as shown on Drawing No. 10889-2031. These assembly areas are required for offloading turbine blades, tower sections and hubs from trucks until such time as they are ready to be lifted into position by cranes. They will be surfaced with Clause 804 material or similar.

Similar levelled storage areas will be prepared at the construction compounds for temporary material storage and handling prior to construction. Material will be removed from the temporary storage and assembly areas, and the ground reinstated at the completion of the construction works, except for at the southern construction compound where this area will be upgraded to accommodate the permanent public car park and recreational facilities.

3.4.4 Stone and Fill Requirements

As part of construction of the proposed development, a significant amount of stone and aggregate fill material will be required. This will be used under and around key infrastructure including the turbines, substation, site roads, hardstands and construction compounds. The following are estimates of the material requirements at the various main infrastructure locations:

- Total access roads – 148,350m3
- Met mast hardstand, cable route and grid connection, substation compound, construction compound and storage area – 40,323m3 (sourced from peat spoil stone)
- Turbine and hardstand– 88,621m3

The majority of the required stone volume will be sourced from the onsite borrow pits. As a worst-case scenario, the traffic assessment in the EIAR assumes that all required stone will be sourced off site.

Hardstands and site roads will be constructed to heights of 0.5m to 1.0m above existing ground level based on the various extents of potential surface water flooding across the site, see Section 3.8 Construction Methodologies for additional information.

3.4.5 Borrow Pits

It is proposed that two borrow pits will be constructed as part of the proposed development, in order to provide a source for stone material requirements within the site itself. The borrow pit selection was based on the following factors:

- Avoidance of potential ecological receptors including intact blanket bog and fens
- Avoidance of deeper peat where possible

- Location near areas of known sand and gravel deposits or gravelly till.

Some remnant undeveloped peat areas on site are avoided for consideration. Areas of deeper peat were anticipated and not considered for borrow pit areas. Additionally, several areas of gravels and intact blanket bog were not considered.

There are three areas considered for the borrow pit location (see Drawing No. 10889-2003). Area 1 is located to the northwest of Furnought Hill between T6 and T7, covering an area of approximately 100,000m^2. Area 2 is located to the northeast of Furnought Hill and has a surface area of 34,000m^2. Having two borrow pits onsite will minimise material transport on site and will minimise the depth to which the borrow pit excavations will be required.

Once the required rock has been extracted from each borrow pit, they will be reinstated using any surplus inert material from the site and made secure using permanent stock proof fencing.

Post-construction, the borrow pit area will be partially backfilled with overburden and excavated material from elsewhere on the site and permanently secured. The temporary access roads to the borrow pits will be removed. Berms will be erected around the area to prevent access as necessary. Appropriate health and safety signage will also be erected on the berms and at locations around the borrow pit.

3.4.6 Spoil Management

The use of the borrow pits shall be phased. This will then allow materials to be placed in the first borrow pit thereby minimising the volume of soils requiring temporary storage. To further reduce temporary storage requirements, reinstatement of soils and turves around infrastructure, and in restoration and landscaping works on areas of excavated/disturbed ground, will be carried out during the construction phase or as soon as is practical after the completion of the works in any one area of the site.

Topsoil and sub-soil will be stockpiled separately. Turves will be stored turf side up and will not be allowed to dry out. Stockpiles will be isolated from any surface drains and a minimum of 50m away from watercourses. Measures such as interceptor ditches around the bases of these areas, sediment traps and seeding of the bunds shall be incorporated to prevent runoff of suspended solids laden surface water and soil erosion. No permanent spoil or stockpiles will be left on site.

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

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

3.4.7 On-Site Substation

It is proposed to construct a 110kV electricity substation within the site boundary neatest to T2 as shown on Drawing No. 10889-2003. This substation will provide a connection point to the existing overhead 110kV electrical transmission line running from Bellacorick Substation.

The construction and electrical components of the on-site substation will be to EirGrid specifications and within the parameters assessed in the EIAR. The substation compound will

have a maximum area of approximately 10,125m^2, and will include two control buildings and electrical components necessary to facilitate the generated power from the wind turbines to export onto the transmission system.

Two substation control buildings will be located within the substation compound. Control Building 1 (Asset Owner Control Building) will measure approximately 25 metres by 18 metres and approximately 9.7 metres in height. Control Building 2 (IPP Control Building) will measure approximately 19 metres by 12 metres and approximately 7 metres in height. Layout drawings of the control buildings are shown on Planning Drawings 10889-2017 to 10889-2018.

The substation and compound will be surrounded by steel palisade fencing which will be approximately 2.4m in height. Internal fences will also be provided to segregate different areas within the main substation compound. Lighting will be required on site, and this will be provided by lighting poles located around the substation and exterior wall mounted lights on the control buildings.

The wind farm control buildings will include the Asset Owner Control Building (AOCB) and the Independent Power Producer (IPP), as well as an office space and welfare facilities for staff during the operational period. 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. It is proposed to install a rainwater harvesting system as the source of water for this, with all potable water being brought onsite in bottles.

It is proposed to manage wastewater from the staff welfare facilities in the control buildings by means of a sealed storage tank, with all wastewaters 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.

A local electrical power supply will be provided as a back-up to the on-site substation for light, heat and power purposes. The local supply will be designed and constructed by ESBN, and the exact source of the supply will be confirmed and determined by ESBN. It is anticipated that the local supply will enter the site by either overhead or underground MV cable and will include a step-down transformer to covert to low voltage (LV). The supply will enter the substation by underground cable and terminate on a distribution board in the control building.

3.4.8 Internal Underground Cabling

Clusters of turbines will be connected to the on-site proposed 110kV substation via underground 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 metres below the ground surface alongside the proposed wind farm internal roadways.

3.4.9 Grid Connection

Approval for connection of the wind farm to the national electrical transmission network will be sought from EirGrid. A valid grid application can only be made subsequent to a grant of permission for the wind farm. The proposed 110 kV substation will be connected to the national grid at the existing 110 kV Bellacorick substation via underground HV cables and will export power via the existing 110 kV overhead line infrastructure from Bellacorick substation.

The proposed development requires approximately 5km of 110 kV underground cable (UGC) installation from the 110 kV onsite substation to the existing ESB Bellacorick 110 kV substation. The entire UGC will be installed along the existing wind farm access roads. The entire UGC route was assessed and included in this assessment.

The 110kV cable route from the proposed substation to the existing on site Bellacorick substation encounters a number of natural and manmade obstacles along the route that will require minor amendments to the cable installation methodology. . The location, description and methodology amendments are detailed in Table 3.3 of Chapter 3 in the EIAR.

The proposed underground cable route lies within the development boundary, so the disruption to the traffic and the public will be minimal. Before the construction commences, contractors will carry out detailed site investigations along the proposed route in advance of the approved designs being finalised for the UGC trenching and ducting civil works. These site investigations will include slit trenches along the roadways to detail the route and ensure sufficient space to install a 110 kV cable trench typically measuring approximately 0.6m (width) by 1.2m (depth). Refer to Planning Drawing 10889-2070 to Drawing 10889-2071 for the proposed cable trench arrangement. The cables will be laid in trenches as per Eirgrid/ESB Networks Specification (Planning Drawing 10325-2058).

A Traffic Management Plan (TMP) has been prepared for the proposed development and is included as Appendix A to this CEMP. This is a living document and will be used by the Contractor throughout the construction project to address traffic management. A confirmatory survey of the road condition, including the condition of all water crossings in the public road, will be carried out along the grid connection route in advance of any works, and these will be submitted to the local authority.

3.4.10 Meteorological Mast

A permanent meteorological mast will be installed as part of the proposed development. The mast will be equipped with wind monitoring equipment at various heights and will be a slender, free-standing lattice structure up to 120m in height. The mast will be constructed on a hardstanding area sufficiently sized to accommodate the crane that will be used to erect the mast. The mast will be located to the west of T13 and South of T12 as shown on Drawing No. 10889-2003 and will be accessed via an existing internal access road. An indicative detail of the proposed met mast is shown on Drawing No. 10889-2060.

3.4.11Recreation and Amenities

An amenity track, approximately 4.8km in length, will be provided as part of the development facilitating a route through the site from a local road off the N59 at Dooleeg as shown on Drawing No. 10889-2003. This access point is close to the Western Way (Slí an Iarthair) Trail which runs along the N59 and continues north to Ballycastle, along the western periphery of the Bellacorick Bog Complex.

The amenity track will be suitable for both walking and cycling. Feedback from public consultation suggests that current users would prefer that the existing surface of the track be retained where possible. Where this is not possible, in localise areas gravel/crushed stone will be used to improve the track surface.

3.4.12 Decommissioning

The wind turbines proposed as part of the proposed development are expected to have a lifespan of 30 years. Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site will be decommissioned fully, except for the electricity substation. If it were to be confirmed that the substation was not required in the future for any other useful purpose, it could be removed. The site will be decommissioned by the following steps:

- Disconnect turbines from the grid
- Dismantle and removal by competent contractor
- Cranes will be erected on hardstand areas left after the construction phase.
- Turbine to be dismantled fully from blade tip to top of foundation.
- Firstly the rotor blades and hub will be taken down and then the nacelle (incl. generator) will be taken down.
- Depending on Original Equipment Manufacturer (OEM) requirements the generator may need to come down first and temporary works are sometimes utilised to hold hub and blades in place whilst it comes down.
- Sequence above might alter slightly from above depending on OEMs requirements and crane company's lift plan.
- The tower sections will be removed section by section and lowered to the ground.
- Finally all parts will be transported by road to its final destination either wholly intact or in more transportable components and will be either properly disposed or reused.
- The turbines will be removed from site by articulated trucks as part of the proposed Traffic Management Plan and Transport Management Plan which will be finalised post consent.
- Upon dismantling of turbines, the concrete foundation will remain in situ.
- The turbine foundations will infilled with peat and where the foundation is above ground locally that ground will be built up to cover the foundation.
- The MV cable will be removed from the ducting at joint bay locations and ducting will remain in the ground.
- The cable will be disposed of in an orderly fashion by an approved contractor and the joint bays will be backfilled after excavation and post cable removal.
- All electrical equipment will be removed from the control building. The building structure will remain in-situ.
- The transport route for turbine components will be assessed and subject to that assessment any required temporary modifications will be agreed with the local authority in advance of works.
- The components involved in decommissioning will be re-used, recycled or sent for waste disposal and these include, but not limited, to cables, metals, fibreglass and hydrocarbons.
- A waste management plan will be produced prior to works commencing on site.

All above ground turbine components will be separated and removed off-site for recycling. Turbine foundations and hardstanding areas will remain in place underground and will be covered with earth and allowed to revegetate or reseed as appropriate. Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground could result in potentially significant environment nuisances such as noise, dust and/or vibration. Most of the site roadways will be in use for additional purposes to the operation of the wind farm (such as a mature amenity and recreational use) by the time the decommissioning of the project is to be considered, and therefore it will be more appropriate to leave the site roads in situ for future use. If it were to be

confirmed that the roads were not required in the future for any other useful purpose, they could also be removed.

3.5 ROLES AND RESPONSIBILITIES

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

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

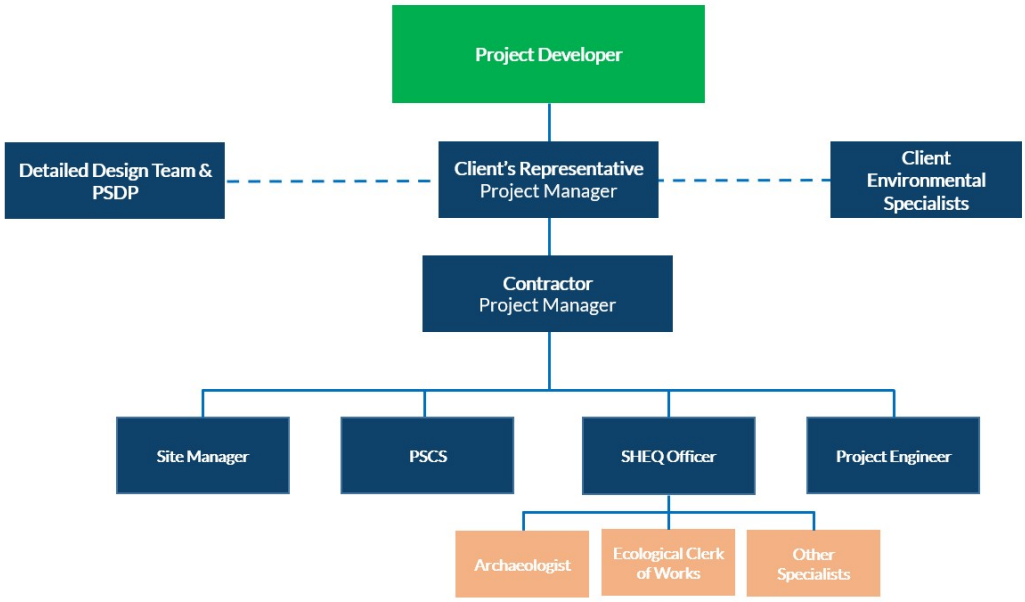

Figure 3.4 Project Development Organisation Chart

3.6 CONSENTS, LICENCES, NOTIFICATIONS AND PERMISSIONS

The key consents, licences, notifications, and permissions which may be required for the project are summarised as:

- Planning permission and associated planning compliance.
- Commission for Energy Regulation (CER) Authorisation and Licence to Generate.
- A Commencement Notice for Development will be lodged with the Building Control Authority (BCA) via the online Building Control Management System (BCMS) not less than 14 days and not more than 28 days before development works commence on site.
- Abnormal loads – it is envisaged that permits will be required for the abnormal loads that will be required for the delivery of turbine components and oversized plant such as piling rigs to the site.
- Archaeological excavation licence, as required.
- Office of Public Works (OPW) consultation and agreement for watercourse crossings.

- Inland Fisheries Ireland (IFI) method statement approval for works in or near to watercourses.
- NWPS consent will be required for surface water protection measures; and
- 30-day prior notification to the Irish Aviation Authority (IAA) ahead of turbine erection works.

The above list is non-exhaustive but identifies the key consents, licenses, notifications, and permissions required for the project. This list will be further populated as required through planning compliance and stakeholder engagement to ensure that any further consents are identified as early as possible and do not impact on the construction programme.

Additional method statement and monitoring programme submissions may be required by the Local Authority as part of the grant of planning.

4.0 CONTRACTOR FACILITIES, SAFETY AND SITE SECURITY

4.1 CONSTRUCTION COMPOUND AND FACILITIES

At the commencement of the construction phase, a single large temporary compound areas will be constructed at location as shown Drawing No. 10889-2003 and 10889-2025 – 10889-2028 to provide office space, welfare facilities, car parking and material laydown areas.

The site accommodation will consist of temporary porta-cabins constructed on unbound, levelled hardcore aggregate. Broken stone and appropriate capping aggregate will be used to create a base for the welfare facilities as well as a suitable surface for material lay-down areas and car parking. The use of four separated construction compounds will improve efficiency and capacity across the wind farm site area.

1. Main compound at the entrance (includes the storage compound)
2. Substation compound
3. Compound between T7 and T8
4. Compound between T11 and T14

All four compounds will be secured by means of a chain link fence on timber posts which will be approximately 2.4m in height, see Drawing No. 10889-2015 to Drawing No. 10889-2018. There will be one access gate into each compound which will be secured and controlled by the Contractor. A combination of bottled water, tanker water supply and rainwater harvesting will be used to supply water for the welfare facilities in both compounds during the construction works. Rainwater harvesting will be utilised to supplement the tanker water supply for non-potable uses. Wastewater generated at the welfare facilities in the construction compounds will be managed by means of a temporary sealed storage tank, with all wastewater being filtered off-site by a permitted waste collector to a wastewater treatment plant. The proposed temporary wastewater storage tanks will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying.

Fuels, oils, lubricants and other hazardous liquids required for maintenance of equipment during the construction phase will be stored on a dedicated impermeable storage platform in the compound. This area will be away from drains and open water and will be easily accessible for machinery to refuel and to accommodate fuel deliveries to site. COSHH Risk assessments and MSDS sheets will be provided for each hazardous liquid and operatives will be briefed on the hazards. MSDS Sheets will be kept in the storage area for ease of reference. Fuel containers will be stored within additional secondary containment e.g., bund for static tanks or drip trays for smaller mobile containers. A fuel bowser, used for refuelling equipment on-site where off-site

refuelling is not possible, will be stored in the compound area on a dedicated storage platform. Whenever possible, this bowser will be refilled off-site and brought to site for on-site refuelling. The fuel bowser will be hauled around the site by a suitably equipped 4x4 vehicle.

