MWP

Construction Environmental Management Plan (CEMP)

Ballinla Wind Farm

Ballinla Wind Farm Ltd.

September 2025

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1. Introduction

This Construction Environmental Management Plan (CEMP) outlines the scope of construction works, construction methodologies and environmental management measures which will be implemented and followed for the Proposed Development in order to ensure that the project is constructed in accordance with best practice and with the minimum impact on the surrounding environment. For the purposes of the CEMP, the Proposed Development comprises the construction of seven wind turbines, an onsite 110 kilovolt (kV) substation and all ancillary works in County Offaly (the Proposed Wind Farm), in addition to works along the turbine delivery route (TDR) (the Proposed TDR). This CEMP also considers the associated grid connection (the Proposed Grid Connection), which will be subject to a separate planning application but included as it forms part of the overall project.

1.1 Report Purpose and Objectives

All construction projects require the preparation of a Site-Specific CEMP in order to ensure that the project is constructed in accordance with Best Practice, with the minimum impact on the surrounding environment.

The purpose of a CEMP is to outline how the Contractor(s) will implement a site construction management system to meet the specified requirements which include contractual, regulatory and statutory requirements, environmental mitigation measures and planning conditions.

In essence this CEMP is to provide the Client and the Main Project Contractor with a practical guide to ensure compliance by all parties with Planning and Environmental requirements.

The CEMP achieves this by providing the environmental management framework to be adhered to during the pre-construction and construction phases of the proposed development. It outlines the work practices, construction management procedures, management responsibilities, mitigation measures and monitoring proposals that are required to be adhered to in order to construct the works in an appropriate manner.

All site personnel will be required to be familiar with the plan's requirements as related to their role on site. There will be a requirement on the Appointed Contractor that details are updated with progress, including the roles and responsibilities of those appointed on the site for the construction of the Proposed Development.

This CEMP is intended to be a live document whereby different stages will be completed and submitted as the development progresses

1.2 Scope

The CEMP defines the approach to environmental management at the site during the construction phase relating to all construction activities. Compliance with the CEMP, the procedures, work practices and controls will be mandatory and will be adhered to by all personnel and contractors employed on the construction phase of the Proposed Development. This CEMP seeks to:

- Promote best environmental onsite practices for the duration of the construction phase.
- Comply with any planning conditions that may apply.

The CEMP is considered a 'live' document, and as such, will be reviewed on a regular basis. Updates to the CEMP may be necessary due to any changes in environmental management practices and/or contractors. The

procedures agreed in this CEMP will be audited regularly throughout the construction phase to ensure compliance.

2. Overview of Project

The Proposed Development for which planning permission is sought consists of the following:

- Seven Wind Turbine Generators (WTGs) (blade tip height 185m, refer to **Table 2-1** for dimensions of each turbine).
- Seven WTG foundations and hardstand areas.
- One electrical substation (110kV) including independent power producer (IPP) substation and wind farm operations compound with associated ancillary buildings, security fencing and all associated works.
- One LiDAR station based on the ground.
- Two new site entrances from the L5010.
- New and upgraded internal site access tracks.
- All associated underground electrical and communications cabling connecting the proposed turbines to the proposed onsite substation.
- The TDR including temporary works on sections of the public road network and private lands along the turbine delivery route on the L-5006 and the junction of the R-402 and R-420.
- One temporary construction site compound and additional mobile welfare unit.
- One spoil deposition area.
- Landscaping.
- Associated surface water management systems.

The project considered in this CEMP includes for an underground grid connection cabling, connecting the onsite substation to the national electricity grid via the Philipstown 110kV Substation located in the townland of Ballykilleen, Co. Offaly. The cabling will be located within the public road corridor or existing tracks for its entire length. The total length of the Proposed Grid Connection Route is approximately 8km, the full length of the Proposed Grid Connection Route is located within Co. Offaly. To ensure clarity, the Proposed Grid Connection Route will be the subject of a separate future planning application.

All elements of the Proposed Development listed above, have been considered as part of this CEMP.

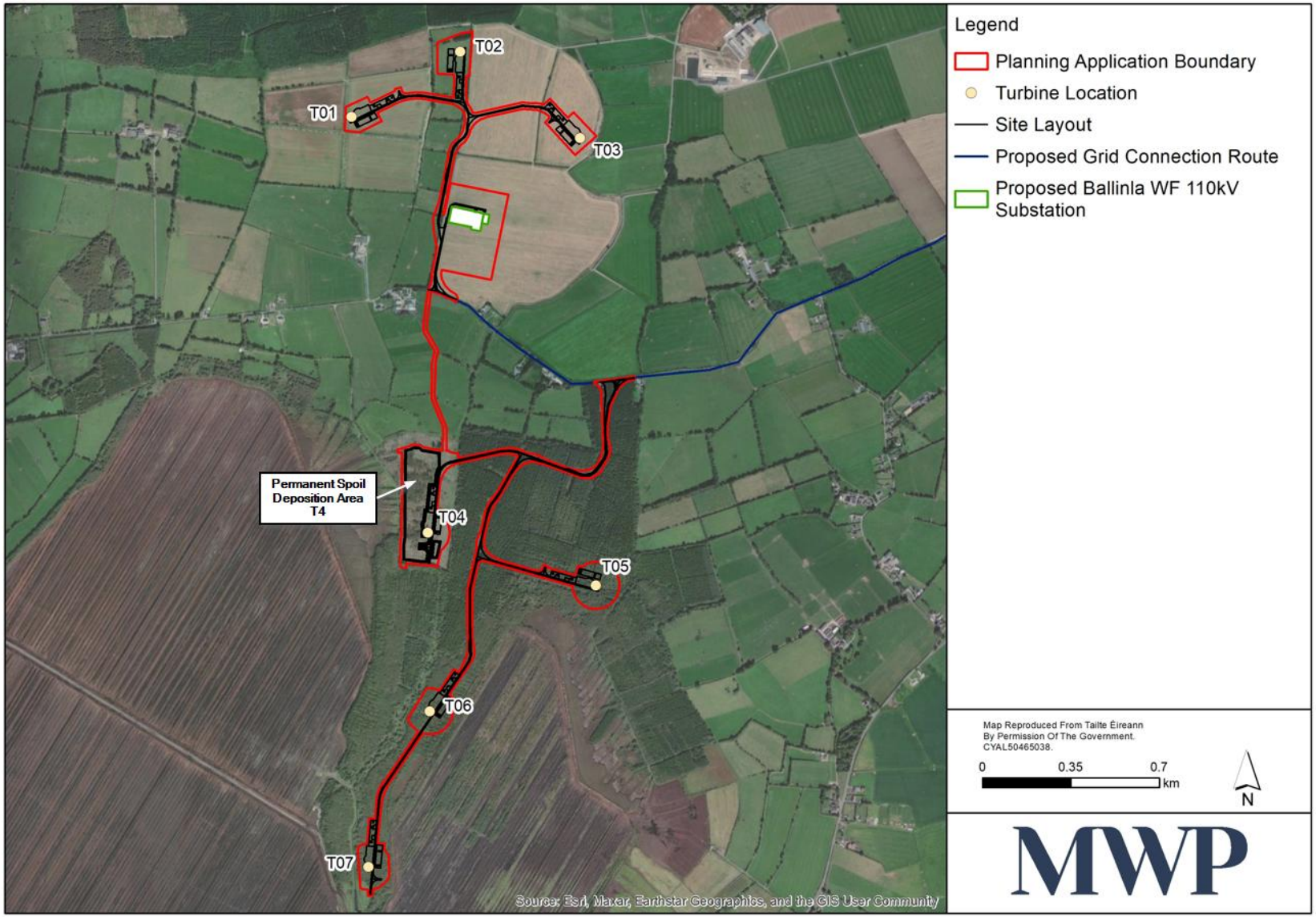

Figure 2-1: Proposed Wind Farm and Substation Layout

Table 2-1: Proposed Turbine Dimensions and Co-ordinates

Turbine Ref. No.	Hub Height	Blade Length	Turbine tip height (m)	Grid Co-ordinates (ITM)	
T1	104	79.35	185	655751 (X)	731543 (Y)
T2	104	79.35	185	656181 (X)	731802 (Y)
T3	104	79.35	185	656655 (X)	731460 (Y)
T4	104	79.35	185	656053 (X)	729897 (Y)
T5	104	79.35	185	656718 (X)	729689 (Y)
T6	104	79.35	185	656060 (X)	729191 (Y)
T7	104	79.35	185	655818 (X)	728575 (Y)

2.1 Turbine Delivery Route and Grid Connection

The Proposed TDR is detailed in the **Turbine Delivery Route Assessment, Appendix 2-2** of the EIAR. Minor works are required along the route with three TDR nodes red lined for works (see **Figure 2-2**). The TDR will run on public roads and all works in relation to it are temporary in nature.

The Proposed Grid Connection will run from the proposed 110kV substation to the existing Philipstown 110kV substation (see **Figure 2-3**). The associated underground cabling will travel along the access tracks for approximately 500m to the L5010. On the L5010 the cable will travel east for approximately 2km to the L5006. On the L5006 the cable route turns south on the L5006 for approximately 5km before joining the R401 south for approximately 1km where it will link into the newly constructed Philipstown 110kV substation. The full length of the Proposed grid Connection route is approximately 8km.