In the interest of best practice and to avoid the potential for the transfer of alien invasive plant species into the site, it is proposed to install a self-contained wheelwash system at the project site. Planning Drawing 10889-2062 includes details of a proposed self-contained wheelwash system which will be installed as part of the construction phase of works. The wheelwash will be located at the construction and delivery entrance of the site, off the N59, as shown on Planning Drawing 10889-2003.

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

There is / will be a drawing for each compound showing the proposed arrangement of welfare facilities, fuel storage, car parking and storage areas. The actual arrangement of cabins and storage areas within the compounds will vary depending on Contractor requirements but will be similar to that shown in the drawings.

4.2 SAFETY AND SECURITY

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.

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 Developer 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 will prepare a Preliminary Health and Safety (H&S) Plan which will identify any particular risks, residual risks and particular sequences of work that are envisaged during the design of the works.

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

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

Public safety will be addressed by restricting site access during construction works and the erection of security fencing as appropriate at construction works areas. There will be only one entrance to the wind farm construction site from the south which will be controlled by the Contractor. Construction vehicle access to the site will be via the existing access to Oweninny Wind Farm Phase 1 at the Priority T-Junction on the N59, located approximately 300m north of the junction of the N59 / R312. The site entrance gates from the N59 / R312 will be securely locked outside of construction hours to prevent unauthorised entry and will be monitored during construction hours to regulate access to the site for authorised personnel.

For the duration of the construction works, access to the visitor centre will be facilitated by a shuttle bus that will pick up and drop off at the existing Bord na Mona works areas located off the N59 to the east of the construction entrance and existing entrance to the Visitor centre.. Appropriate signage will be erected directing the public onto an alternative route as set out in Chapter 6 (Population and Human Health) of the EIAR.

4.3 SIGNAGE

Warning signs will be erected at the construction works areas clearly stating that construction works are underway (see Figure 4-1). A notice board will be erected at the site entrance and at the construction compound gates with information on the contact details for site management, PPE requirements for the site and any other information deemed necessary in accordance with the H&S Plan.

Signage will be erected on both sides of the N59 National Road both north and south of the site entrance location to warn approaching vehicles of the construction site entrance location and the potential presence of slow-moving vehicles. Signage will also be erected on the R312 Regional Road where construction vehicles will cross the road. On the internal roadway, signage will be erected at either side of the R312 crossing to remind construction traffic that this local road is not permitted to be used as part of the project construction works. Prior to exit from the site onto the N59, signage will be erected directing traffic to main settlement areas to the left and right.

Road signage on the public road will be in accordance with the current *Traffic Signs Manual*[1] Chapter 8 and associated best practice guidelines. Signage in respect of traffic management is discussed in the TMP in Appendix A 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.

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

Figure 4.1 Indicative Safety Signage (Source: safetysigns.ie)

4.4 EMERGENCY RESPONSE PLAN

The Contractor will be responsible for developing a detailed Emergency Response Plan (ERP) for the proposed works, to cover health and safety emergencies as well as environmental emergencies, as part of the H&S Plan. This ERP shall be activated in the event of an emergency such as an accident, fire, spillage, collapse etc. and will provide details on who is required to be notified, first aid facilities and closest hospitals. The ERP will also include details of all personnel inducted and authorised to work on the site as well as next of kin contact details and relevant medical information.

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

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

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

Further information relating to the management of spills or leaks is provided in Section 4.6 and the procedure for responding to a health and safety or environmental incident is outlined in Section 4.7.

4.5 FUELS AND OILS MANAGEMENT

Construction vehicles will be refuelled off-site, wherever possible. This will primarily be the case for road vehicles such as vans and trucks. However, for construction machinery that will be based on-site will be carried out at least 50m from any watercourse. The fuel bowser, typically double bunded, containing limited amount of fuel will have to be stored on site. On-site refuelling of machinery will mainly be carried out using a mobile double skinned fuel bowser typical of that shown in Figure 4-2. Refuelling axle custom-built refuelling trailer, will be re-filled

off-site, where possible, or at either of the two construction compounds and will be towed as required within the site by a 4x4 vehicle to where machinery is located. It is not practical or preferable for most heavy construction vehicles (such as cranes, excavators, dozers, dumpers etc.) to travel back to the refuelling point in the construction compounds given the size of the proposed wind farm site. The 4x4 vehicle will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level impermeable area in either of the construction compounds when not in use.

Figure 4.2 Typical mobile fuel bowser (Source: Clarke Machinery Group)

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 as described in Section 4.1. 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 as per the approved refuelling and maintenance procedure.

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

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.

4.6 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 kept in both construction compounds, the 4x4 vehicle transporting the fuel bowser and smaller spill control kits will 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 a spill in the field, the spill kits will be used 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 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 4.7.

4.7 INCIDENTS

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

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

4.8 COMPLAINTS

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 Final CEMP will contain more specific details regarding 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 Developer immediately.
- All complaints will be followed up and resolved in so far as is practicable; and
- The complainant, Developer and other stakeholders will be kept informed of the progress in resolving the complaint.

5.0 ENVIRONMENTAL MANAGEMENT

As part of the development of this CEMP, a series of Environmental Management Plans (EMPs) have been prepared to ensure appropriate environmental management of specific aspects of the proposed works. The EMPs have been prepared in accordance with the design and mitigation measures set out in the EIAR and the NIS. The requirements outlined within the following plans are a summary of key implementation constraints, site specific obligations and best practice requirements with which the Contractor shall comply. The construction methodology for the proposed development is set out in Chapter 3 (Description of the Proposed Development) of the EIAR.

Construction of the proposed development will be carried out in line with best practice guidance in all areas of potential environmental impact and these specific guidance documents are identified within the following sections. Across the full project duration, the Contractor will utilise the general guidelines set out in the CIRIA C741 publication *Environmental Good Practice on Site (4th Edition)*[2].

Following grant of planning for the proposed development, the appointed Contractor will further develop this planning stage CEMP into a final CEMP which will incorporate any additional measures identified during the planning assessment process, specified in planning conditions and associated post-planning statutory body consultation for the management of the environment during the construction works. The final CEMP will include an updated and refined construction phase programme of works and will set out specific timings and requirements for surveys and monitoring prior to and throughout the construction works. The final CEMP will be a dynamic document and will be continuously reviewed and updated throughout the construction works to ensure it takes account of all environmental auditing and site inspections.

5.1 Noise and Vibration

The Contractor will be required to have regard to BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites*[3], which sets out detailed guidance on the control of noise and vibration from construction activities.

An assessment of construction phase noise emissions has been carried out in Chapter 13 (Noise and Vibration) of the EIAR and outlines the predicted noise levels from construction activities at the closest noise sensitive locations (sensitive receptors). 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.

[2] CIRA *Environmental Good Practice on Site (4th Edition)* (C741) (2015)
[3] British Standards Institute (BSI), *BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites* (2008)

The following general measures for control of noise and vibration from construction works will be implemented:

- Construction working hours are limited to those set out in Section 3.2 to avoid noise generation during unsociable hours.
- Duration of works which create high levels of noise or vibration, such as rock-breaking, blasting or piling, will be limited and staggered to prevent constant annoyance.
- Communication channels will be established between the Developer/Contractor and local residents to inform of upcoming works which may generate higher than normal construction noise or vibration and provide a means for local residents to register complaints regarding noise and vibration.
- The local authority will also be informed of the communication channels.
- The SHEQ Officer, or equivalent, will address complaints relating to noise and vibration.
- Periodic monitoring of construction noise and vibration during critical periods will be carried out at sensitive receptor locations; and
- Internal access roads will be maintained in good condition to minimise noise and vibration generation from heavy goods vehicles.

In addition to the above, the Contractor will be required to select plant and equipment with a low inherent potential for generation of noise and/or vibration in lieu of noisier alternatives and place noisy/high vibration equipment as far away from sensitive receptors as permitted by site constraints. Where possible, contractors will use noise dampers or other attenuation methods for particularly noisy operations. Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. Any noisy plant, such as generators or pumps, which is required to operate outside of the typical working hours (for maintaining water levels or safety lighting etc.), will be surrounded by an acoustic enclosure or portable screen. Regular maintenance of plant and equipment will be carried out to ensure that the equipment is operated efficiently and generating minimal noise emissions. Plant or equipment which is not in use will be shut down while not required or throttled back to a minimum.

Specifically in relation to rock-breaking activities, the following measures will be employed as required:

- Fitting suitably designed muffler or sound reduction equipment to the rock breaking tool to reduce noise without impairing machine efficiency.
- Ensuring all leaks in air lines are sealed.
- Erecting acoustic screen(s) between compressor or generator and a noise sensitive area. Where possible, the line of sight between top of machine and reception point needs to be obscured; and
- Enclosing the breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation.

Further requirements with regard to noise and/or vibration monitoring which may be set out in planning conditions will be updated in the final CEMP.

5.2 AIR QUALITY

The Contractor will have due regard to relevant guidance such as *The Control of Dust and Emissions during Construction and Demolition* published by the Greater London Authority (GLA) in 2104 and *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* published by the National Roads Authority (NRA), now Transport Infrastructure Ireland (TII) in 2011.

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

- Movement of construction vehicles.
- 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.
- Piling operations.
- Excavation, movement and placement of soil stockpiles; and
- Wind generated dust from stockpiles, exposed unconsolidated soils and roads.

An assessment of the potential effects of construction traffic movements associated with the proposed development is presented in Chapter 12 (Air Quality and Climate) of the EIAR. Maximum utilisation of the on-site borrow pits will reduce the need to import excavated materials to the site and where excavated material, concrete and building materials are required to be brought to site, local quarries and suppliers will be preferred to minimise the carbon footprint of construction material deliveries.

In order to minimise emission of pollutants from plant and equipment, the following measures will be implemented during the construction works:

- Regular maintenance of plant and equipment will be carried out to ensure that the equipment is operated efficiently and generating minimal air emissions; and
- Plant or equipment will not be left running unnecessarily and low emission fuels will be used.

The greatest potential impact on air quality during the construction stage will be from dust emissions associated with the construction works. The proactive control of fugitive dust, rather than an inefficient attempt to control dust once released will ensure the prevention of significant emissions.

The following measures will be implemented to minimise the potential for dust generation:

- 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; and
- Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found.

A Dust Management Plan (DMP) has been prepared which sets out the measures that will be implemented by the Contractor to minimise and control dust emissions (see Section 5.2.1) This DMP will be updated by the Contractor in the final CEMP to account for any additional measures identified in Planning Conditions.

5.2.1 Dust Management Plan

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and any impacts from dust deposition will typically be within 200m of the construction area. It is noted that the vast majority of construction works are located at distances greater than 200m from residential properties with

the exception of small areas of work, namely along the grid connection route and the Turbine Delivery Route (TDR), which will have a short duration at any one location.

In order to ensure mitigation of the effects of dust nuisance, a series of measures will be implemented. Site access roads shall be regularly cleaned and maintained as appropriate; dry sweeping of large areas shall be avoided. Hard surface access roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced access roads shall be restricted to essential site traffic only. Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

Vehicles using site access tracks shall have their speeds restricted where there is a potential for dust generation. Vehicles delivering material with dust potential to an off-site location shall be always enclosed or covered with tarpaulin to restrict the escape of dust. Access gates to site from the N59 are located at least 250m from receptors which will prevent significant dust effects on residents.

Vehicles exiting the site, prior to the local road crossing point, will make use of a wheelwash facility prior to entering onto public roads to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site shall be regularly inspected for cleanliness daily and cleaned using a street sweeper, as necessary (see Figure 5-1). Before entrance onto public roads, trucks shall be adequately inspected to ensure no potential for dust emissions. On-site haul routes shall be inspected for integrity and necessary repairs to the surface instigated as soon as reasonably practicable. Records shall be kept of all inspections of the haul routes and any subsequent action(s) in a site logbook.

Figure 5.1 Typical road sweeper (Source: CMP Road Planning)

The following measures will be implemented to prevent significant dust emissions from material stockpiles. Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind as per Section 3.4.6 and Section 5.5. Sand and other aggregates will be stored in bunded areas and not allowed to dry out unless this is required for a particular process, in which case appropriate additional control measures will be put in place. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. At all times, the procedures put in place shall be strictly monitored and assessed by the SHEQ Officer. In the event of dust nuisance occurring outside the site boundary, appropriate procedures shall be implemented to rectify the problem.

This DMP shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust using best practices and procedures. As per Section 4.8, the name and contact details of a person to contact regarding air quality and dust issues shall be displayed on a notice board at the site entrance. Community engagement before works commence on site will be put in place, including a communications plan. All dust and air quality complaints shall be recorded, and causes identified, along with the measures taken to reduce emissions. Daily on and off-site inspections shall occur for nuisance dust and compliance with this DMP. This shall include regular dust soiling checks of surfaces within 100m of the construction works. Cleaning shall be provided if necessary.

5.2.2 Climate

There is the potential for a number of embodied greenhouse gases (GHGs) and GHG emissions during the construction phase of the development. Construction vehicles, generators etc., may give rise to CO_2 and N_2O emissions as well as the large quantities of material such as stone, concrete and steel that will be required for the proposed development. The Institute of Air Quality Management (IAQM) document *Guidance on the Assessment of Dust from Demolition and Construction* (2014) states that site traffic and plant is unlikely to make a significant impact on climate.

To minimise climate impacts associated with delivery of construction materials to the site, the Contractor will source quarry materials as close to the site location as possible and use local builder's providers where possible. Borrow pits on-site will be utilised as much as possible to minimise import of quarried stone material. In some cases, it will not be possible to locally source building materials due to the technical nature of parts and equipment required.

Prior to commencement of construction on-site, the turbines to be installed at the site will be manufactured off-site. The chosen route for delivery of the turbine components from either Galway port or Killybegs port to the site has been determined based on the suitability of port infrastructure and the shortest feasible route, given the nature of road network constraints, which will minimise vehicle emissions associated with the turbine component deliveries.

5.3 SURFACE WATER MANAGEMENT

The proposed development is located within a former peat extraction site. An extensive network of drainage channels was present throughout the peatland is managed under IPC licence P0505-01 Oweninny bog group. During production, the peatlands were made up of large production fields (700 to 1800m in length) which were separated by drainage channels 15m apart. At the end of each production field there was a 21m turning ground.

Rehabilitation of the peatland started pre 2003. Since 2003, all production in the bog ceased and a rehabilitation programme was implemented. To date the rehabilitation programme has resulted in the recolonisation of the peatlands with typical bog species such as the heath vegetation and Sphagnum. A number of ponds and pools now occur in topographical depressions on site as a result of rehabilitation works.

All equipment associated with peat extraction works including rail tracks within the peatland area have been decommissioned and a programme of sedimentation pond decommissioning has been completed on ponds near roads and access points.

The peatlands are located within the Owenmore, Moy and Killala Bay Hydrometric Catchment Areas. The majority of the bog is drained into the Muing and Owenmore Rivers (also known as

the Oweninny River). The eastern sections of the peatlands are drained by the Fiddaunagosty and Shanvolahan Rivers. The surface water management system will be visually inspected daily during construction works by the SHEQ Officer to ensure that it is working optimally. The frequency of inspection will be increased at settlement ponds adjacent to areas where earthworks are being carried out and at the borrow pits during excavations. Where issues arise, construction works will be stopped immediately, and the source of the issue will be investigated. Records of all maintenance and monitoring activities associated with the surface water network will be retained by the Contractor on-site, including results of any discharge testing requirements.

The Contractor will implement control measures such as temporary drains and drainage diversions, from commencement of construction to limit the volume of water that requires treatment. Temporary control measures implemented during construction works may include silt fences, silt bags, temporary settlement tanks and run-off attenuation, as required. Examples of silt fences and temporary settlement tanks are shown in Figures 5-2 and 5-3.

Figure 5.2 Silt fencing measures (Source: SSI Environmental (left) and Thrace Group (right)

Figure 5.3 Temporary site settlement tanks (Source: Siltbuster)

There is potential for earthworks to lead to release of suspended solids to surface water bodies. The main factors influencing the rate of soil erosion and subsequent sediment release includes:

- Climate.