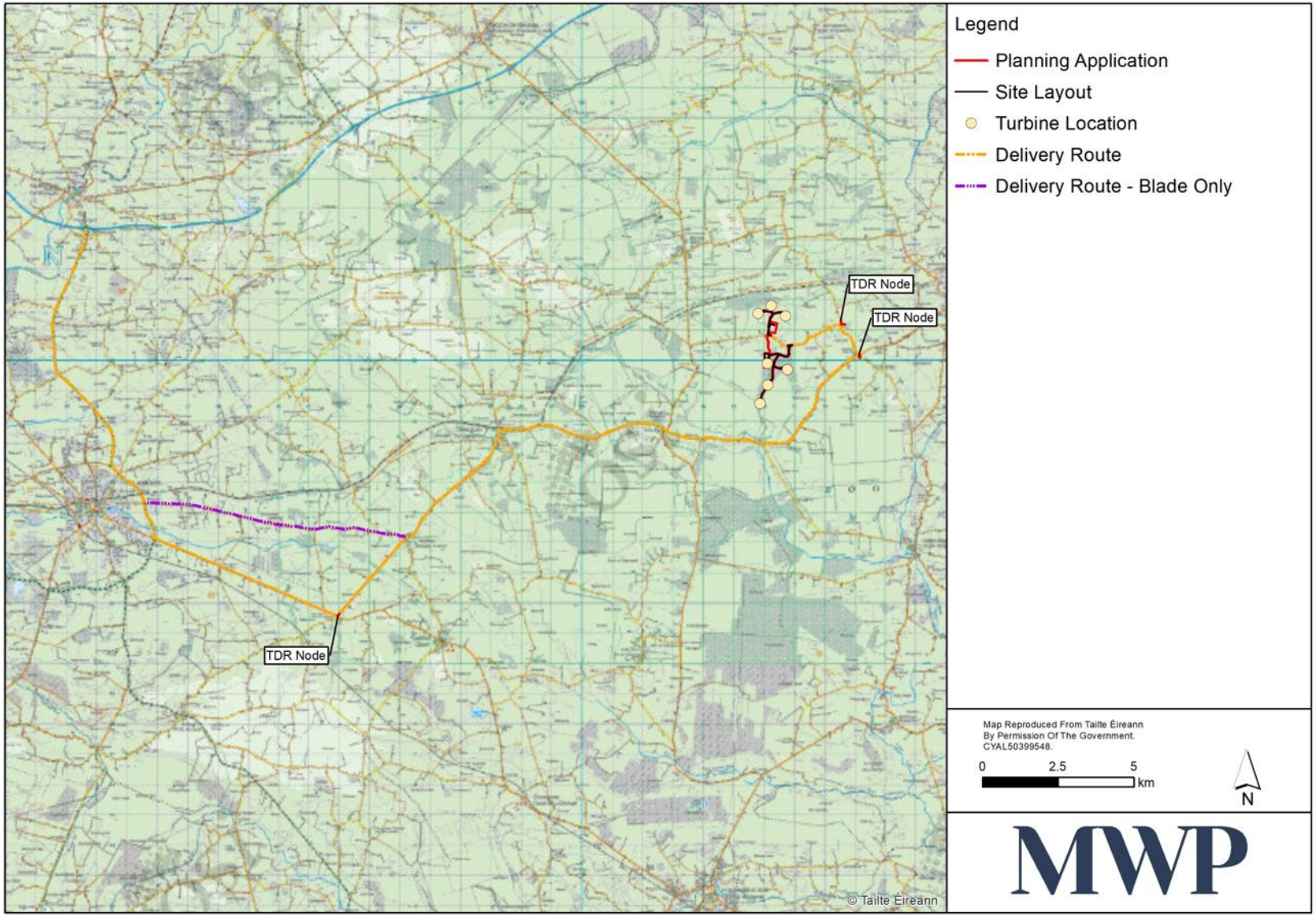

Figure 2-2: Turbine Delivery Route

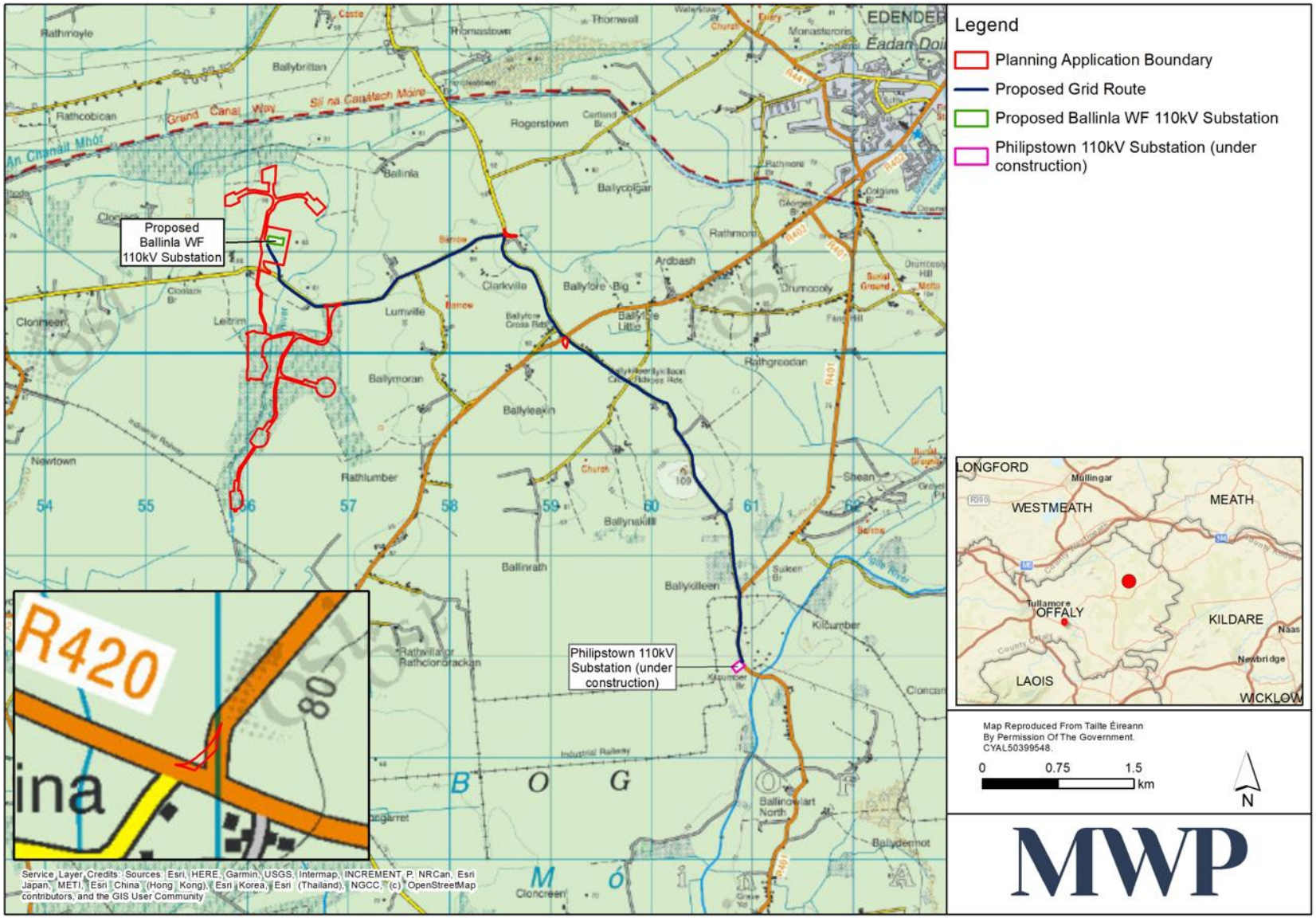

Figure 2-3: Proposed Substation and Grid Connection Route

3. Construction Works

3.1 Construction Schedule

It is envisaged that construction of the Proposed Development will commence in 2027 with an expected 18-month construction period. The start date is dependent on planning being granted, receipt of a grid connection offer from EirGrid, funding and all other ancillary permits being in place.

The Proposed Development construction works will be phased as outlined in Table 3-1. A number of these phases will however run concurrently including:

- As the internal site access tracks are constructed up to each turbine, hardstanding areas for the crane, turbine foundations and building foundations will be prepared.
- Once the tracks are completed, the trenching and laying of underground cables will begin.
- Construction of the site sub-station and control houses will commence so that they will be ready to export power as turbines are commissioned.

Table 3-1: Preliminary Indicative Construction Programme

Phase	Activity	Duration
Phase 1	Clear felling (to be complete ahead of construction site mobilisation)	2 months (prior to construction)
Phase 2	Prepare site, pre-construction activities, site entrance, temporary compound	1 month
Phase 3	Access track construction + Drainage plan implementation	3 months
Phase 4	Hard standing construction for turbines	2 months
Phase 5	Turbine Foundation construction	4 months
Phase 6	Trenching and ducting (underground electrical collection system)	2 months
Phase 7	Substation construction	4 months
Phase 8	Turbine delivery	3 months
Phase 9	Turbine erection	4 months
Phase 10	Wind Farm Commissioning	4 months (approx.)

3.2 Working Hours and Construction Personnel

Typically, construction will occur within the hours 7.00am – 7.00pm, Monday to Friday and 7.00am to 4.00pm on Saturdays, which will be confirmed with the Local Authority. Due to the requirement for the concrete pours to be continuous, the working day may extend outside normal working hours in order to limit the traffic impact on other road users, particularly peak period school and work commuter traffic. Such activities are limited to the day of turbine foundation concrete pours, which are normally complete in a single day per turbine. Turbine and crane erections may also occasionally occur outside of these times in order to take advantage of low wind periods. Working hours will be confirmed at the outset of the project and any changes in hours will be agreed with the Local Authority.

A permit for moving abnormal loads will be sought from An Garda Síochána for the delivery of oversized wind turbine components (i.e. blades, nacelles and towers).

There shall be no work on Sunday or bank holidays unless preapproved with the Local Authority.

During the construction phase, the number of onsite construction personnel will vary for each phase of the development. Overall, it is envisaged that the wind farm and substation works of the proposed development would generate employment for up 60 persons during the construction phase to include site contractors, onsite vehicle and plant operators, engineers, materials delivery personnel, environmental and health and safety personnel.

It is expected that the civil works for the grid connection route will require at least 10 personnel to complete the works. The electrical works will require less heavy machinery but more labour personnel, with typically 25 personnel to complete the works.

4. Construction Methodology

Key elements of the civil works and activities associated with the construction phase of the Proposed Development are as follows:

4.1 Pre-Construction Surveys

Any detailed ground investigations, environmental surveys and archaeological testing required to support the construction process will be carried out and finalised. These may include:

- Pre-construction ornithology surveys.
- Pre-construction monitoring of terrestrial mammals conducted to determine whether their use of the site has altered.
- Baseline water quality assessment.
- Pre-development archaeological testing at the site.

4.2 Enabling Works

Prior to construction commencing, on site demarcation of the construction site boundary will be undertaken to prevent equipment tracking outside of the planning boundary.

To prepare the site for the construction of the internal tracks, turbines and hardstand areas, clearance of small areas of scrub and hedgerows is required. The temporary compound will also be set-up at this stage.

4.3 Temporary Site Construction Compound

One temporary construction compound will be set up upon commencement of the construction phase. The location of the temporary compound is shown in Figure 4-1. See planning application Drawing No. 23882-MWP-00-00-DR-C-5417 for details.

The compound will be used as a secure storage area for construction materials and will also contain temporary site cabins to provide welfare facilities for site personnel. Facilities will include office space, meeting rooms, canteen area, and mobile sanitary facilities. There will be areas designated for parking as well as construction waste within this compound. The proposed development will include an enclosed wastewater management system at the temporary compound capable of handling the wastewater demand during the construction phase. A holding tank is proposed at the compound for wastewater management. The holding tank will be emptied by a licensed permitted contractor only. Upon completion of the project the compound will be decommissioned by backfilling the area with the material arising during excavation and landscaping with topsoil.

The exposed surface will be levelled out by cutting and filling and will be overlain with a layer of crushed stone from a local quarry. The finished surface will be formed with a layer of Unbound Granular Mixture A (UGMA) (formerly clause 804) or similar aggregate imported from a local quarry. The site compound will be graded and compacted out before the welfare container facilities are installed.

The compound will be in place for the duration of the construction phase and will be removed once commissioning is complete.

Areas within the compound will be constructed as access tracks and used as vehicle hardstanding during deliveries and for parking.

- A bunded containment area will be provided within the compound for the storage of lubricants, oils, and site generators etc.
- The compound will be fenced and secured with locked gates.
- During the construction phase, a self-contained port-a-loo with an integrated waste holding tank will be used on site for toilet facilities. This will be maintained by the service contractor on a regular basis and will be removed from the site on completion of the construction phase.
- Upon completion of the construction phase, the compound will be decommissioned by backfilling the area with the material arising during excavation, landscaping with topsoil as required.

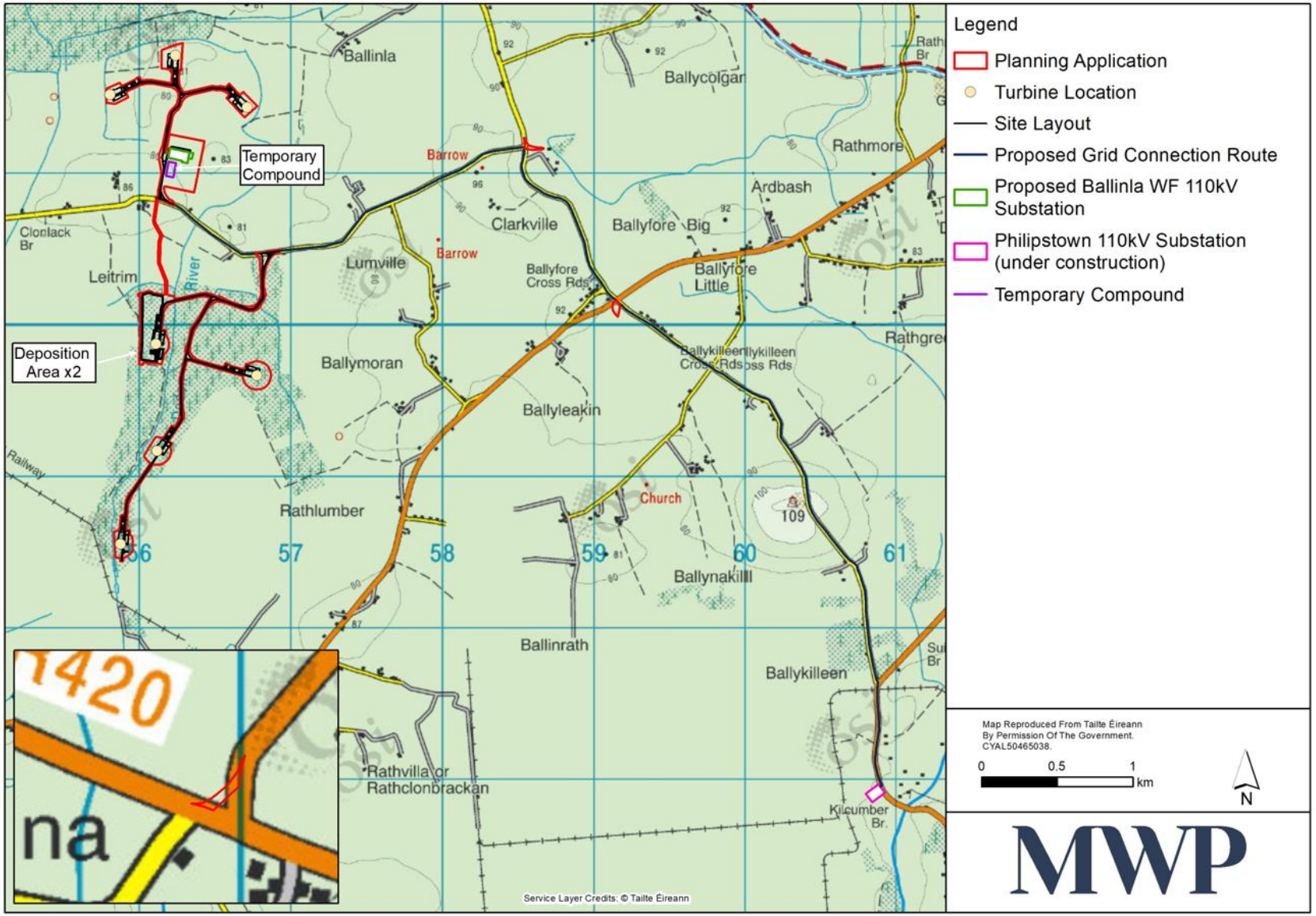

Figure 4-1: **Location of Temporary Construction Compound**

4.4 Site Entrances

Primary access to the Proposed Development will be provided from the local public road linkage (L5010) between the L-5006 in the east and the R400 to the west (refer to Figure 4-2**).** There will be two site entrances, one each to facilitate the northern and southern sections of the Proposed Wind Farm.

Entrance Point 1 will be created on the L-5010 local road and will serve the southern portion of the Proposed Wind Farm and internal tracks to T4, T5, T6 and T7. Entrance Point 2 on the L-5010 will serve the northern portion of the Proposed Wind Farm and internal tracks to T1, T2, T3 and the substation. These site access points will facilitate turbine deliveries, construction materials, aggregates, operations and maintenance vehicles. These will be permanent access points, however they will be scaled back, landscaped, fenced and gated as the Proposed Development enters the operational phase.