- Length and steepness of slopes.
- Characteristics of the soil/soil erosion potential.
- Soil vegetation/cover.
- Duration and extent of works; and
- Erosion and sediment control measures.

Erosion and sediment control measures which will be implanted will include, but will not be limited to:

- Minimisation of soil exposure, by controlling, in so far as is practical, the locations where vegetation/soil is stripped and when vegetation/soil is stripped.
- During the side casting of soils, silt fences, straw bales and/or biodegradable geogrids will be used to control surface water run-off from material storage areas; and
- All surface water run-off from the development (including during construction works) will pass through either temporary or permanent settlement ponds.

To maximise the erosion and sediment control benefits of natural vegetation soil cover, stripping of soil is to be kept to a minimum and confined to construction areas only. Where practical, construction works will be staged to minimise the extent and duration of disturbance, e.g., plan for progressive site clearance, only disturbing areas when they are scheduled for current construction work.

Pre-Emptive Site Drainage Management

The works programme for the initial construction stage of the proposed development will take account of weather forecasts and predicted rainfall. 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 daily 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 two 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 forecasting suggests any of the following is likely to occur:

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

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

- Secure all open excavations.
- Provide temporary or emergency drainage to prevent back-up of surface runoff.
- 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.

As a further precaution, near-stream construction work will only be carried out during the period permitted by IFI 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 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.

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

It is proposed, that during the ground clearance of the proposed development, water control measures will be implemented to limit the impact on water quality. Suspended solid (silt) removal features will be implemented in accordance with CIRIA C697 Sustainable Drainage System (SuDS) Manual, and CIRIA C648 Control of water pollution from linear construction projects.

All temporary and permanent drainage from the site shall be designed to have as a minimum three stages of treatment, as defined in the SuDS Manual. Management of run-off 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.

<u>Interceptor Drains</u>

Interceptor drains/diversion ditches will be installed ahead of the main earthworks activities to minimise the effects of collected water on the stripped/exposed soils once earthworks commence. This drainage will integrate into the existing peatland drainage. These drainage ditches will be installed on the upgradient boundary of the areas affected by the access track earthworks operations and installed ahead of the main track construction operations commencing. They will generally follow the natural flow of the ground. The interceptor drains will intercept any storm water surface run-off and collect it to the existing low points in the ground, allowing the clean water flows to be transferred independently through the works without mixing with the construction drainage. It will then be directed to areas where it can be redistributed over the ground by means of a level spreader.

<u>Swales</u>

Track edge drainage/swales are required to control run-off from the running surface to lower water levels in the subgrade, to control surface water and to carry this flow to outlet points.

Swales along access tracks will be installed in advance of the main construction phase. On sections of track where there is significant longitudinal gradient, regular surface water interception channels will be employed – these will typically be at 10-20m intervals to collect any surface water that is discharging as sheet flow along the track and discharge the flow into the trackside swale.

Swales will provide additional storage of storm water where located along gradient. Given the steep longitudinal gradients on some sections of access track, regular check dams will be employed within the trackside swale on these sections to reduce the flow velocity and provide settlement opportunity. Check dams will be constructed from course gravel/ crushed rock (See Figure 5-4). Check dams will have a minimum 0.2m freeboard (from top of check dam) to top of swale level, to prevent overtopping of flows onto the access track. All check dams, etc will be checked at least once weekly via a walkover survey during the full period of construction. All excess silts will be removed and placed in borrow pit reinstatement or embankments. Where check dams have become fully blocked with silt, they will be replaced.

Figure 5.4 Typical example of stones used in a check dam to slow down water flow (Source: SNH, 2015)[4]

Swales will be re-vegetated by hydro-seeding with indigenous seed mix as soon as is practicable following excavation. This will reduce the flow velocity, treat potential pollutants, increase filtration and silt retention.

Settlement Ponds

Settlement ponds will be located downstream of road swale sections and at turbine/hardstand locations, to manage/buffer volumes of run-off discharging from the drainage system during periods of high rainfall, thereby reducing the hydraulic loading to watercourses. Settlement ponds are designed in consideration of the greenfield run-off rates.

The following shall apply to construction of settlement ponds at the site:

- Pond depths generally to be excavated to less than 1.5m.

[4] Scottish Natural Heritage (SNH), *Good Practice during Wind Farm Construction* (2015)

- Side slopes to be shallow, nominally at a 1 in 3 side slope (maximum); and
- Material excavated from the settlement pond should be compacted around the edge of the pond.

The settlement pond design is based on primary settling out of suspended solids from aqueous suspension. The theory behind the design of the settlement lagoons is the application of Stoke's Law. The settlement lagoons will be designed to provide sufficient retention time and a low velocity environment to allow suspended solids of a very small particle size to fall out of suspension prior to allowing the water to outfall to the receiving environment. Flow rates for storm events will be maintained at or below greenfield run-off rates.

Settlement lagoons will be installed concurrently with the formation of the road and will be fenced off for safety. They will be located as close to the source of sediment as possible and as far as possible from the buffer zones of existing watercourses. The minimum buffer zone width will be 50m as outlined above.

Subject to potential planning conditions and prior to commencement of construction activity, this drainage design (including construction specific measures) will be reviewed by the appointed Contractor as part of the review of this Construction Environmental Management Plan (CEMP).

A Surface Water Management Plan (SWMP) has been prepared and is included as Appendix 11.3 of the EIAR. The purpose of this plan is to ensure that all site works are conducted in an environmentally responsible manner so as to minimise any adverse impacts from the proposed development on surface water quality. The plan will incorporate the following specific objectives:

- Provide overall surface water management principles and guidelines for the construction phase of the Oweninny Wind Farm project.
- Address erosion, sedimentation and water quality issues; and
- Present measures and management practices for the prevention and/or mitigation of potential downstream impacts.

During the operational phase of the project, the management of surface water will be carried out in accordance with the proposed design and associated management features. The design of the wind farm has been developed following a detailed examination of the existing drainage on site. The drainage design ensures that any surface water arising from the proposed wind farm during operation will be contained and treated to ensure it can be dispersed out from the proposed development without any significant impact.

The decommissioning phase will not require any significant works that will impact on the drainage network.

The protection of water quality and prevention of pollution events requires a sustained and concentrated input from the Contractor with regard to the provision and maintenance of sediment control structures. The drainage system, as it is designed, does not impact on the existing drainage regime on site.

Proprietary Silt Control Measures

Temporary settlement tanks can be utilised, in lieu of constructing temporary settlement ponds, to remove suspended particles from controlled water in small works areas such as localised excavations that require pumping out of water. The tanks, as per Figure 5-3 are proven to be very effective, have a small footprint and are very mobile with the potential to move around the

wind farm site using a telehandler. These types of units are recommended by the Scottish Environmental Protection Agency (SEPA) and the UK Environmental Agency for use on construction sites for the treatment of sediment laden water. Sediment retained in settlement ponds or tanks will be removed on a regular basis and deposited at a suitable location, such as embankments or borrow pit reinstatement stockpiles.

Dewatering silt bags allow the flow of water through them while trapping any silt or sediment suspended in the water (see Figure 5-5). The silt bags provide a passive non-mechanical method of removing silt from silt-laden water collected from works areas within a construction site. Silt bags are easily disposed by a licensed waste contractor. Check dams will also be used in the site drainage system during construction to minimise sediment transport (see Figure 5-4). These check dams will slow down the movement of water in site drains, and thereby reducing the amount of sediment transported by the water. Stones are typically used at each dam to reduce soil erosion, to stabilise the dam and aid in filtration.

The proposed works will require significant trenching for on-site cabling and for the grid connection. Trenches will be dug in short sections at any one time to avoid potential for water flowing into the excavations. Any water that does accumulate in trenches will be allowed to naturally percolate to ground where possible. Any excavated material which is not removed immediately will be stored on the upgradient side of the trench, where possible, so that any sediment run-off will be collected in the trench. Clay plugs will be installed at regular intervals to prevent conduit flow of water through the trench after construction.

In specific locations, silt fences will be installed as an additional water protection measure around existing watercourses, particularly where works are proposed within the 50-metre buffer zone of a stream.

Silt control measures e.g. silt bags, will be implemented as required during the construction process.

Figure 5.5 Examples of Proprietary Silt Control Measures

Culverts

Culverts will be where the site roads, crane pads and turbine pads cross main bog drainage networks. Indicative locations of the culverts are shown on Planning Drawing 10889-2037

Precast concrete culverts of minimum 300mm in diameter shall be provided, a typical detail of which is shown on Planning Drawing 10889-2037. The proposed culverts and any diversion of the existing main drainage network across the site are specified on Planning Drawing 10889-2037.

5.3.1 TDR and Grid Connection Route

Silt fencing will be erected at the location of stream crossings along the grid connection route. Silt curtains and floating booms will also be used where deemed to be appropriate and this will be assessed separately at each individual location.

No refuelling of machinery will take place within 50m of a watercourse. Excavated material will not be stockpiled or side-cast within 50m of a watercourse. Appropriate steps will be taken to prevent soil/dirt generated during the temporary upgrade works to the TDR from being transported on the public road. Road sweeping vehicles will be used to ensure that the public road network remains free of soil/dirt from the location of the TDR works and grid connection when required. This will reduce the potential for sedimentation of surface watercourses locally.

5.3.2 Dewatering

Extraction could be undertaken by dry or wet working.

- Dry working requires dewatering. Dry excavation would require the use of initial drainage channels to reduce the hydraulic head, followed by sump dewatering in the pit or well dewatering. The volume of water requiring extraction initially is high in the gravels due to drainage from storage, however as the gravel area is surrounded by lower permeability materials the volume of groundwater encountered for the short-term use of the pit may be limited
- There may be circumstances where pumping may not be required:
  i. Shallow workings (e.g., sand and gravels) from which the mineral can be dredged.
  ii. Shallow quarries where the water table is close enough to the surface to allow the installation of passive drainage measures.
  iii. Quarries where there is a general lowering of the water table as a consequence of mineral extraction providing there is some natural outlet for groundwater drainage

With a shallow excavation in the area, material up to 4m below ground level or 2.5 m below the water table are accessible with conventional excavators or if required long reach excavators. Wet working can help to limit the impact on local groundwater resources. See Chapter 9, Table 9-9 for dewatering options of the various borrow pit locations. Potential effects are negative, slight, direct, long-term, certain effect on peat and soils.

5.3.3 Concrete Handling

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 be cleaned, using the

smallest volume of water necessary, before leaving the site. Concrete trucks will be washed out fully at the batching plant, where suitable facilities are already in place.

The small volume of water that will be generated from washing of the concrete trucks chute will be directed into a temporary lined impermeable containment area, or a concrete wash unit. This type of unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site as waste material. Where temporary lined impermeable containment areas are used, such containment areas will be excavated and lined with an impermeable membrane (see Figure 5-6).

Figure 5.6 Example of temporary concrete washout area

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

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

5.4 GROUNDWATER

No significant groundwater resources are present at the site, although localised perched groundwater may be associated with areas of granular overburden. No significant geological resources are known at the site and geological heritage is limited to the banks of the Bellacorick River.

The project site is relatively flat lying, with cutover blanket peat overlying deep glacial sandy tills The site overlies a poor aquifer that is unproductive except for local zones. The residual impacts on the surrounding groundwater quality, hydrology and existing drainage regime at the site are negligible and short term in nature. The existing on-site drainage system will remain active during construction and operation of the proposed wind farm and will be enhanced by a proposed drainage plan that has been designed for this development.

The construction timescale of activities within the site will be phased and short-term in duration and, thereafter, the only activities within the site that will be associated with maintaining existing drains, ongoing maintenance and monitoring during the operational phase. There are no significant long-term impacts.

The principal risks associated with soil and geology at the site are the management of soils, particularly regarding the generation of silty waters, and the loss of construction and operational materials (concrete, fuel and oil, etc) to water. It is expected that these risks can be fully mitigated through the adoption of construction and operational good practice.

5.5 LAND, SOILS AND GEOLOGY

The management of excavated materials is an important component of controlling dust as well as sediment and erosion control. Excavated topsoil, subsoils and peatland encountered, will only be moved short distances, and will be used locally for landscaping and benching/battering, where possible. Excavated material will not be stored in excessive mounds on the site. Excess soils/subsoils/peat, including from the grid connection cable trench excavations and drilling, will be hauled to the borrow pits and stockpiled temporarily pending backfill into the pits once the required rock resources have been extracted. Placed soils 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 side of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the berms. Seeding of the placed materials with indigenous species will be carried out only where natural revegetation or the reuse of the upper vegetated layer is unsuccessful. The re-vegetation of these areas will promote stability, reduces desiccation, run-off erosion and susceptibility to freeze/thaw action.

Excavations in some areas may be susceptible to collapsing depending on material encountered and depth of the excavation. Where battering back of excavations to a safe angle is not feasible, a physical barrier will be applied between the excavations and the potentially unstable material in the form of a granular berm or sheet piles. Excavations for turbine bases and substation infrastructure will be backfilled to ground level following foundation installation. Temporary works designs will be carried out by a competent engineer during detailed design to account for the existing ground conditions and the chosen turbine specification. The borrow pits will be reinstated insofar as is possible with excess excavated material from across the wind farm site and grid connection route.

As discussed in Section 4.1, temporary wastewater holding tanks will be used to store wastewater generated from the welfare facilities in the two construction compounds. This will eliminate the need for any wastewater treatment and percolation at the site. No concrete truck wash-out will be permitted at the site either to protect the existing ground conditions. Only concrete truck chute washing will be permitted on site in accordance with the measures outlined in Section 5.3 above. The management and handling of fuels, oils and lubricants will be in accordance with the measures set out in Section 4.5 to reduce the potential for spillage or contamination of soils.

Surface water management measures as set out in Section 5.3 will be put in place from start of construction works and installed alongside internal roadways to ensure that surface water run-off is controlled and does not cause erosion of exposed surfaces or generate sediment laden discharge.

Several turbine component transport options have been identified, the routes originate from Galway port (Route A) and Killybegs port (Routes B and C). These routes are described in detail in Chapter 17 Traffic and Transport. Any upgrades to the identified haul route options (including

the existing Oweninny phase 1 and 2 TDR – See Chapter 17 Traffic and Transport) will be carried out in advance of turbine deliveries and following consultation and agreement with Mayo County Council.

5.5.1 Peat Deposition Areas

Due to the nature of the development, i.e., deposition of soil and peat, there is the potential for impacting the shallow soil and geology environment. Excavation of peat and subsoil will be required for construction of works for the installation of access roads. This will result in a permanent removal and relocation of cutover peat and subsoil. There is no loss of peat or subsoil, as it will all be relocated within the proposed development.

The amount of peat and soil excavated from tracks depends on the final design i.e., cut or floating. Worse case scenarios were utilised in the excavation calculations. Peat depth information (both probed and extrapolated depths) was used to determine the preliminary estimates of excavation volumes for each of the main infrastructure elements.

It is anticipated that peat deposition to a repository area will be required, which will be designed to be fully stable, it is anticipated that deposited peat thickness will not exceed 1m. The design aimed to minimise further the amount of peat excavated by proposing floating tracks wherever possible. A Peat Management Plan (PMP) has been prepared for the development. Recommendations made in the PMP will be taken into consideration during the design and construction stage of the proposed development. Guidance regarding the management of Peat stability must be inherent in the construction phase of the project. A Peat Management Plan (PMP) was developed as part of the planning application – See Appendix 9-3. This plan documents how Peat will be managed on site for re-use of materials, the design for on-site re-use and disposal options, and a scheme for the tracking and recording of soil movements.

5.6 BIODIVERSITY

The following general measures will be taken to minimise potential effects on the local and regional biodiversity during construction:

- An Ecological Clerk of Works (ECoW) will be appointed to ensure compliance during the construction stage with all mitigation measures and planning conditions related to ecology and with wildlife law.
- A Biodiversity Enhancement Plan (BEP) has been prepared and is included in Appendix 7-5 of the EIAR. It will be a living document, updated and amended by the ECoW during the lifetime of the project. The updated BEP will become part of the final CEMP for the construction works.
- A particular focus of the plan will be the management of habitat creation and enhancement measures and bat buffer zones.