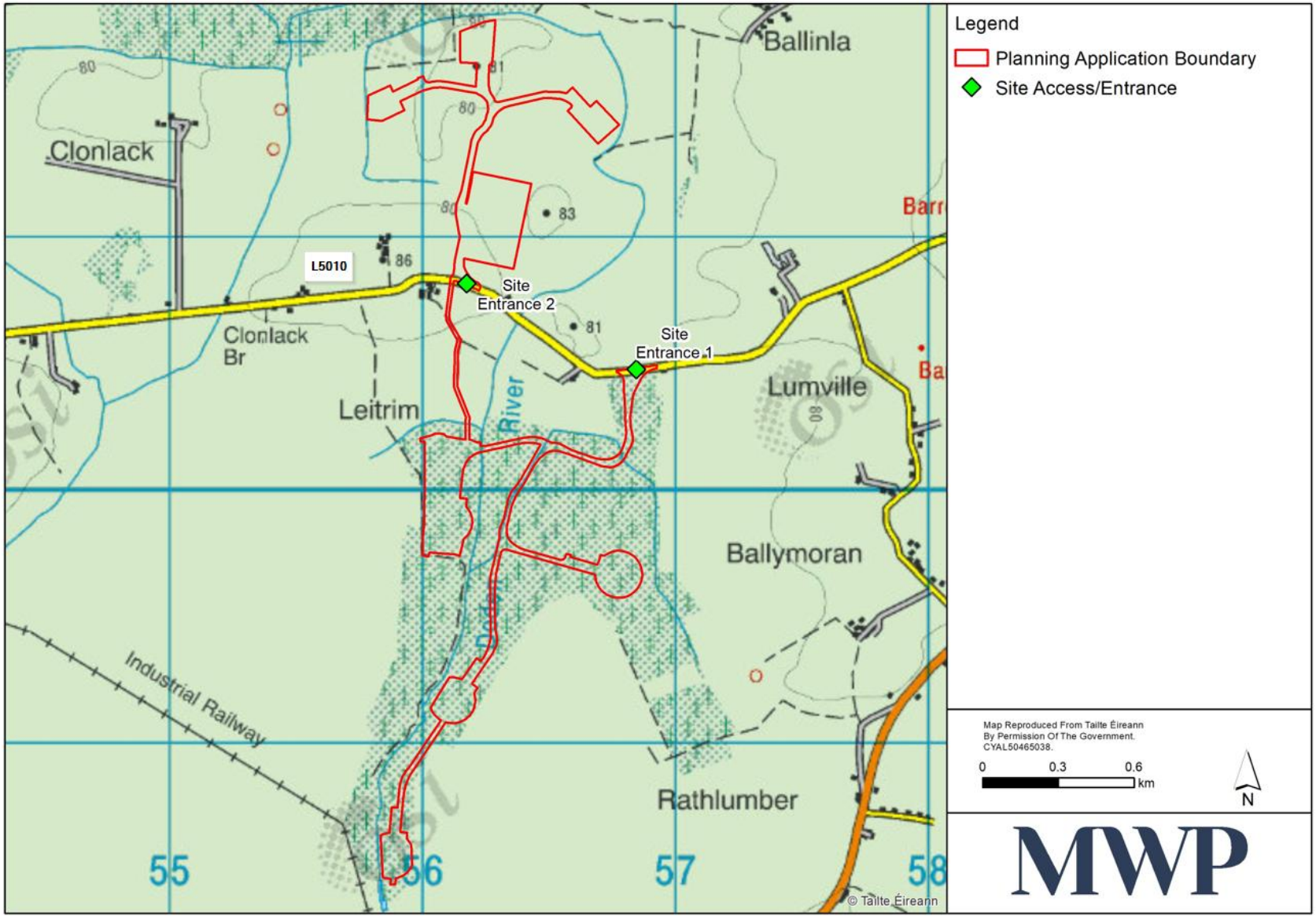

Figure 4-2: Site Access Points and Proposed Development Area Layout

4.5 Internal Site Tracks

Internal site access tracks are required to interconnect elements of the site and allow access to all wind turbines and wind farm infrastructure. Existing tracks will be upgraded, and new tracks will be constructed to access each of the turbines and substation compound.

The routing of internal access tracks is shown in **Figure 2-1.** These access tracks will be constructed using excavated and floating track techniques depending on the ground conditions.

See planning application **Drawing No. 23882-MWP-00-00-DR-C-5007** to **Drawing No. 23882-MWP-00-00-DR-C-5018** for details. The finished surface of the internal access tracks will be raised above the surrounding ground level and cambered to allow surface water to runoff the track surface.

4.6 Site Drainage System and Water Quality Management

During the construction phase of the project, there is potential for sedimented surface waste runoff from the construction works areas to contaminate downstream watercourses, without implementation of appropriate mitigation measures. Fundamental to any construction project, is the need to keep clean water (i.e. runoff from adjacent ground upslope of the permitted development footprint) clean and manage all other runoff and water from construction in an appropriate manner.

A site-specific drainage system has been designed taking account of the following:

- Knowledge of the ground and hydrological conditions at the site.
- Previous construction experience of wind farm developments in similar environments.
- Previous experience of environmental constraints and issues from construction of wind farms in similar environmental conditions.
- Technical guidance and best management practice manuals.

The system is designed to ensure that it will largely mimic the existing drainage regime across the site, will not deteriorate water quality and will safeguard catchment water quality status from wind-farm-related sediment runoff. The following are the key elements of the proposed drainage system:

- Clean water upgradient from works, which would otherwise flow into the site infrastructure areas, will be collected in cut-off drains and diverted away from or piped unimpeded through site infrastructure. This reduces the risk of clean water mixing with dirty water runoff from the development and also reduces the volume of dirty water to be treated.
- Access tracks will be cambered to ensure dirty water flows towards to dirty water drain.
- Runoff collected in dirty water drains will be routed through settlement ponds prior to travelling through overland flow/percolation to existing agricultural field drains or to existing watercourses.
- Stone filter beds will be installed at the outfall of the settlement ponds.
- (2) rows of Terrastop silt fencing will be installed along the top banks of watercourses and existing agricultural field drains where infrastructure will cross or run adjacent to a watercourses or existing agricultural field drains. The silt fencing will slow overland flows and provide additional filtration of suspended solids prior to discharge entering watercourses.
- Areas between structures within the onsite substation compound will be constructed of permeable crushed stone. A footpath will be installed around the substation building. This footpath will be graded to direct surface water away from the building towards a land drain installed within the compound stone and discharging to a bioretention basin and overflowing overland to existing land drainage.

- All stormwater runoff from electrical infrastructure bunds within the substation compound where the risk of an oil leak or spill may be present, will be treated using Class 1 full retention interceptor manufactured in accordance with IS EN 858 parts 1 and 2 and a BundGuard pump and sump system (or similar).
- All bunds will be fitted with alarmed sensors to detect oil. High water levels in the sump will activate the pump and the water level will begin to drop as the sump is emptied. When the oil layer is detected by the units sensors, the pump will stop and no water will discharge. When the next rainfall event occurs, this process is repeated with the oil layer always remaining in the bund.
- To ensure effective drainage from the permanent internal access track network and substation compound, the drainage measures installed for the construction phase will remain in place for the operational life of the wind farm.

The drainage layout is presented in **Planning Drawing No. 23882-MWP-00-00-DR-C-5019** with associated drainage layout details presented in **Planning Drawing No. 23882-MWP-00-00-DR-C-5020** to **Planning Drawing No. 23882-MWP-00-00-DR-C-5031**.

Figure 4-3 shows a well-constructed and maintained tiered settlement pond. The design was developed in conjunction with Inland Fisheries Ireland (IFI) personnel and local authority engineers. This example is located in an upland environment with significant ground surface slope and operates efficiently provided that it is well maintained.

Figure 4-3: Typical Three-tiered Settlement Pond with Stone Filter

4.6.1 Drainage/Stream Channel Crossings

Watercourses Within the Wind Farm Boundary

On the proposed site, four watercourse crossings will be required on EPA registered streams. The water crossings will consist of one clear span bridge and three culverts.

Land Drains within the Wind Farm Boundary

In the northern section of the proposed development, there are small field drains within the hedge lines of the agricultural fields. There will be approximately nine field drains to be crossed in this section of the wind farm. Bottomless culverts will be used in the northern section of the site.

In the southern section, there are numerous minor forestry drains all draining east to west within the forestry and the peatlands. Four land drains have been noted in site walkovers. They will be crossed using culverts.

Watercourses within the Grid Connection Route

The Proposed Grid Connection route is 8km long on local roads. One EPA registered watercourse crossing is required along the Proposed Grid Connection, the Leitrim Stream (EPA River Water Body Code: IE_SE_14E010200). 18 land drains have been identified along the route.

4.6.2 Water Quality Management Systems

Sediment can cause pollution during the construction phase of a civil engineering project due to the erosion of exposed soil by surface water runoff. The water quality management system has been prepared in order to control erosion and prevent sediment runoff during the construction phase of the proposed development. The implementation of sediment and erosion control measures is essential in preventing sediment pollution. The system was designed having regard to:

- Knowledge of the site's environmental conditions.
- Previous experience of environmental constraints and issues from construction of wind farms in similar environmental conditions.
- Technical guidance and best management practice manuals.

4.6.3 Water Quality Monitoring

4.6.3.1 Pre-Construction Baseline Monitoring

Pre-baseline construction monitoring will be carried out at the following proposed locations which drain the Proposed Development (see Table 4-1 and Figure 4-4).

Surface water monitoring for the baseline is to include all parameters outlined below for the construction stage monitoring. The three locations for recommended for monitoring fare sites 5, 6 and 10. Water quality field testing and laboratory analysis will be undertaken at the these locations prior to commencement of felling and construction at the site. The monitoring programme will be based on the planning stage programme as outlined in the EIAR and presented herein.

Table 4-1: Baseline Monitoring Locations

Hydrometric Area	Sub-basin	Watercourse	River Segment Code	Site	x	y
Barrow	ESKER STREAM_020	Leitrim	14_1844	5	656648	731817
		Leitrim	14_1844	6	656330	730714
		Leitrim	14_248	10	655774	728475

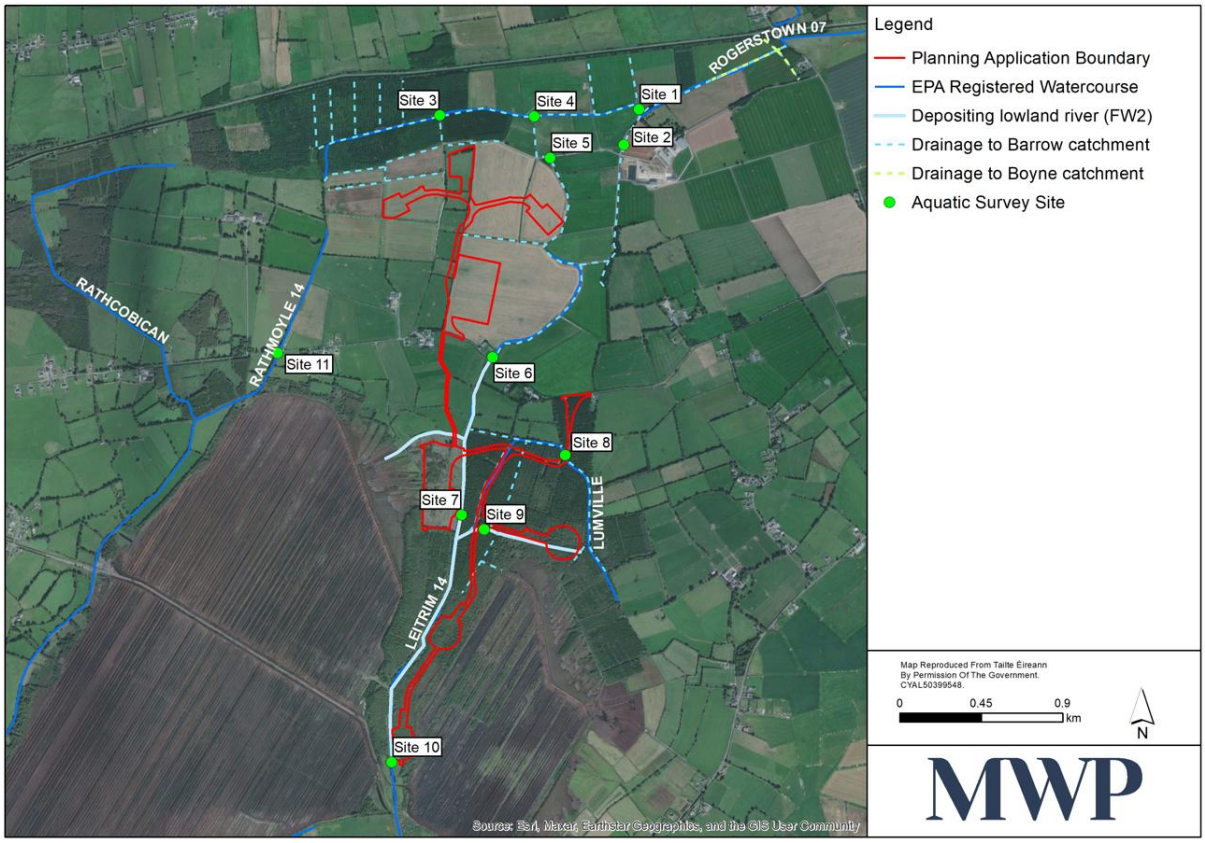

Figure 4-4 Water Quality Monitoring Locations

4.6.3.2 Construction Phase Monitoring

Continuous Field Monitoring

During the construction phase of the project, a surface water monitoring schedule, finalised prior to construction, will be followed. In summary, it is recommended that weekly field monitoring of surface water quality chemistry will be carried out at identified surface water quality monitoring locations 5, 6 and 10 in **Figure 4-4,** or others as required.

The following parameters will be measured:

- pH (field measured).
- Electrical Conductivity (field measured).
- Temperature (field measured).
- Dissolved Oxygen (field measured).
- Total Dissolved Solids (TDS).
- Turbidity (field measured).

Monthly Laboratory Analysis

The analytical determinants of the monitoring programme (including limits of detection and frequency of analysis) will be as per S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations

and European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009. The likely suite of determinants will include:

- pH.
- Total Petroleum Hydrocarbons (TPH).
- Temperature.
- Total Phosphorus.
- Chloride.
- Nitrate.
- Nitrite.
- Total Nitrogen.
- Orthophosphate.
- Ammonia N.
- Biochemical Oxygen Demand.
- Total Suspended Solids.

Visual Monitoring

Periodic visual observations at each of the monitoring points will be recorded with specific reference to flow, stream substrate and water colour. Photos will be taken to support visual observation, and inspection sheets including visual observation results and photographic records will be kept on site.

Visual observations will also be completed after major rainfall events along with photographs which will be collected and assessed by the ECoW.

The elements which will be included in the visual checklist are as follows:

- Appropriate periodic visual inspection of all watercourses which drain the proposed development by the ECoW or a suitably qualified and competent person delegated by the ECoW.
- All elements of drainage system will be monitored including settlement ponds, check dams, interceptor drains etc. Corrective action will be carried out if there is a visual indication of discoloration, oily sheen, odour or litter.
- Event based visual inspections by the ECoW as follows:
    - Following a high intensity localised rainfall event (10mm/hr).
    - Heavy rainfall within a day (25mm in a 24 hour period).
    - Higher than monthly rainfall within a week period.
- A record of all visual inspections will be included in the Construction Environmental Management Plan (CEMP) and maintained site.