5.6.1 Habitat/Flora

5.6.1.1 Habitat Loss/Degradation & Habitat Creation/Enhancement

The habitat creation and enhancement sites. Management measures will be developed on a site-specific basis and will include:

- Drain blocking, to increase wetland habitat area and improve ecological function and species composition.
- Scrub removal.
- Invasive species removal in selected areas

Where the clearance of vegetation cannot be avoided, vegetation removal will be kept to a minimum. Where applicable and to minimise peat/ vegetation loss, surface vegetation and upper layers of peat (scraw) will be carefully stripped and temporarily stored to one side, following construction activities this scraw can be reinstated in original areas, in the case of borrow pits and temporary compounds or relocated beside infrastructure sites, such as hard stands or roadways.

All proposed works area will be defined at the outset to define the limits of the proposed works area. The demarcation of the works area will ensure no vegetation clearance will occur outside the proposed development site boundary.

In accordance with Section 40 of the Wildlife Acts, all vegetation proposed to be removed to facilitate the works will be cleared outside of the birds nesting season (1st March to 31st August inclusive). This will ensure there is no loss of nests because of the proposed construction works. If clearance of vegetation is required within the bird nesting season, vegetation will first be surveyed by an experienced ecologist to identify the presence of active nests. Only vegetation confirmed to be nest free may be cleared. If a nest is confirmed as present, the nest will either removed under license obtained from NPWS or the nest will be cordoned off until the chicks have fledged or until nesting has failed.

5.6.1.2 Pollution Control/Sedimentation

All pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for 'Environmental Good Practice on Site' (C741), 'Control of Water Pollution from Linear Construction Projects. Technical guidance' (C648) and regarding IFI guidance 'Guidelines on the Protection Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (IFI 2016) to ensure the protection of watercourses located within the proposed development site.

5.6.1.3 Maintaining Site Hydrology

Existing surface water flows across the site will be maintained through such measures as cross drains transferring water across access tracks. Further information on surface water management is provided in Section 5.3.

5.6.1.4 Watercourse Protection

The proposed development has been designed to avoid significant impacts on watercourses. The turbines have been located an excess of 50m from all watercourses. No in-stream works are proposed as part of the proposed works. The access track to T05, which crosses the Muingamolt stream and access track to T16, which cross which crosses the Fiddaunfura Stream twice will be constructed via a clear-span bridge. The proposed clear-span bridges will comprise a reinforced concrete bridge bed placed on foundations, set 2.5m back from the bank, either side of the stream.

5.6.2 Fauna

5.6.2.1 Otter

Evidence of otter was recorded within the proposed development site. It is likely that otter occasionally uses large watercourse such as the Muing River within the proposed development site for commuting and foraging. No otter holts or resting places were recorded onsite.

Due to the presence of otter activity recorded within the proposed development site, a pre-construction otter survey (as part of a general ecological pre-construction walkover survey) will be undertaken to identify the presence of any new holts or activity. The pre-construction survey should be conducted no more than 10—12 months in advance of the construction works as per the NRA (2008) guidelines. An otter survey was undertaken within the proposed development site in August 2020 as well as other incidental observations recorded during other surveys (April 2020 – March 2021). No signs of otter (which included, tracks, slides and spraints), otter holts or resting sites were identified during the August 2020 surveys. But Two incidental records of otter however were recorded near waterbodies in October 2020. These were live sightings of otter foraging in lakes within the proposed development site on cutover bog, one located within to the northwest portion of the site and one located near the centre of the site.

Otter is a qualifying interest of the Owenduff/Nephin Complex SAC (000534) and the River Moy SAC (002298) which are located approximately 4km and 7km downstream of the proposed development site. The territories of otter can stretch for several kilometres, ranging from as small as 2km and extending up to 20km in cases.

Otter, which may occur in proximity to the proposed development may be associated with the downstream SAC population; therefore, otter is categorised as being of International Importance. If a new holt is identified within the ZoI of the proposed works, a derogation license will be sought from NPWS. The derogation licence will allow the disturbance of the holt (if located within the ZoI) once all mitigation measures outlined in the license are implemented accordingly.

No construction lighting will be directed towards watercourses or lakes within the site, to maintain a dark corridor for commuting and foraging otter.

Water quality will be protected in all the watercourse onsite following the mitigations detailed in Chapter 7, Sections 7.9.1.2.2 and 7.9.1.2.3.

5.6.2.2 Badger

Signs of badger were recorded within the proposed development site including a dead (roadkill) animal and signs of foraging. No setts however were identified within the ZoI of the proposed works. Due to the presence of badger activity recorded within the proposed development site, it is recommended that a pre-construction badger survey within 150m of the proposed development works is carried out prior to the works commencing.

Pre-construction surveys (as part of a general ecological pre-construction walkover survey) will be carried out in accordance with 'Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes' (NRA, 2006). Should any new setts be encountered within the ZoI of the proposed development, a disturbance derogation licence, if required, will be sought from the NPWS. The derogation licence will allow the disturbance of the sett(s) once all mitigation measures outlined in the license are implemented accordingly.

Any temporary construction lighting used during the construction works will be cowled away from potential foraging sites to prevent disturbance to badger within the area.

To protect individual badgers during the construction phase of the proposed development, all open excavations on site will be covered when not in use and backfilled as soon as possible. Any deep excavations which are left uncovered will contain egress ramps in place to allow mammals to safely exit excavations should they fall in.

5.6.2.3 Pine Marten

The felling of the conifer plantation will be limited to time periods outside which pine marten may have young in dens (March and April). Where this is not feasible then areas to be clear felled will be re-surveyed (as part of a general ecological pre-construction walkover survey) in advance by a suitably qualified ecologist to determine whether any occupied pine marten dens are present. A license under the Wildlife Acts will be applied for should any dens have to be disturbed.

5.6.2.4 Common Frog

If frog spawn is identified during a survey during common frog's spawning season within the footprint of the works, a derogation license under Sections 9, 23 and 43 of the Wildlife Acts will be sought from NPWS. The derogation license, if required, will detail specific measures to translocate the frogs and spawn to suitable nearby habitat which will not be impacted by the proposed development.

5.6.2.5 Bats

Mitigation is best achieved through avoidance especially in relation to bat fauna. It is proposed that measures outlined in Chapter 7, Table 7-16 of the EIAR be put in place to avoid or lessen the degree of impacts on local bat populations.

A high level of mitigation is required T1, T2, T3, T4, and T7 areas. Moderate level Bat Mitigation applies to T6, T8, T9, T11, T13, T14, T17 and T18. This also applies to remaining Internal Road Network. T5, T10, T12, T15 and T16 requires a low level of mitigation.

5.6.3 Aquatic Ecology

The rivers and watercourses within and immediately adjacent to the site were found to provide important spawning and nursery habitat for crayfish, lamprey, and salmon. The release of construction pollution and/or sediment into the watercourses has the potential to degrade water quality indirectly impacting these aquatic species and their habitats. As such mitigation to control pollution/sedimentation (as discussed in section 5.6.1.2) and mitigation to protect watercourses (as discussed in Chapter 7 Section 5.6.1.2.) will be followed. Proposed drainage measures to reduce and protect the receiving waters from the potential.

5.6.4 General Mitigation

Construction-phase mitigation measures to protect retained habitats and to protect watercourses are described in Section 7.10.1 of the EIAR.

5.6.4.1 Habitat Loss

Where areas of potentially sensitive breeding bird habitat are proposed to be removed during construction, these works will be timed to avoid the breeding birds nesting season from 1st of March to 31st of August. This measure will avoid any potentially significant effects to breeding bird species. If the bird nesting season cannot be avoided, a license will be sought from NPWS to undertake the clearance of vegetation within the season. Upon license approval, a suitably qualified ornithologist/ecologist will undertake a pre-construction survey of the vegetation proposed to be removed to establish the presence or not of breeding birds. Where an active nest is found, the nest will be clearly marked and avoided if possible. Where avoidance of the nest is

not possible, the nest will only be removed once the chicks have fledged or where nesting has failed.

A pre-construction survey for ground nesting species, which have been identified as having a confirmed or possible breeding status, or species which may potentially be found nesting (e.g. Greenshank, Dunlin, Golden Plover, Redshank, Lapwing, Ringed Plover, Common Sandpiper, Curlew, Snipe, Meadow Pipit or Common Gull) will also be undertaken within the cutover bog located at the south and east of the proposed development site to identify the presence of any nest prior to the clearance of vegetation.

5.6.4.2 Disturbance/Displacement of Protected Species

The following measures, in relation to birds, are proposed for the construction phase:

- As part of the iterative project design process, turbines have been located away from habitats identified as particular value to protected or sensitive avian species and all will be in habitats not evaluated as valuable to avian species and typically of low ecological value. This mitigation by avoidance will reduce potential habitat loss impacts for key avian species.
- Pre-construction surveys will be required to identify the location of any breeding birds onsite, in particular breeding waders (e.g., Greenshank, Dunlin, Golden Plover, Redshank, Lapwing, Ringed Plover, Common Sandpiper, Curlew or Snipe) and breeding gulls (e.g. Common Gull). These surveys are required to inform site clearance activities given the legal protection of all breeding birds.
- As noted, the removal of any vegetation will be undertaken outside the bird breeding season, where feasible, which begins on the 1st day of March and ends on the 31st day of August. Where this is not possible, a derogation license will be sought from NPWS. If a nest is found in proximity to the proposed works area, hoarding will be erected between the nest and the proposed development site.

5.7 WASTE MANAGEMENT PLAN

All waste generated from the proposed development will be managed in accordance with the provisions of the *Waste Management Act* 1996 as amended and associated Regulations.

All excavated topsoil, subsoils and peat 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.

Typical 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 construction compounds and removed off site by a licensed waste management contractor at regular intervals for the duration of the construction works. Skips and bins of appropriate sizes will be stored in both construction compounds and used to maximise source segregation of waste materials. This will include food and packaging waste from 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 an authorised hazardous waste contractor.

The Contractor will encourage all project teams 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 steel reinforcement cages and concrete materials as much as possible. The 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, particularly for turbine bases, in preference of non-reusable options. Other opportunities for material reuse across the site will be sought by the Contractor.

The SHEQ Officer, or other appropriate person, will be appointed as the Waste Manager for the duration of the project in accordance with the general guidance set out in the *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (Department of the Environment, Heritage and Local Government (DoEHLG, 2006).

At the pre-construction stage, the construction and demolition (C&D) Waste Manager will be able 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 Waste Manager.

The Waste Manager will be responsible for auditing waste handling and storage throughout the project and for advising construction personnel on best practices. All waste collections and records of waste movement off-site will be collated by the Waste Manager and retained in the site office.

5.8 TRAFFIC AND TRANSPORT

A TMP for the construction phase of the works has been prepared and is included in Appendix A to this document. The primary objectives of the TMP as set out in the document are to:

- Outline minimum road safety measures to be undertaken at site access / egress locations during the Construction Phase, including approaches to such access / egress locations; and
- Demonstrate to the Developer, Contractor and suppliers the need to adhere to the relevant guidance documentation for such works.

Mitigation measures regarding traffic and transport as set out in the EIAR are provided in the following sections.

5.8.1 Traffic Impact

To mitigate the impact of the construction traffic, the Wind Farm will utilise all available resources within the existing site to reduce the requirement for importation of materials to site.

The second largest traffic volume impact is associated with the haulage of the materials for the internal access track construction. In addition to the borrow pits, the internal access tracks have been designed to utilise existing Wind Farm access tracks where feasible, reducing the volume of materials required for importation to the site.

The largest volume traffic impact is associated with the concrete pours for the turbine foundations. The works at other areas within the main site 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 impact, liaison with local authorities and the community in advance of the foundation pours as well as minimising other works/deliveries as noted.

5.8.2 Internal Access Tracks & Passing Bays

To access the development site, the existing internal access roads will be utilised with some widening and a new section of internal access road constructed, refer to Drawing No. 10889-2003.

5.8.3 Drainage

Drainage works to be carried out alongside the internal access tracks are discussed in Section 5.3.

5.8.4 Haul Routes

A number of turbine component transport options have been identified. These routes are described in detail in Chapter 17 Traffic and Transport. The three routes identified originate from Galway port (Route A) and Killybegs port (Routes B and C).

5.8.5 Pre- and Post-Construction Pavement Surveys

The client will undertake pre-construction and post-construction visual pavement surveys on the Haul Roads. Where the surveys conclude that damage on the roadway is attributable to the Construction Phase of the proposed project, the developer will fund the appropriate reinstatement works to bring the road back to pre-construction condition as a minimum, details for which will be agreed with the Roads Authorities.

5.8.6 Traffic Management Plan (TMP)

The successful completion of this project will require significant co-ordination and planning, and a comprehensive set of mitigation measures will be put in place before and during the construction stage of the project to minimise the effects of the additional traffic generated by the proposed development. The Traffic Management Plan (TMP) proposed for the Oweninny Wind Farm Phase 3 is included in Appendix A of this report.

Note, the TMP has been included as a separate document. Any changes which may arise from the planning process and in the detailed construction programme can be incorporated.

The following mitigation has been incorporated into the TMP:

- Haul route selection to avoid sensitive receptors.
- Widened approaches to the site accesses within the development to facilitate queuing of construction vehicles off the public road.

- Traffic Management Operatives (TMOs) will be provided by the principal contractor in accordance with their Traffic Management Plan at the site accesses during peak construction traffic activities, refer to the TMP.
- A wheel wash will be provided within the site.
- Passing bays on the internal access track and a loop layout within the Wind Farm site to facilitate safe passing of vehicles within the site, vehicles travelling in a forward direction (reducing higher risk reversing manoeuvres).

5.8.7 Project Delays

To avoid delays to the project programme all required road opening licenses, agreements with the Local Authorities and An Garda Síochána to facilitate movement of abnormal loads shall be sought by the appointed Contractor in a timely manner to avoid delays to the project.

5.9 CULTURAL HERITAGE

There are no recorded archaeological, architectural or cultural heritage sites located within the footprint of the proposed project, therefore, there are no predicted impacts to the recorded heritage resources during the construction phase.

Previously unknown archaeological sites and features may survive below the current ground level across the proposed project. Should any such remains be encountered during construction direct and negative impacts may occur. Prior to the application of mitigation these have the potential to range from moderate to profound negative, depending on the nature, extent and significance of any such archaeological features.

The National Monuments Act, as amended requires that, in the event of the discovery of archaeological finds or remains that the relevant authorities, the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht (DoCHG) and the National Museum of Ireland, should be notified immediately. Allowance will be made for full archaeological excavation, in consultation with the National Monuments Service of the DoCHG, if archaeological remains are found during the construction phase.

In areas where there is the potential that archaeological, architectural or cultural heritage site, structures, monuments or features could be impacted on during the construction phase, one or both of the following mitigations measures will be implemented:

Archaeological testing – best practice in areas of moderate archaeological potential demands caution, to ensure that archaeological deposits are identified as early as possible, thereby ensuring that any loss from the archaeological record is minimised. During archaeological testing, a licensed eligible archaeologist will supervise excavations of pre-determined trenches undertaken with a toothless grading bucket, under licence to the National Monuments Service of the DoCHG. Undertaking this confirmatory surveying will ensure that sufficient time can be allowed within the construction schedule for the excavation of any archaeological deposits discovered.

Archaeological testing was carried out in the townland of Bellacorick, to the west of the proposed development area. The peat was recorded as deep as 1.7m in places. Nothing of archaeological significance was identified (Licence Ref.: 11E0101, Bennett 2011:447).

Archaeological monitoring – in areas of moderate archaeological potential, excavations associated with construction works, namely topsoil stripping, will be monitored by a suitably qualified archaeologist. If archaeological deposits are discovered, work in the area will cease

immediately and the archaeologist will liaise with the National Monuments Service of the DoCHG and the National Museum of Ireland.

Oweninny Bog, including a large portion of the overall proposed project boundary, was previously subject to archaeological survey as part of the Peatland Survey 2003 (Licence Refs.: 03E1319 and 03E1320). No archaeological features or deposits were noted within the area of the proposed project (Bennett 2003:1320). A possible mass path was identified in the townland of Drumanaffrin, outside of the study area of the proposed project (Bennett 2003:1296).