4.7 Traffic Management

A detailed Traffic Management Plan (TMP) has been prepared and is included in Appendix 15 of the EIAR. The TMP will be updated at the construction stage (or the update commenced during planning compliance stage) to ensure controls are in place for all users of the site. It will be necessary to engage with the Roads and Transportation section of Offaly County Council and with An Garda Siochána and to establish traffic volumes and local road usage at the time.

The purpose of developing and implementing an agreed TMP for the construction phase works is to minimise the impact of the works on local residences and users of the public road networks.

4.8 Spoil Management and Material Volumes

It has been calculated that there will be approximately 84,700m³ of material excavated during the construction of the Proposed Development. It is intended that all soils and subsoils generated from excavation works will be retained on site and reused in bunding, landscaping and localised earthworks. Berms will be formed along sections of access tracks and hardstands that will act as edge protection and drainage measures. Drainage and siltation control measures will be put in place in all material stockpile areas. This will include a dedicated drainage network, temporary silt fences and settlement ponds designed to cater for the size of each storage area.

Excess spoil material will be permanently stored on site in the designated spoil deposition area. The proposed location for the spoil deposition area is shown on Planning Drawing No. 23882-MWP-00-00-DR-C-5012.

The calculated volume of material requirements is summarised in Table 4-2.

Table 4-2: Spoil Excavation and Construction Material Volumes

Item	Unit	Quantity
Imported stone for turbine bases	m3	10738
Imported stone for turbine hardstand	m3	28816
Imported stone for access tracks	m3	4654
Imported stone for substation area	m3	16843
Imported stone for temporary compound	m3	3781
Imported stone for independent power producer	m3	19899
Imported stoner for external cable route	m3	2943
Imported stone for internal cable route	m3	121
Total volume of imported aggregate required	**m3**	**87795**
Concrete for turbine Bases	m3	8482
Concrete for substation	m3	73
Concrete for lidar unit	m3	3
Concrete for independent power producer	m3	327
Concrete for external cable route	m3	2864
Concrete for internal cable route	m3	1852
Total volume concrete required	**m3**	**13601**
Reinforced steel for turbine bases	tonnes	1272
Reinforced steel for substation	tonnes	9
Reinforced steel for independent power producer	tonnes	41
Reinforced steel for lidar unit	tonnes	0
Total volume of imported steel reinforcement required	**tonnes**	**1323**

* This material will be reused on site as preference in trackside berms etc. It is however included in the table above as material to be removed from site as a precautionary measure.

4.9 Wind Turbines

4.9.1 Wind Turbine Locations

Turbines have been located to minimise the volume of excavated spoil and to achieve as close as possible to a balance of cut and fill of the underlying strata at each turbine location. This was achieved by orientating the turbine base and crane hardstanding area with its long axis parallel to the ground contours as much as possible while taking account of access criteria for delivery of turbine components. Table 4-3 gives the location of each of the proposed turbines.

Table 4-3: Turbine Locations

Turbine Ref. No.	Hub Height	Blade Length	Turbine tip height (m)	Grid Co-ordinates (ITM)	
T1	104	79.35	185	655751 (X)	731543 (Y)
T2	104	79.35	185	656181 (X)	731802 (Y)
T3	104	79.35	185	656655 (X)	731460 (Y)
T4	104	79.35	185	656053 (X)	729897 (Y)
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T6	104	79.35	185	656060 (X)	729191 (Y)
T7	104	79.35	185	655818 (X)	728575 (Y)

4.9.2 Turbine Crane Hardstands

The layout of the crane hardstand is designed to accommodate the delivery of the turbine components prior to their erection and to support the cranes during erection. Hardstands are also used for maintenance during the operation of the turbine. The hardstands will be rectangular in shape with additional hardstand set down area to lay the turbine blades across once delivered. The area of a single hardstand is approximately 80m long by 30m wide. Refer to Planning Drawing No. 23882-MWP-00-00-DR-C-5403 for further details. Due to the substantial loads exerted by the main lifting crane's outriggers during turbine erection, the hardstands will be constructed using excavation techniques across the full footprint of the turbine base and hardstand area to ensure stability and load-bearing capacity.

The proposed works will be restricted to the turbine locations and will comprise the followings:

- Each crane hardstand will be formed on competent subgrade of the underlying subsoil/rock which will comprise of stone aggregate (obtained from either the onsite borrow pit, excavated works, or imported from the nearby quarry) laid on a geotextile filter membrane.
- Any existing unsuitable soil found within the footprint of the turbine hardstand will be excavated out during formation works. The excavation works will be carried out using hydraulic excavators where surplus subsoil material will be transported to the onsite deposition areas via articulated dumper.
- The stone aggregate for the turbine hardstands will be compacted in 250mm layers and will vary from approximately 300mm to 900mm deep depending on the gradient of the underlying subgrade.
- Temporary set down areas will be formed to facilitate the storage of the turbine components at each crane hardstand (e.g., the turbine blades, the turbine towers, and nacelle). Each temporary set down area will be constructed using compacted stone aggregate which will be fully removed and reinstated after all turbines have been erected.

- Plate bearing test results will be undertaken on the finished hardstand surface to check if ground bearing strengths are to the wind supplier's specifications. Once complete the assembly cranes will be set up on the hardstand and erect the wind turbine into place.
- Where drop offs greater than 1m in height occur alongside hardstand edges. Physical edge protection will be constructed to reduce the risk of vehicles overturning or persons falling.

4.9.3 Turbine Bases

Wind turbines will have a reinforced concrete base pad foundation with a central pedestal above the base, that will in turn support the wind turbine tower. Each turbine base will bear onto rock or other such suitable bearing stratum and will be constructed utilising a spread foundation, which is wide and shallow. A typical foundation will be approximately 28m in diameter and will generally be installed to a depth of approximately 3.5m below ground level. Approximately 1200m^3 of concrete and 180 tonnes of steel will be used in the construction of each turbine base. Refer to Planning Drawing 23882-MWP-00-00-DR-C-5402 for further details.