Archaeological monitoring was carried out within the townland of Shanvodinnaun, under licence 17E0418, in advance of the erection of a wind mast. A total of 23 anchor point trenches were excavated under archaeological supervision. Nothing of archaeological significance was identified (Bennett 2017:143).

Archaeological monitoring was undertaken (unlicensed) in the townland of Srahnakilly in advance of the construction of a wind monitoring mast. No archaeological features were identified, and no archaeological artefact were recovered (Bennett 2020:496).

Archaeological monitoring of groundworks associated with the erection of a meteorological mast was carried out under licence 16E0384. Nothing of archaeological significant was recorded (Bennett 2016:339).

A suitably qualified cultural heritage consultancy/consultant will be appointed to oversee the effective implementation of the archaeological mitigation measures recommended in this chapter for the construction phase of the proposed development. The consultancy/consultant will maintain continuing liaison with the National Monuments Service of the DoCHG and Mayo County Council's (MCC's) Executive Archaeologist throughout the construction phase of the development.

Archaeological Mitigation – measures for different components and locations of the wind farm project are detailed below.

All archaeological mitigation is to be undertaken under licence to the National Monuments Service of the DoCHG and the National Museum of Ireland.

During the construction phase all stripping of topsoil/peat across the proposed development area will be monitored by a suitably qualified archaeologist. Should any features of archaeological potential be discovered during the works the DoHLGH will be informed immediately and archaeological excavation (preservation by record) or in-situ will be required. Any further mitigation will require approval from the DoHLGH.

6.0 CONCLUSION

This Construction Environmental Management Plan (CEMP) presents a summary of the overall proposed development works, the management of the site during the construction works and the mitigation measures required to ensure the proposed works do not have a significant effect on the environment. This document is prepared in accordance with Best Practice documents as set out above and in the EIAR and the NIS.

Prior to commencement of construction, the appointed Contractor will be required to update this document with site specific details including the location of spill kits on the site, the layout of the construction compounds, machinery pre-start checklists and provide details on the persons responsible for environmental management for the duration of the works. The updated

CEMP will also be required to include any specific construction phase environmental management procedures identified in the grant of planning for the development or subsequent to the planning submission. The final CEMP document will be agreed with the Developer prior to commencement of works and submitted to the planning authority. It will be a live document and updated accordingly throughout the project.

Appendix A – Traffic Management Plan

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OWENINNY WIND FARM PHASE 3

TRAFFIC MANAGEMENT PLAN

MARCH 2023

OWENINNY WIND FARM

TRAFFIC MANAGEMENT PLAN

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TOBIN Consulting Engineers

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1.0 INTRODUCTION

This Traffic Management Plan (TMP) was prepared as requested by Mayo County Council's Roads Department. The TMP is a "living document". Therefore, any changes which may occur in the planning process and in the detailed construction programme can be incorporated, as can inputs by the Contractor(s), the detailed design team and Client. The commitments included within the Environmental Impact Assessment Report (EIAR) are the minimum commitments that the Contractors shall follow, and others will be developed during the Construction Phase in consultation with the various stakeholders, including the Local Authorities.

1.1.1 Objectives

This document is a Traffic Management Plan (TMP), prepared as an Appendix to the Construction Environmental Management Plan (CEMP). This TMP has been prepared prior to the appointment of a Contractor, material suppliers and final Construction Phase programme. It will be updated following grant of planning permission and prior to commencement of any construction works as outlined in section 3 of the CEMP.

The primary objectives of this TMP are to:

- Outline minimum road safety measures to be undertaken at site access / egress locations during the Construction Phase, including approaches to such access / egress locations; and
- Demonstrate to the developer, Contractor and suppliers the need to adhere to the relevant guidance documentation for such works.

The TMP shall address the following issues which are explained in detail in this report:

- Consent, Licenses, Notifications and Permissions;
- General Provisions;
- Site Access and Egress;
- Routing of Construction Traffic;
- Site Specific Temporary Traffic Measures;
- Enforcement of Traffic Management Plan; and,
- Emergency Procedures During the Construction.

1.1.2 Implementation and Monitoring

The principal Contractor shall agree and implement measures to monitor the effectiveness of the TMP, in conjunction with the Local Authority and Client. On finalisation of the TMP, the Contractor shall adopt the plan and associated monitoring measures.

In order to ensure that environmental awareness and compliance is communicated effectively at the start and throughout the construction works, this TMP in conjunction with the 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. Refer to Aims and Objectives in section 1.4 of the CEMP.

2.0 THE PROJECT

2.1 PROJECT LOCATION

Oweninny Wind Farm Phase 3 is located on Oweninny Bog near Bellacorick in County Mayo. The Oweninny Bog is situated approximately 12km west of Crossmolina, 8km east of Bangor Erris, and just north of the N59 National Road. The closest settlement to the site is Bellacorick village which is located at the southwestern extents of the bog. The area around the Oweninny Bog is a relatively sparsely populated area.

The proposed development site is located on the eastern side of Oweninny bog, within the townlands of Laghtanvack, Croaghaun (also known as Croaghaun West), Moneynieran, Corvoderry, Shanvolahan, Dooleeg More, Shranakilly, Bellacorick and Shanvodinnaun. The application site surrounds but does not include a forestry plantation at Corvoderry on third party lands, seen in Figure 2-1.

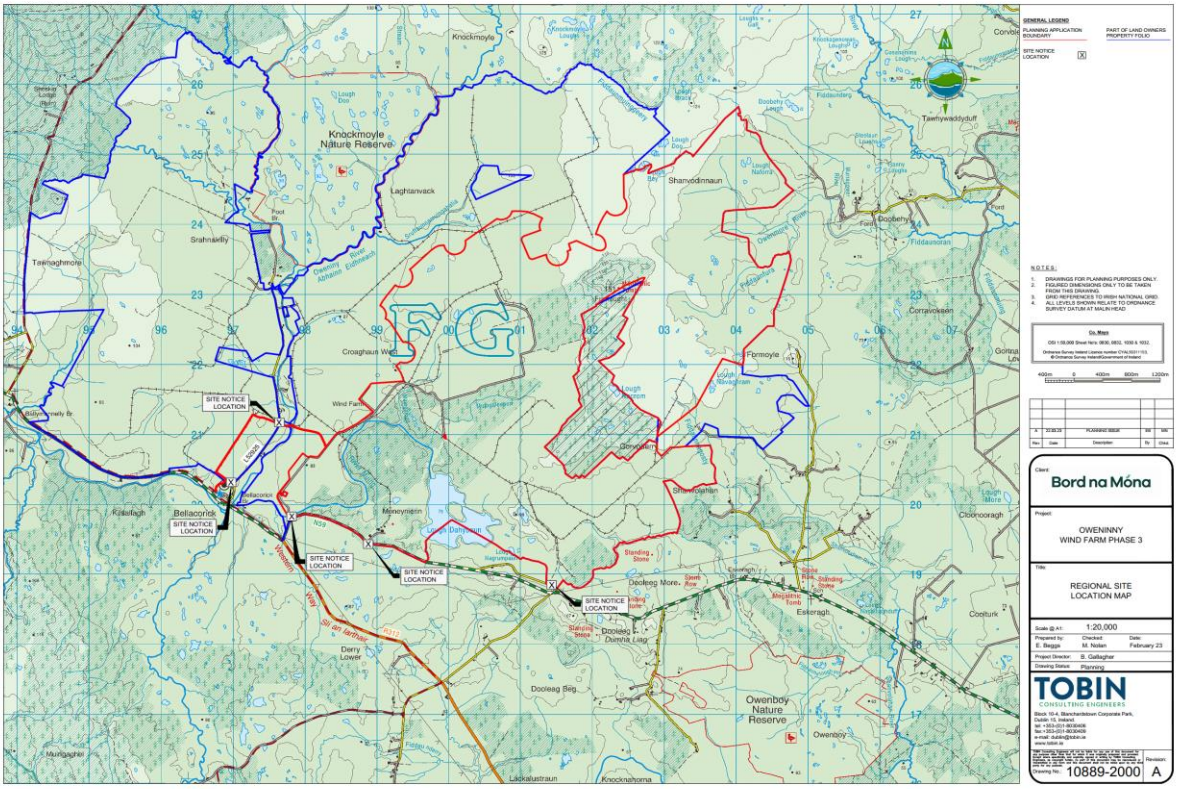

Figure 2-1 Site Location Map - Regional

2.2 PROJECT DESCRIPTION

The proposed development comprises the construction of 18 no. wind turbines and ancillary works. The turbines will have a blade tip height of 200m above the top of the foundation level and will be accessible from internal access routes within the Bord na Móna site. In addition, there will be a requirement for minor temporary modifications to public road infrastructure to facilitate the delivery of abnormal loads. Seen in Figure 2-2 and 2-3.

A 10-year planning permission and 30-year operational life from the date of commissioning of the entire wind farm is being sought. Decommissioning will occur after the operational phase.

The proposed development (as described in full in Chapter 3 (Description of the Proposed Development) of the main EIAR) will generally comprise of the following:

- 18 no. wind turbines (including tower sections, nacelle, hub, and rotor blades) and all associated foundations and hard-standing areas in respect of each turbine;
- Decommissioning and removal of 21 no. existing Bellacorick Wind Farm wind turbines (including tower sections, nacelle, hub, and rotor blades) with a tip height of 62m;
- New internal site access roads, approximately 26,500m in length (permanent and temporary), passing bays, car parking and associated drainage;
- An amenity route through the site to the existing Visitors Centre with access from a public road off the N59 near Dooleeg;
- 3 no. borrow pits;
- 5 no. peat deposition areas;
- 1 No. permanent Meteorological Mast 120m high, and the decommissioning and removal of an existing 100m Meteorological Mast on site;
- 5 no. temporary construction compounds, including material storage, site welfare facilities, and site offices;
- 1 no. 110kV electrical substation compound. The electrical substation will have 2 No. control buildings, a 36m high telecommunications tower, associated electrical plant and equipment and a wastewater holding tank.
- All associated underground electrical and communications cabling connecting the wind turbines to the proposed substation;
- All works associated with the connection of the proposed wind farm to the national electricity grid, including a 110kV underground electrical cable from the proposed on-site electrical sub-station to the existing sub-station at Bellacorick;
- All related site works and ancillary development including (but not limited to):
    - Earthworks;
    - Peat management works;
    - Site security;
    - Groundwater and surface water management;
    - Overburden (soils/peat) storage and management; and
    - Site reinstatement, landscaping and erosion control.

Grid Connection

The proposed 110 kV substation will be connected to the national grid at the existing 110 kV Bellacorick substation via underground high voltage (HV) cables and will export power via the existing 110 kV overhead line infrastructure from Bellacorick substation.

The proposed development requires approximately 5km of 110 kV underground cable installation from the 110 kV onsite substation to the existing ESB Bellacorick 110 kV substation. The entire underground cable will be installed along the existing wind farm access roads.

Construction Haul Routes

There are two types of haul routes:

- The Construction Haul Route, see Figure 2-2 and
- the Abnormal Indivisible Load (AIL) Haul Route, see Figure 2-3.

Construction Haul Route for standard construction traffic (i.e. max. legal articulated vehicles and rigid vehicles) uses the N59 from Bangor Erris and Crossmolina with access to national, regional, and local road networks from these towns.

Advanced Abnormal Indivisible Load (AIL) Haul Route

For Oweninny Wind Farm a number of AIL delivery haul route(s) have been considerations including the following:

- **Route A** - Port of Galway, Galway City
  Route A commences at Galway port, and utilising both motorway and national roads to the site via Rathmorrissey Interchange to Tuam and onwards to Claremorris, Charlestown, Foxford and Crossmolina to the site access.

- **Route A1** - Shannon Foynes Port, Co. Limerick
  Route A1 commences in Foynes, towards Limerick City and north to the Rathmorrissey Interchange and continuing along Route A.

- **Route B and Route C** - Killybegs Port, Co. Donegal

  Route B commence at Killybegs port, through Bundoran and onto Crossmolina. This route continues south of Sligo to Collooney and west to Ballina via Tobercurry via the R294. From Ballina, it follows the same route to Crossmolina and onward to the site access as per Route A.

  Route C commence at Killybegs port, though Bundoran and onto Crossmolina. This route continues west, south of Sligo at Ballysadare via the N59 onto Ballina. From Ballina, it follows the same route to Crossmolina and onward to the site access as per Route A.

Note: Route C is the route utilised in 2019 and 2021 for Oweninny Wind Farm Phase 1 and 2 for the transport of the turbine blades of 57.5m in length.

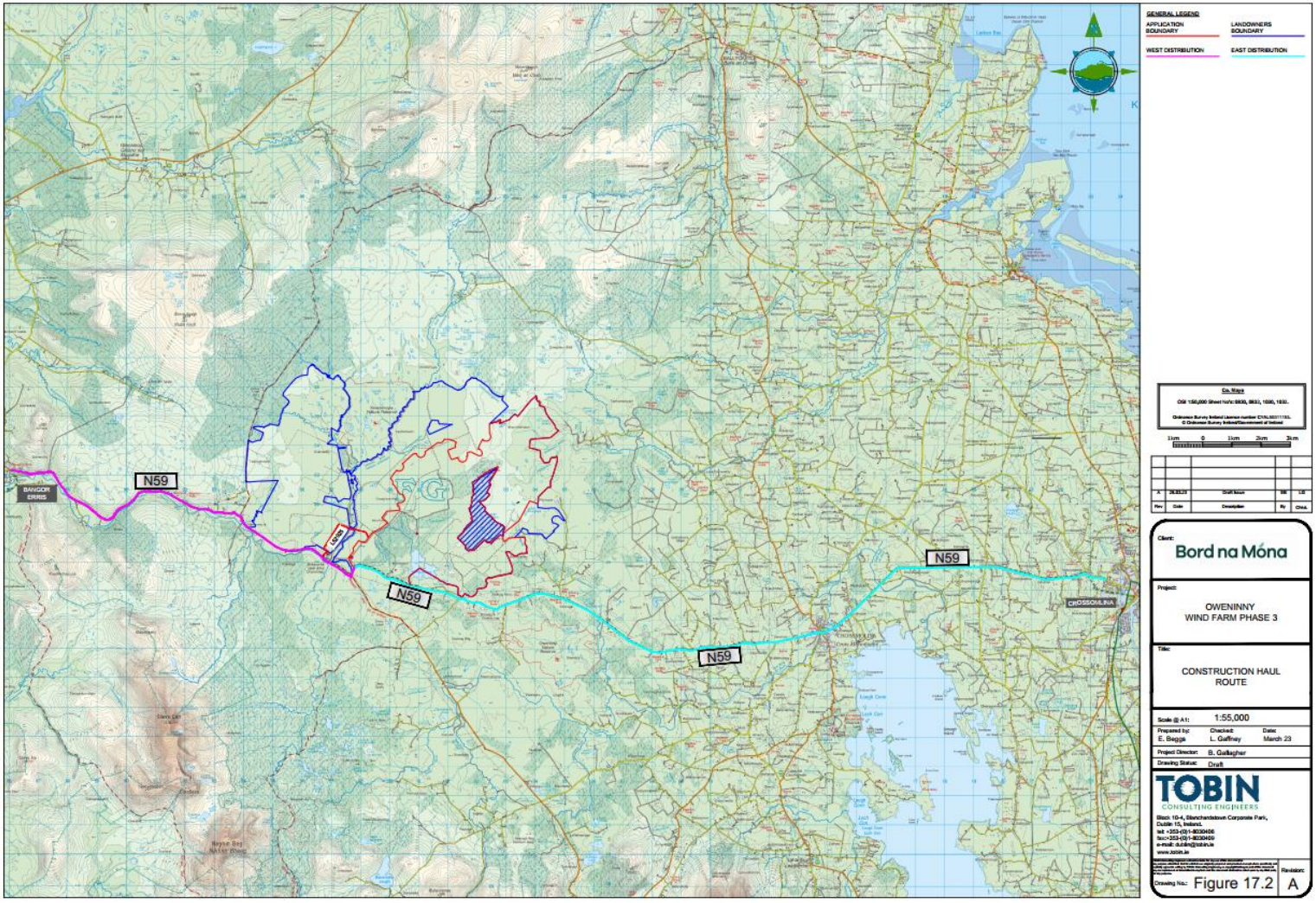

Figure 2-2 Construction Haul Route

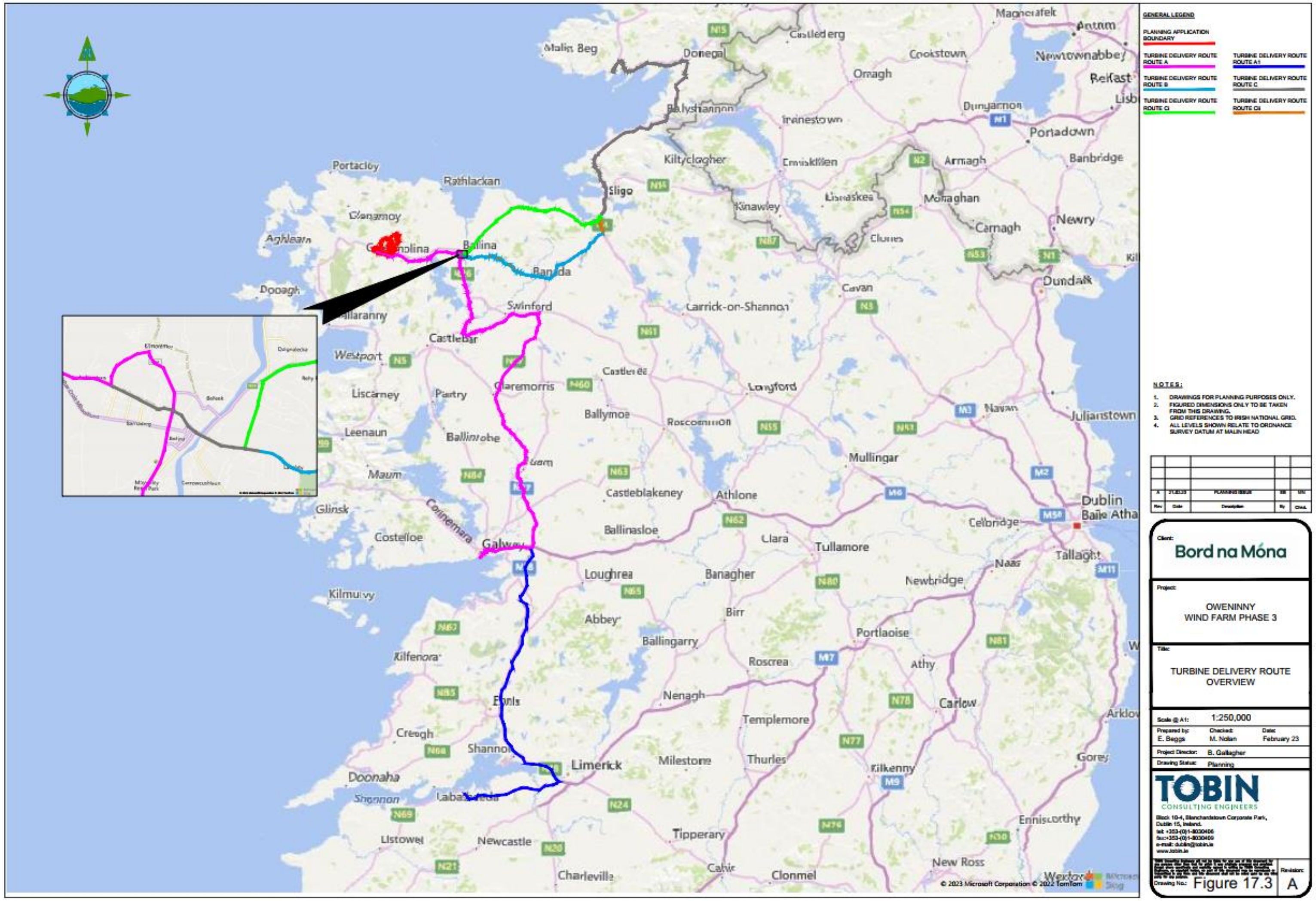

Figure 2-3 Abnormal Indivisible Load (AIL) Delivery Routes / Turbine Delivery Route (TDR)

2.2.1 Proposed Site Access & Egress

The proposed development will utilise the existing access to Oweninny Wind Farm Phase 1. The existing entrance is located via a priority T-Junction on the N59, located approximately 300m north of the junction of the N59 / R312.

This entrance will be the construction entrance and exit to the site and will facilitate both the delivery of materials to the site as well as large oversize components (AILs). During the operational phase of the wind farm this entrance will also be used as the access point to the Visitors Centre and associated pathways and cycleways.

2.2.2 Existing Road Network

The EIAR Traffic Chapter 17 describes the existing surrounding road network impacted by the proposed wind farm development. The main haul routes to the site are via the national and regional road network, which has sufficient width to accommodate two-way passing typical construction vehicles (i.e. HGVs). Construction traffic movements are limited on the local road network, with use of the local roads only in the absence of an alternative on the national and regional road network. The construction haul route along the N59 has been identified and the final source of materials on procurement by the appointed Contractor will determine the haul route extents.

The haul route for the AILs may commence at Killybegs, Galway or Shannon-Foynes Port. The routes primarily use the national road network where feasible. Two alternative swept path movements were undertaken to assess the AIL routes. With minor works on the existing road network, as detailed in Appendix 17.1 of the EIAR. The AIL assessment shows the existing road network can accommodate these AIL deliveries with minor modification at a number of pinch points, refer to APPENDIX 1 of this TMP.

The cable route will be along the internal access roads, with crossing of one public road, the L52925 local road. The crossing will be by hydraulic directional drilling to mitigate the impact on the public road.

The following existing roads may be utilised by the proposed Phase 3 wind farm development:

- Motorway
  - M6
  - M17
  - M16
- National Road
  - N59
  - N6
  - N18
  - N17
  - N83
  - N4
  - N15
  - N56
  - N69
- Regional Road
  - R339
  - R336
  - R263
  - R314
  - R510
  - R257
  - R445
- Local Road
  - L52925

3.0 CONSTRUCTION PHASE

3.1 CONSTRUCTION PHASE WORKS

The wind farm construction has a construction period of approximately 24 months with construction envisaged to commence in January 2025, with the construction completion date in 2027. The construction phases can be broken down into three overlapping phases;

Construction Phases:

- Phase 1 - Civil Engineering Works 18 months
- Phase 2 - Electrical Works 18 months
- Phase 3 – Installation Turbine Erection 10 months

The durational and phasing of the works are outlined in detail in the EIAR Chapter 3, Chapter 17 and is included in Section 3.1 of the CEMP. As evident in the above list, the phases will be overlapping and occurring concurrently at different works areas within the main site.

3.2 CONSTRUCTION HOURS

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

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

3.3 CONSTRUCTION PHASE TRAFFIC

3.3.1 Staff Levels

For the Phase 3 wind farm construction, a peak workforce of approximately 100-120 personnel are anticipated on site. There will be peaks and troughs in the numbers, throughout the estimated construction period of 24 months.

3.3.2 Staff Traffic Generations

The 100-120 workers will generally travel to the site via light vehicle (LV) (i.e. car or small van) assuming 2 persons per vehicle, or 50-60 trips to and 50-60 trips from the site.

3.3.3 Construction Vehicles

The construction phase for the proposed development will result in additional traffic on the roads in the vicinity of the development. The proposed HGVs will typically be rigid vehicles (i.e. concrete trucks, dump trucks, delivery vehicles) or maximum legal articulated vehicles within normal vehicle loading.

This additional construction traffic will include the following:

- Construction worker vehicles, e.g. cars or vans (light vehicles).
- HGVs carrying conventional earthworks equipment such as an excavator, a roller, stone crusher, forklifts, etc.
- Mobile Cranes.
- Delivery vehicles carrying:
  - conventional construction materials for the site, e.g. aggregate, concrete, rebar, etc.
  - conventional construction materials for the substation, e.g. electrical components, bricks, concrete, rebar, fencing, etc.
  - drainage infrastructure i.e. culverts, tanks, etc.
  - met mast, electric cabling, inverter stations and electrical equipment for the on-site substation.

3.3.3.1 Abnormal Indivisible Load

The transformer and the wind turbine components will be abnormal indivisible loads (AILs). An assessment of the AIL loads have been made based on segmented and non-segmented blades with two haulage vehicle types pending confirmation of the specification during procurement at Construction Stage. The two haulage vehicle types are:

- Rear actuated tractor and trailer for segmented blades and
- Blade lifter technology for non-segmented blades.

The AILs will be transported by convoy. Typically the convoy will have 3 or 5 no. components per convoy. The number of components in the convoy will be agreed in advance with MCC and all associated local authorities and stakeholders.

The contactor will be responsible for obtaining all associated licenses from the Local Authority or Gardaí during construction for the abnormal load.

3.3.4 Construction Vehicles Traffic Generation

It is estimated that the peak construction phase will generate approximately 143 no. HGVs (one-way) and 60 LVs (one-way) movements during peak construction activity at the site. This includes for the concrete pours which account for 75 of these one-way HGV movements. The peak construction traffic generations relate to peak HGV movement in September 2025 to November 2025 (i.e. 3 months). During this period the following activities are occurring simultaneously: site compounds, site roads, turbine hardstands, turbine foundations and substation construction with electrical works.

The construction methodology for the concrete turbine foundations requires them to be poured on a single day, resulting in all 75 HGVs required to arrive to site on a single day, on 18 occasions for the turbine foundations.

The average construction traffic will be associated with the 53 HGV one-way movements and variable LVs for staff.

For the grid connection cabling works within the site, these are accounted for in the site peak and average traffic generations., For the road crossing works by Hydraulic Directional Drilling (HDD) on the local road (L52925), approximately 4/5 persons will be required.

3.3.5 Construction Haul Route

3.3.5.1 Construction Traffic Deliveries

The deliveries to the development will be via the existing Oweninny Wind Farm Phase 1 site access on the northside of the N59, national road. The existing access is a priority T-junction with existing "STOP" road marking and signage, see Plate 3-1. The haul routes identified utilise principally the national and regional road network with carriageway cross sections facilitating passing of two-way HGV movements. The principal route will be east or westbound to the site on the N59, see Figure 2-2.

Plate 3-1 Site Access on N59The haul routes have been optimised to maximise the use of the national and regional road network over the use of local roads. The haul routes selected also take into consideration the sensitive receptors presented by towns and villages, with routes avoiding towns and villages when the opportunity presents itself.

The haul routes have been reviewed and are considered suitable to accommodate the two-way passing delivery vehicles anticipated at the site in terms of alignment, condition, and width. It is not anticipated that any works will be required on the road network for the purpose of normal construction deliveries.

3.3.5.2 Abnormal Indivisible Load Deliveries - AIL

All the AIL Routes terminate at the bellmouth of the existing priority T-Junction on the N59, Existing bollards are present at the back of the bituminous surface and on the east side of the access a compacted hardstanding overrun area for the turning movement of the AILs is available behind the bollards, see Plate 3-2. This overrun area was formerly used during the previous Phase 1 turbine component delivery (i.e. AILs) to the site and is proposed for use in Phase 3. The assessment of the AIL for Phase 1 and Phase 2 are comparable in size and the access is deemed suitable based on the previous movements to Phase 1.

Temporary removal of the bollards during the deliveries of the AILs is proposed at the site access. The bollards will be reinstalled between each convoy to reinstate the roadway to its existing condition.

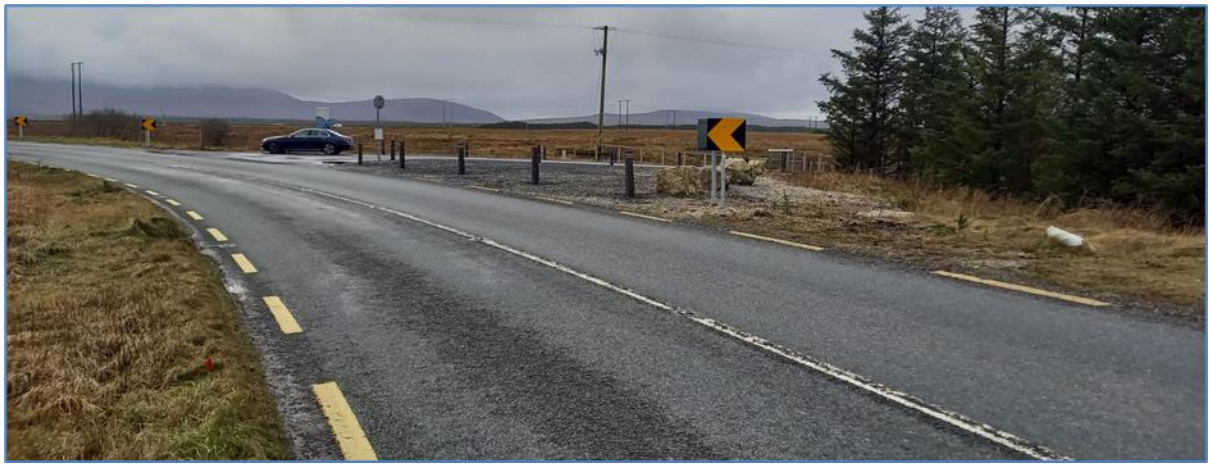

Plate 3-2- Site Access on N59 – AILs

Along the Routes, see Figure 2-3, various interventions will be required to accommodate the AIL movements (see APPENDIX 1). The AIL Route C was previous used in for Oweninny Wind Farm Phase 1 and 2, and as such all permanent interventions are in-place for a low load trailer. Only temporary demounting of road infrastructure (i.e. traffic signs) from retention sockets may be required.

Swept paths of Route A and B were undertaken to inform the potential impacts on these routes. Minor works are required on these routes with typically works including pruning vegetation, demounting signs and diversion of overhead lines. Only 1 no. location on Route B, is identified requiring road strengthening works on the R294. This area is for widening on the inside of the bend and will require similar works as for road maintenance.

Various routes confirmed by the swept path analysis through Ballina Town are shown in Figure 3-1.

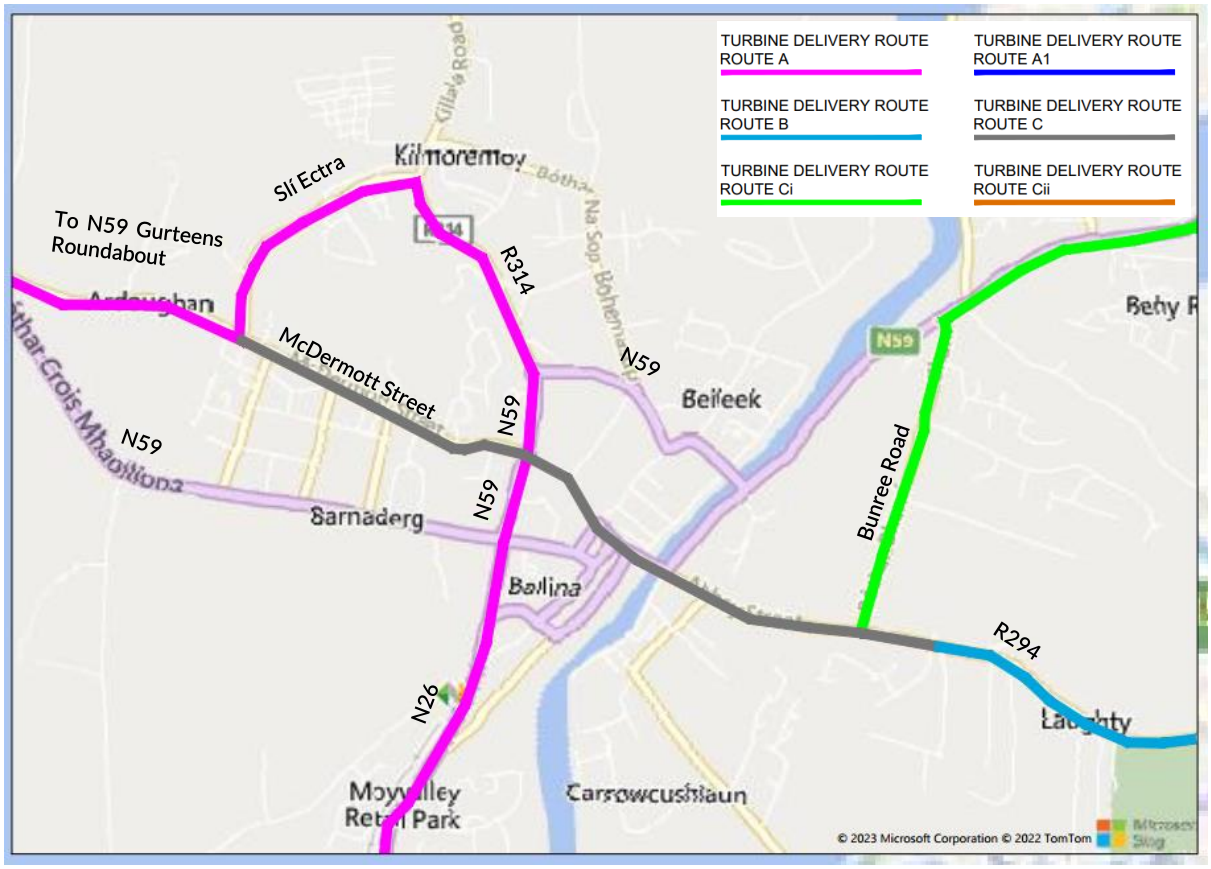

Figure 3-1 AIL Haul Route - Ballina

3.3.6 Internal Access Track Construction Haul Route

The internal access tracks have been designed to utilise existing Wind Farm access tracks where feasible, reducing the volume of materials required for importation to the site. The internal access roads are shown in Figure 3-2. Passing bays are proposed along the internal access roads to accommodate two-way passing HGVs. Turning heads are provided at each turbine location within the site.

During the construction stage a temporary self-contained wheel wash will be installed at the site entrance to minimise the transfer of dirt and dust from the site onto the public road and to minimise the potential for transfer of alien invasive species onto the site.

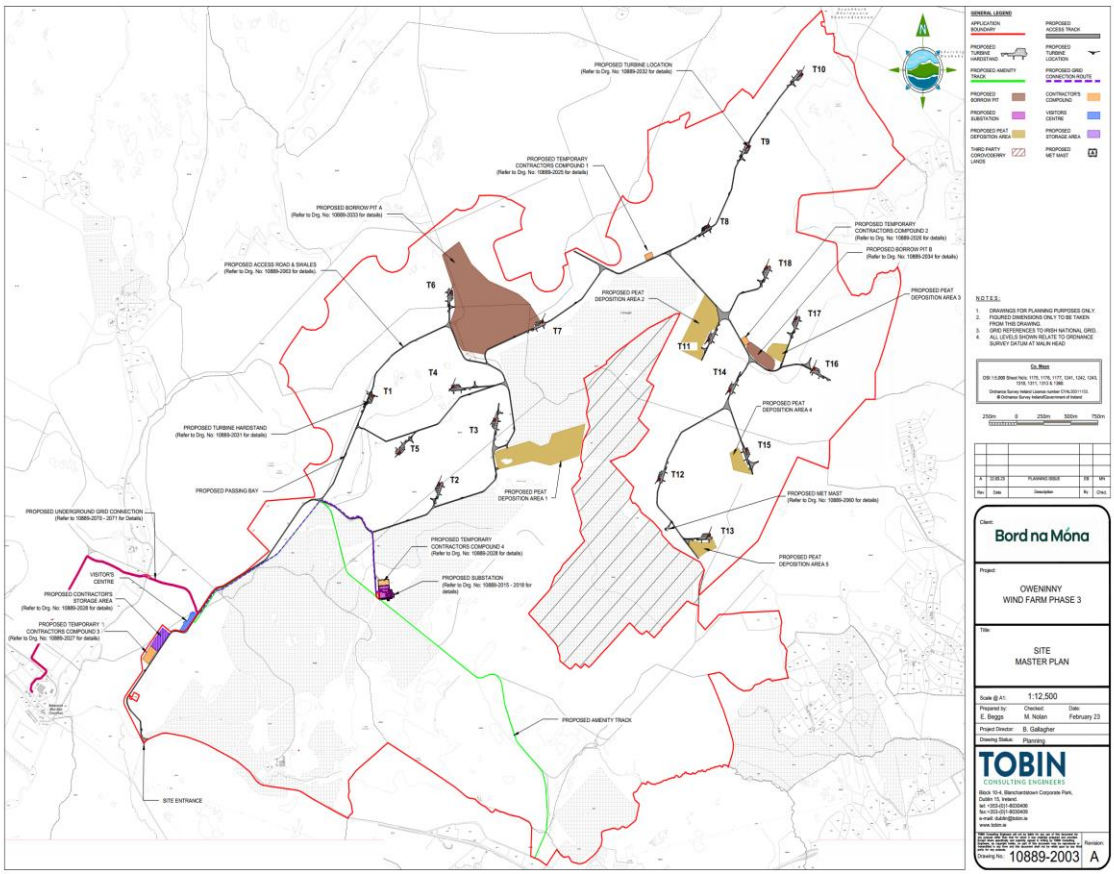

Figure 3-2 - Internal Master Plan – Internal Access Roads

3.4 CONSTRUCTION PHASE SUMMARY

The construction traffic impact of the additional HGVs and LVs on the existing road network has the potential to impact on the existing pavement condition, the carrying capacity of the road, the existing traffic flows on the haul route and at the site access and crossing point of the local road, L52925, for the duration of the construction programme. The peak and average construction phase traffic volumes, as outlined in section 3.1, will have varying impacts on the road network and environs.

The Wind Farm construction has an envisaged construction programme of 24 months, with lower traffic volume impacts on the road network outside of the 3 month peak period with overlapping construction activities.

Passing bays will be utilised within the internal access track layout to accommodate two-way traffic.. The widened approach to the access will provide safe locations for vehicles to queue and pass clear of the public road network.

4.0 CONSTRUCTION PHASE TRAFFIC MANAGEMENT PLAN - TMP

The Contractor shall develop and take account of the commitments imposed within this TMP. The following are the commitments made at the planning stage of the project which shall be further developed by the Contractor and agreed with the Roads Authorities, prior to works commencing on site:

- General Provisions;
- Site Access & Egress;
- Routing of Construction Phase Traffic;
- Site Specific Temporary Traffic Measures;
  - Traffic Management Logistics;
  - Traffic Management Speed Limits;
  - Traffic Management Signage;
  - Road Closures;
  - Timings of Material Deliveries to Site;
  - Abnormal Load;
  - Road Cleaning;
- Enforcement of Traffic Management Plan and
- Emergency Procedures During the Construction.

4.1 CONSENTS, LICENCES, NOTIFICATIONS AND PERMISSIONS

The key consents, licences, notifications and permissions likely to be required for the project with regards to traffic and roads are summarised as:

- Planning permission and associated planning compliance.
- Abnormal Indivisible Loads (AILs) – it is envisaged that permits will be required for the AILs that will be required for the delivery of the transformer and turbine components to the site.
- Road opening licences for underground cable works, potential junction upgrade works (depending on the AIL Haul Route), foundations in the public roadway (i.e. for TTMP signage) etc.
- Approval of temporary traffic management plans.
- Road closures and diversions.
- Permission for works outside of standard construction operation hours agreed with the Mayo County Council.
- Permission from the Motorway Maintenance and Renewal Contractor (MMaRC) / Public Private Partnership Contractor (PPP) on the relevant national roads.

The above list is non-exhaustive but identifies the key consents, licenses, notifications and permissions required for the project. This list will be further populated as required through planning compliance and stakeholder engagement to ensure that any further consents are identified as early as possible and do not impact on the construction programme.

4.2 GENERAL PROVISIONS

The construction traffic impacts of the proposed development have been identified as being temporary in nature. It is important that any impact caused by the proposed development is

minimised as far as possible and, considering this the following mitigation measures shall be included in future developments of this TMP:

- Traffic movements will be limited to 08:00 - 20:00 Monday to Friday and 08:00 – 13:00 Saturday, unless otherwise agreed in writing with Mayo County Council.
- The selected the haul route has with low volume of sensitivity receptors (i.e. vulnerable road users young children). Therefore, the HGV movements for the proposed development will have little to no interaction within sensitive areas.
- No parking shall be permitted along the access route for unloading or activities that result in blockages of access routes. Such vehicles will be immediately requested to move to avoid impeding the works and traffic on the road network.
- Measures to remove queuing of construction traffic on the adjoining road network including turning space and queuing of convoy HGVs will be provided within the site.
- Wheel wash equipment will be used on site to prevent mud and stones being transferred from site to the public road network.
- Activities generating dust will be minimised where practical during windy conditions. Loads will be covered on arrival and departure from site, where required. Other measures are outlined in the CEMP.
- Clear construction warning signs will be placed on the public road network to provide advance warning to road users to the presence of the construction site and slower moving vehicles making turning manoeuvres.
- Access to the construction site will be controlled by on site personnel and all visitors will be asked to sign in and out of the site by security / site personnel and site visitors will all receive a suitable Health and Safety site induction.
- Security gates will be sufficiently set back from the public road, so that vehicles entering the site will stop well clear of the public road.
- Compound locations have been identified for storage, site offices and welfare facilities.

The final TMP will also include provision by the appointed Contractor, for details of intended construction practice for the development, including:

- Traffic Management Co-ordinator – a competent traffic management co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management;
- Delivery Programme – a programme of deliveries will be submitted to Mayo County Council (MCC) in advance of the delivery of the turbine components to site;
- Information to locals – local residents in the area will be informed of any upcoming traffic related matters, e.g. temporary lane/road closures (if required) or any night deliveries of turbine components, via letter drops and posters in public places. Information will include the contact details of the Developer's representative, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided;
- Pre and Post Construction Condition Survey;
  - A pre-condition survey of roads on approach to the site will be carried out prior to construction commencement to record the condition of the road;
  - A post construction survey will be carried out after works are completed;
  - Impacts on the road condition as a result of the proposed development will be rectified and the road condition returned at least to its original condition.
  - The timing of these surveys will be agreed with MCC;
- Liaison with Local Authorities – liaison with MCC and other Local Authorities, including the roads and transport section, through which the delivery route traverses and An

Garda Siochána, during the delivery phase of the AILs, wherein an escort for all convoys may be required;
- Temporary Alterations – implementation of temporary alterations to road network at critical junctions;
- Temporary traffic signs – As part of the traffic management measures, temporary traffic signs will be put in place;
- TMOs will be present at the site access during peak delivery times; and,
- Delivery Times of Large Turbine Components – The management plan will include the option to deliver the large wind turbine plant components at night in order to minimise disruption to general traffic during the construction stage.

The Traffic Management Plan (TMP) will be updated by the principal Contractor (on appointment) and agreed with the Planning Authorities prior to commencement of development in the event of a grant of permission.

4.3 SITE ACCESS AND EGRESS

An existing site access is the proposed access to Oweninny Wind Farm Phase 3 development. The exiting access is currently being used for Oweninny Wind Farm Phase 1. This entrance will facilitate all construction and AIL traffic.

The principle Contractor shall be required to utilise a safe system of traffic management, including the use of Traffic Management Operatives (TMOs) for the control of traffic during access / egress operations at the site access during the peak construction activities (e.g. 3 months of overlapping construction activities including the delivery for the concrete pours).

4.4 ROUTING OF CONSTRUCTION PHASE TRAFFIC

The proposed haul roads were identified based on sources of materials and focus on the l road network (i.e. N59) in consultation with the local authorities. The haul routes utilise the national network as much as feasible.

All construction traffic to the Wind Farm site will arrive via the N59, as previously mentioned the majority of materials delivered to site will be delivered using maximum legal articulated lorries or smaller vehicles. The principle Contractor shall be required, in the further development of the TMP, to identify the sources and proposed haul routes for all material supplies.

Project construction HGV traffic will be directed away from communities and sensitive receptors (i.e. schools, dense residential areas, urban centres) where possible to minimise the effect on these communities.

4.5 SITE SPECIFIC TEMPORARY TRAFFIC MEASURES

The specific details of temporary traffic measures shall be developed by the Contractor(s) for each traffic measure in consultation with the Roads Authority, An Garda Síochána and other emergency services, before being submitted to the Roads Authority for formal approval prior to any works taking place.

Any requirement for a traffic lane closure will be controlled by an active traffic management system (i.e. temporary traffic signals or Stop & Go / Téigh discs). An Garda Síochána shall be consulted prior to the implementation of the active traffic management system. The operation of a manual 'Stop & Go / Téigh' system will be undertaken by trained personnel, wearing suitable high visibility garments. The operators of this type of system will be in verbal contact (i.e. walkie talkie) and preferably inter-visible. At these locations queue lengths will be estimated initially with onsite measurements to determine the necessary warning distance for approaching drivers. The signage shall be adjusted as necessary when the actual impact on traffic flows is established.

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

Where roadworks impede dwelling access onto the road network, the residents shall be instructed on how to egress the property at times when a shuttle system is in operation. The Contractor shall provide a TMO at accesses where the motorist is having difficulty following the instructions.

Where reasonably practicable, consideration will be given to the possibility of removing the traffic management measures in order to deal with:

- Particularly high traffic volumes due to sporting or other events;
- Adverse weather conditions;
- Emergency access; or
- Times when work is not in progress.

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

On completion of the works, the traffic management measures are to be removed when the road is safe and free from obstructions, all reinstatement of road surfacing is completed and all permanent signs, road markings and other items are in place.

4.5.1 Traffic Management Systems / Logistics

The principal Contractor as a minimum shall employ the following traffic management systems and logistics to facilitate the safe transport of materials to and from the proposed development.

4.5.1.1 Traffic Management Operatives (TMOs)

No pinch points are present on the public road during the delivery of materials from the material sources on the haul routes to the site access on the N59. The N59 has adequate width for vehicles to turn into the site and advanced warning signage is proposed. During the average construction deliveries TMOs and TTM are not envisaged to be required.

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 only. TMOs will be required within the site to manage the movement of HGVs within the internal layout, during these peak construction activities.

TMOs and TTM for the AIL delivery will be developed by the appointed Contractor in consultation with the specialised haulage provider, An Garda Síochána (AGS) and the Local Authority.

4.5.2 Traffic Management Speed Limits

It shall be noted that where a temporary speed limit is deemed appropriate by the Contractor(s) to facilitate the Construction Phase activities along the public roads serving the proposed development, it shall be a requirement for the appointed Contractor to liaise with the relevant Roads Authority for the purpose of obtaining a temporary speed limit.

4.5.3 Traffic Management Signage

Signage for temporary traffic measures shall be provided in accordance with the Department of Transports Traffic Signs Manual, August 2019 - Chapter 8 – Temporary Traffic Measures and Signs for Roadworks (or any subsequent update of the standards that will be in place at the time of construction).

Advanced warning signs will be used to alert drivers to the unexpected road layout. Clear construction warning signs shall be placed at adjacent roads and the entrances, to advise the general public of the presence of construction sites and activities. All permanent road signs contrary to the proposed roadworks will be covered for the duration of the works and uncovered on removal of the temporary traffic management measures.

MCC requested that all temporary traffic management signs located on the N59, be permanently installed in concrete foundations on passive steel posts for the duration of the construction works. This is due to cross winds as a result of the exposed section of the N59 near the site access.

4.5.4 Timing of Material Deliveries

In order to reduce impacts on local communities and residents adjacent to the proposed sites, it is proposed that:

- Construction activities will be undertaken based on a six-day working week, with deliveries between 08:00-20:00 on weekdays and 08:00-13:00 on Saturdays.
- HGV deliveries shall avoid passing schools at opening and closing times where it is reasonably practical. Deliveries are restricted between the hours of 08:00 and 09:00hrs, the morning peak traffic on the road network.
- Construction activities and deliveries outside these hours shall be agreed with the Local Authority in advance.
- The Contractor shall liaise with the management of other construction projects and the local authority to co-ordinate deliveries.
- The Contractor shall schedule deliveries in such a way that construction activities and delivery activities do not occur during peak traffic flows or run concurrently, such as;
  - avoiding pouring of concrete on the same day as other large material deliveries to site in order to avoid conflicts between vehicles.
  - staggering the pouring of concrete on different days.
- HGV deliveries to the development site will be suspended on the days of any major events (i.e. sporting, agricultural etc), that have the potential to cause larger than normal traffic volumes on the existing road network, in the vicinity of the works.

- The Contractor will be required to interact with members of the local community to ensure that deliveries will not conflict with sensitive events such as funerals; and
- It is likely that some deliveries will be required to be undertaken outside these hours. For example, during large concrete pours or other essential continuous operation whereby the continuous delivery of material will be required. Such deliveries will be agreed in advance with MCC.

The scheduling of material deliveries is required in order to facilitate the implementation of traffic management activities at the site and the works zones within the site. It will also impact on the offsite works locations for the AIL advanced works. A convoy system shall be employed for HGVs departing the proposed development to reduce the frequency of isolated HGV movements on the public road network as much as practicable.

4.5.5 Abnormal Indivisible Load

A total of 217 no. AILs are anticipated to be transported to the site along the AIL haul route. It is envisaged that these loads will be moved outside of normal hours as night-time works in convoys.

Prior to the construction of the Proposed Development a test run of the proposed transport operation along the proposed route will be completed using vehicles with attachments to simulate the dimensions of the turbine components. Following this test run, the Traffic Management Plan will be reviewed and updated with the haulage company when the final transport arrangements are known, delivery dates confirmed and escort proposals in place. The plan will then be submitted to the relevant County Councils for agreement in writing in advance of any abnormal loads using the public roads. The plan will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.

The principal Contractor shall ensure that the haulage of these AILs is done in conjunction with an Gardaí Síochána and the Roads Authorities. The principal appointed Contractor and their haulage provider will be responsible for obtaining all necessary permissions and licences from the local authorities and Gardaí.

4.5.5.1 Convoy System

The deliveries of turbine components to the site will be made in convoys of three to five vehicles and mostly at night when roads are quietest. Convoys will be accompanied by escorts at the front and rear operating a "stop and go" system. Although the turbine delivery vehicles are large, they will not prevent other road users or emergency vehicles passing, should the need arise. The delivery escort vehicles will ensure the turbine transport is carried out in a safe and efficient manner with minimal delay or inconvenience for other road users.

It is not anticipated that any section of the public road network will be closed during transport of turbines, although there will be some delays to local traffic at pinch points. During these periods, it may be necessary to operate local diversions for through traffic.

4.5.6 Road Closure

The traffic volumes for the AILs will be low, with no immediate road closures foreseen for typical construction traffic. However, detailed traffic management plans will be formalised by the

appointed Contractor and agreed with the Roads Authority if road closures are required (including TII representatives on the national roads).

Grid connection via cabling from the Wind Farm to the Bellacorrick Substation is proposed. The route for the cable will cross the L52925, local road. The current construction methodology envisions that the technique of Hydraulic Directional Drilling (HDD) will result in no impacts to the existing traffic operations (i.e. no road closures). However if the current methodology were to change a temporary road closure maybe required.

4.5.7 Road Cleaning

Regular visual surveys of the road network in the vicinity of the sites will be carried out. Where identified / required, the Contractor shall carry out road sweeping operations, employing a suction sweeper to remove any project related dirt and material deposited on the road network by construction / delivery vehicles. It shall be a requirement of the works contract that the Contractor(s) will be required to provide wheel cleaning facilities, and any other necessary measures to remove mud and organic material from vehicles. In addition, the cleaning of delivery lorries such as concrete delivery lorries shall be carried out at the material storage yard as outlined in the CEMP.

4.6 ENFORCEMENT OF TRAFFIC MANAGEMENT PLAN

The appointed Contractor will further develop this TMP in consultation with the Road's Authority Mayo County Council. The Contractor will, during the development and adoption of the TMP, agree and implement an appropriate way of monitoring the effectiveness of the plan.

All project staff and material suppliers will be required to adhere to the Traffic Management Plan. Inspections / spot checks will also be carried out by the Contractor(s) to ensure that all project staff and material supplies follow the agreed measures adopted in the Traffic Management Plan.

4.7 EMERGENCY PROCEDURES DURING THE CONSTRUCTION

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

- Emergency Services will be contacted immediately by dialling 112;
- Exact details of the emergency/ incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner;
- Follow the instructions of the Local Authorities and An Garda Síochána;
- The emergency will then be reported to the Site Team Supervisors and the Safety Officer;
- Where required, appointed site first aiders will attend the emergency immediately; and
- The Safety Officer will ensure that the emergency services are enroute.

It is important that during the Construction Phase, emergency services can gain ready access to any property along the Haul Road or in the vicinity of any of the Infrastructure sites, or indeed can gain priority usage of any Haul Road. Emergency procedures will be agreed, and contact numbers provided to the local Emergency Services. On being notified of a priority condition, all construction vehicles will be directed to give right of way to the emergency vehicles until the need for priority access has passed.

With respect to an emergency condition arising on any of the sites, priority access to and from these sites will be given to ambulance or fire tenders.

During the transportation of the AILs the Emergency Services will be provided with adequate space for overtaking and or undertaking manoeuvres in the event of an emergency. As the AILs transport will be under a Garda escort at all times.

5.0 OPERATIONAL AND DECOMMISSIONING PHASES

5.1 OPERATIONAL PHASE

The operational phase of the project is envisaged to last for a duration of 30 years. During this time, the development will generate small volumes of traffic for operational and maintenance purposes. 8 no. LV movements per day (i.e. 4 arrivals and 4 departures), with an additional movement to and from once a month for a worst-case scenario of 10 LV movements per day.

On the Oweninny Wind Farm is an existing permitted Visitors Centre, which will be operational during the Oweninny Wind Farm Phase 3 operational phase. Based on previous data at similar sites, an additional 300 visitors are anticipated at the Visitor Centre with a mix of tour buses and passenger cars.

Estimates for the vehicle numbers are based on 3 no. buses with occupancy of 52 visitors and 72 no. passenger cars with 2 visitors per car. Staff during the peak tourist season are envisaged to be 3 no. staff and are assumed to arrive / depart by individual passenger car. The estimated associated traffic volume is 156 vehicles per day, with peak activities on weekends.

The combined operational traffic (i.e. Wind Farm Phase 3 and Visitor Centre) for the two-way movements is 166 vehicles.

Overall, due to the relatively low operational and recreational traffic, it is envisaged that the operational impacts of the proposed development will be a negligible addition to operational traffic of the existing Phase 1 wind farm.

5.2 DECOMMISSION PHASE

The design life of the wind farm is 30 years, after which time a decision will be made to determine whether or not the turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the site may be decommissioned fully.

It is proposed that turbine foundations and hard-standing areas will be left in place and covered with peat/soil/topsoil. It is proposed to leave the access tracks in situ at the decommissioning stage (i.e. for forestry / agricultural / recreational use). It is considered that leaving the turbine foundations, access tracks and hard-standing areas in situ will cause less environmental damage than removing and recycling them. The decommissioning will be managed on a phased basis and the recreational use will be restricted during these times.

If the site is decommissioned, cranes will disassemble each turbine tower and all equipment. All infrastructure including turbine components will be separated and removed off-site for re-use, recycling and waste disposal.

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

6.0 CONCLUSION

The TMP is a living document and shall be developed through the Detailed Design and Construction phases with ongoing consultation with the Local Authority, An Garda Síochána, Emergency Services and other stakeholders.

This TMP has thus far been developed to the Planning Stage, so that the necessary steps are taken throughout the planning proposals to support an efficient, safe transportation operation, with the least possible impact upon vulnerable road users and traffic along the haul roads or in close proximity to the proposed development.

APPENDIX 1 AIL Haul Route: Swept Path Table of Potential Impacts

Table 6-1 Swept Path Analysis – Route, Drawings and Actions

Route	Dwg No. (EIAR Appendix 17.1)	Title	Demount Signage	Prune Vegetation	Overhead Wire Removal	Public Lighting Removal	Widen Road / Footway Strength	Oversail
A	359222-070B1.1 Foxford	Junction of Main Street and N2 (Option 1 N58 to N26)	✓		✓			✓
A	359222-080B1.1 Foxford	Option 2 - Junction of Davitt Street (N58) & Morrogh Bernard Road (N58)			✓			✓
A	359222-081B1.1 Foxford	Option 2- Junction of Morrogh Bernard Road (N58) & N26			✓			✓
A	359222-090B1.1 Foxford	Right Bend & Bridge Crossing on N26, Foxford			✓			✓
A	359222-091B0.1	N26, Heading Out of Foxford			✓			
A	359222-100B0.1	Approach to a Left Bend in a Hamlet North of Foxford			✓			
A	359222-110B0.1	Right Bend on N26			✓			
A	359222-111B0.1	Overhead Cables on N26 - Junction with L1317			✓			
A	359222-112B0.1	Overhead Cables on N26 - Left Bend			✓			
A	359222-113B0.1	Overhead Cables on N26 - Left Bend			✓			
A	359222-130B0.1	Overhead Cables - Cross Road of N26/ N59/ R294			✓			
A	359222-131B0.1	Overhead Cables - Crossroad of N59/ McDermott Street & Tone Street			✓			
A	359222-132B0.1	Overhead Cables - Killala Road (R314) After Roundabout			✓			

Route	Dwg No. (EIAR Appendix 17.1)	Title	Demount Signage	Prune Vegetation	Overhead Wire Removal	Public Lighting Removal	Widen Road / Footway Strength	Oversail
A	359222-133B0.1	Overhead Cables - Left Bend on Killala Road			✓			
A	359222-134B0.1	Junction Of Killala Road and Slí Ectra			✓			✓
A	359222-135B0.1	Junction Of Slí Ectra and The L1119						✓
A, B, C	359222-136B0.1	Overhead Wires - Left Bend on L1119						✓
A, B, C	359222-137B1.1	Gurteens Roundabout, Ballina (With Flow)	✓					✓
A, B, C	359222-137B1.2	Gurteens Roundabout, Ballina (Contra Flow)						✓
A, B, C	359222-138B0.1	Overhead Wires - N59 To Bangor, Ballina	-	-	-	-	-	-
A, B, C	359222-140B0.1	Overhead Wires - Left Bend N59, Bundeelin			✓			
A, B, C	359222-150B0.1	Overhead Wires - Right Bend N59, Crossmolina	-	-	-	-	-	-
A, B, C	359222-151B0.1	Overhead Wires - N59, Crossmolina			✓			
A, B, C	359222-152B0.1	River Bridge - N59, Crossmolina						✓
A, B, C	359222-153B0.1	S Bend Junction on N59/ Church Street/ The Boreen, Crossmolina			✓	✓	✓	✓
A, B, C	359222-154B0.1	Overhead Wires - Erris Street (N59), Crossmolina			✓			
A, B, C	359222-160B1.1	Overhead Wires - N59	-	-	-	-	-	-
A, B, C	359222-161B1.1	Left Bend on N59, Cloonawillin	-	-	-	-	-	-

Route	Dwg No. (EIAR Appendix 17.1)	Title	Demount Signage	Prune Vegetation	Overhead Wire Removal	Public Lighting Removal	Widen Road / Footway Strength	Oversail
A, B, C	359222-162B1.1	Overhead Cables on N59, Cloonawillin	-	-	-	-	-	-
A, B, C	359222-163B1.1	Overhead Cables on N59, Cloonawillin	-	-	-	-	-	-
A, B, C	359222-170B1.1	Overhead Cables on N59, Moylaw	-	-	-	-	-	-
A, B, C	359222-171B0.1	Overhead Cables on Right Bend On N59, Moylaw						✓
A, B, C	359222-172B0.1	Overhead Cables On Left Bane On N59, Moylaw	-	-	-	-	-	-
A, B, C	359222-173B0.1	Overhead Cables On Right Bend On N59, Moylaw			✓			
A, B, C	359222-174B0.1	Right Bend On N59, Moylaw	-	-	-	-	-	-
A, B, C	359222-180B1.1	Overhead Cables On N59, Eskeragh		✓				
A, B, C	359222-181B0.1	Overhead Cables On Left Bend On N59, Eskeragh	-	-	-	-	-	-
A, B, C	359222-182B0.1	Overhead Cables On N59, Eskeragh	-	-	-	-	-	-
A, B, C	359222-190A0.1	Right Bend On N59, Dooleeg	-	-	-	-	-	-
A, B, C	359222-191B0.1	Overhanging Trees On N59, Dooleeg		✓				
A, B, C	359222-192B0.1	Left Bend On N59, Dooleeg	-	-	-	-	-	-
A, B, C	359222-193B0.1	Right Bend On N59, Dooleeg						Verge
A, B, C	359222-194B0.1	S - Bend On N59, Dooleeg			✓			
A, B, C	359222-200B0.1	Overhead Cables On N59, Oweninny						Verge
A, B, C	359222-201B0.1	Right Bend On N59, Oweninny						Verge

Route	Dwg No. (EIAR Appendix 17.1)	Title	Demount Signage	Prune Vegetation	Overhead Wire Removal	Public Lighting Removal	Widen Road / Footway Strength	Oversail
A, B, C	359222-210B0.1	Left Bend On N59, Oweninny Wind Farm	-	-	-	-	-	-
A, B, C	359222-210B0.1	Left Bend On N59, Oweninny Wind Farm	✓				At Site Access to Oweninny, pavement strengthening in place from Phase 1	Verge
B	359222-300B0.1	Right Bend On N26, Foxford			✓			Footway
B	359222-410B0.1	N17, East Tobercurry			✓			
B	359222-411B0.1	N17 At The Junction With Humber Street, Tobercurry						Footway
B	359222-412B1.1	N17 At The Junction With Humber Street, Tobercurry		✓	✓			
B	359222-413B0.1	LEFT BEND ON R294, TOBERCURRY						
B	359222-600B1.1	Overhead Cables & Right Bend on R294		✓	✓			Verge
B	359222-602B0.1	Overhead Cables & Left Bend on R294		✓				
B	359222-610B1.1	Overhead Cables on Left Bend On R294, Gorterslin		✓	✓			
B	359222-612B1.1	Overhead Cables on Right Bend On R294, Gorterslin		✓	✓			Verge
B	359222-620B1.1	Overhead Cables and Right Bend On R294, Glenavoo		✓	✓			Verge
B	359222-622B1.1	2nd Right Bend and Overhead Cables On R294, Glenavoo		✓	✓			Verge
B	359222-624B0.1	Junction On R294 With Road to Lough Talt, Glenavoo		✓	✓			Verge

Route	Dwg No. (EIAR Appendix 17.1)	Title	Demount Signage	Prune Vegetation	Overhead Wire Removal	Public Lighting Removal	Widen Road / Footway Strength	Oversail
B	359222-630B1.1	Left Bend on R294, Glenavoo		✓	✓		✓	Verge
B	359222-632B1.1	Left Bend on R294, Glenavoo		✓				Verge
B	359222-640B1.1	Left Bend on R294		✓				Verge
B	359222-650B1.1	S Bend on R294, Near Lough Talt		✓	✓ (Electrical pole to be removed)			Verge
B	359222-652B1.1	S Bend on R294, Near Lough Talt		✓				
B	359222-654B1.1	Right Bend on R294, Near Lough Talt		✓				Verge
B	359222-660B1.1	Left Bend on R294	-	-	-		-	-
B	359222-662B1.1	Left Bend on R294	-	-	-		-	-
B	359222-670B1.1	Right Bend in Series Of Bends On R294						Verge
B	359222-672B1.1	Left Bend in Series Of Bends On R294	-	-	-		-	-
B	359222-674B1.1	Right Bend in Series Of Bends On R294						✓
B	359222-676B1.1	S - Bend in Series Of Bends On R294			✓			✓
B	359222-678B1.1	Left Bend in Series Of Bends On R294		✓				Verge
B	359222-680B1.1	Left Bend on R294, Near Bonnyconnellan			✓			Verge
B	359222-682B1.1	Overhead Wires on R294, Near Bonnyconnellan			✓			Verge
B	359222-684B1.1	Left Bend on R294, Bonnyconnellan		✓				

Route	Dwg No. (EIAR Appendix 17.1)	Title	Demount Signage	Prune Vegetation	Overhead Wire Removal	Public Lighting Removal	Widen Road / Footway Strength	Oversail
B	359222-686B1.1	Left Bend on R294, Bonnyconnellan		✓		✓		✓
B	359222-688B1.1	Left Bend on R294, Bonnyconnellan	-	-	-		-	-

Note:

1. The blade adaptor in the swept path analysis has been elevated to reduce the oversail of third-party lands.
2. The blade adaptor has been lowered in elevation where feasible to avoid overhead lines.
3. In urban areas, parking restriction will be required to facilitate the turning movements of the vehicles.
4. At Construction Stage, the appointed Contractor and Haulage Company will be responsible for the temporary traffic management, agreements, and licensing with the Local Authorities and an Garda Síochána.