The proposed works will be restricted to the turbine locations and will comprise the following:

- The extent of the excavation will be marked out and will include an allowance for trimming the sides of the excavation to provide a safe working area and slope batter.
- Any existing subsoil found within the footprint of the turbine base will be excavated out during formation works at the adjacent crane hardstand area. The excavation works will be carried out using hydraulic excavators where surplus subsoil material will be transported to the onsite deposition areas via articulated dumper trucks or tractor and trailer.
- Standing water in turbine base excavations is likely to contain an increased concentration of suspended solids. Dewatering of turbine base excavations can result in significant flow rates to the drainage and settlement system if high-capacity pumps are used. To avoid the need for pumping, it is proposed to provide drainage channels from the excavations to prevent a build-up of water. Where this is not feasible, temporary storage will be provided within the excavations and dewatering carried out at a flow rate that is within the capacity of the settlement ponds.
- The excavated surface will be levelled and adequate drainage measures will be put in place along with suitable set back areas to facilitate placing of stone and ultimately the erection of shuttering for the turbine base.
- If poor ground conditions are encountered during excavation and a significant depth to sub-formation is required, a piled foundation may be considered. A piled foundation requires the use of a piling machine equipped with an auger drill to rotary bore a number of holes around the area of the turbine base to the sub-formation depth determined at construction stage. Once all the holes have been bored, reinforcement steel is inserted into each with concrete poured afterwards. Piling if required, will be limited and localised.
- Suitable stone aggregate will be used to form a solid level working foundation surface. The stone will be rolled and compacted to a suitable formation level.
- Shutters and steel reinforcement will then be put in place and the foundation of the turbine will be prepared for pouring of concrete.
- A layer of concrete blinding approximately 100mm thick will be laid directly on top of the newly exposed formation, tamped and finished with a screed board to leave a flat level surface. The concrete will be protected from rainfall during curing and all surface water runoff from the curing concrete will be prevented from entering surface water drainage directly.
- High tensile steel reinforcement will be fixed in accordance with the design drawings and schedules. The foundation anchorage system will be installed, levelled and secured to the blinding using steel box section stools.

- Ductwork will be installed as required, and formwork erected around the steel cage and propped from the backside as required.
- The foundation anchorage system will be checked both for level and line prior to the concrete being installed in the base. These checks will be passed to the turbine supplier for their approval.
- Ready-mix concrete will be delivered to each turbine base by a fleet of ready-mix concrete trucks via the internal access tracks. Concrete will be placed into each base by means of a concrete pump where vibrating pokers will be used to ensure that full and proper compaction of the concrete around the reinforcement in the turbine base has been made. Upon completion of the concreting works the foundation base will be covered and allowed to cure.
- Steel shutters will be used to pour the circular chimney section.
- Following curing, the shuttering around the turbine base will be struck and removed.
- Earth wires will be placed around the base.,
- The foundation will be backfilled with a cohesive material, where possible using the material arising during the excavation and landscaped using the vegetated soil set aside during the excavation. A gravel footpath will be formed from the access track to the turbine door and around the turbine for maintenance.

4.10 Tree Felling

Felling of conifer forestry is required within and around wind farm infrastructures to accommodate the construction of foundations, hardstands, substation, grid connection and access tracks as well as to facilitate assembly of turbines and bat buffers. It is proposed to have felling distances of between 83m and 91m around specific turbines. The proposed felled areas are shown on Figures 4-5 and 4-6.

All tree felling will be undertaken in accordance with a tree felling licence, using good working practices as outlined by the Forest Service in their *"Standards for Felling & Reforestation 2019"*. All conditions associated with a felling licence will be complied with.

Figure 4-5: Areas to be Felled in Southern Area (in amber) - Excerpt from 23882-MWP-00-00-DR-C-5034

Figure 4-6: Areas to be Felled in Northern Area (in amber) - Excerpt from 23882-MWP-00-00-DR-C-5034

4.11 Electrical Transmission/Distribution

4.11.1 Distribution Network

Each individual turbine will generate electricity at a nominal voltage and will have its own internal transformer to step-up to an onsite distribution network voltage. The transformer and associated switchgear will be located within the turbine tower. A network of underground cabling servicing each turbine with electrical power and signal transmission will be installed along internal tracks to collect the electricity from each turbine and connect them to the onsite substation. Cabling will be installed in PVC ducting laid in trenches adjacent to the tracks edge (as illustrated on Drawings 23882-MWP-00-00-DR-C-5020 to 5028). Access to the cable ducting is provided by intermittent chambers and pull pits at defined locations adjacent to the access track infrastructure.

4.11.2 Wind Farm 110kV Substation

The proposed 110kV wind farm substation compound will occupy an area of approximately 10,500m^2 and will comprise an outdoor electrical yard and two single storey buildings (one for EirGrid and one for the wind farm operator). The substation will connect via underground cable circuits to accommodate a grid connection. The proposed 110kV substation will be made up of 1 No. Control Building, 1 No. IPP MV Switch room, Transformer compound and Busbar compound.

The control building works will consist of foundation works, block work, roofing, low voltage electrical fit out, cladding and building finishing works. The transformer, gantry and structural steelwork will be installed in the transformer compound. Two cable sealing ends will be installed to incorporate the radial underground circuits in and out of the station. The busbar compound structural steelwork will be erected, with lightning masts also installed. Substation electrical equipment will be installed once the control building and compound is complete. Fencing will be erected around the compound for security/protection. Permanent access tracks will also be installed to allow traffic in and out of the proposed substation compound, access track to loop in interface mast structures and internal access track for compound use.

The substation will be unmanned. Maintenance personnel will visit the substation occasionally to undertake operations and maintenance. Maintenance vehicles accessing the site will park within the compound area.

The substation buildings and associated compound will be contained within a 2.6m high powder coated steel palisade fence.

4.11.3 External Grid Connection

A 110kV underground cable associated with the Proposed Grid Connection within a single trench extending approximately 8km from the proposed onsite substation to the Philipstown Substation.

To cross sensitive features such as the Leitrim watercourse and the Bord na Móna rail track, Horizontal Directional Drilling (HDD) will be employed. This trenchless method involves drilling beneath obstacles using a guided rig and bentonite fluid to support the bore. Launch and receiving pits will be constructed at either end of the crossing, with careful environmental protection and fluid containment measures in place.

Where land drains or existing underground services are encountered, the trench will either pass over or under them depending on available cover. A minimum clearance of 300mm is required between the ducting and any existing service.

Additionally, joint bays and communication chambers will be installed approximately every 500–1,000m along the route to connect cable segments. These chambers will be precast or cast in situ, with excavation areas protected against runoff and sediment loss. Once installed on a prepared base, the chambers will be backfilled and sealed, ensuring continuity and durability of the grid connection infrastructure.

4.12 Turbine Delivery Route

All turbine components for the proposed development will arrive at one of Irelands deepwater ports, such as Bellview in Co. Waterford. From here, the components will travel via the national road and motorway network to Junction 5 (Kilbeggan/Tullamore) on the M6. Components will travel south on the N52 towards Tullamore. Due to vertical and horizontal alignment constraints the turbine blades and tower sections will take different routes from the N52/L2025 roundabout near Tullamore to Ballinagar village. An overview of the proposed section is shown in **Figure 4-7.** Route B uses a local road (L2025) in order to get through Ballinagar, to reduce impact on the local road, this route will be used to transport the blades, which are the long abnormal load items. The more numerous shorter loads (such as the tower elements) will use Route A along the proposed TDR, which maximises the use of regional roads.

The Turbine Delivery Assessment Report is available in **Appendix 2-2 of the EIAR.**

The delivery of turbine components to the proposed development will require temporary works on sections of the public road network along the delivery route including hedge or tree cutting, relocation of powerlines/poles, lamp posts, signage and temporary local road widening. Such works will be temporary for the delivery of turbine components. There are three locations where works will be required within private lands and these are included in the planning application boundary.

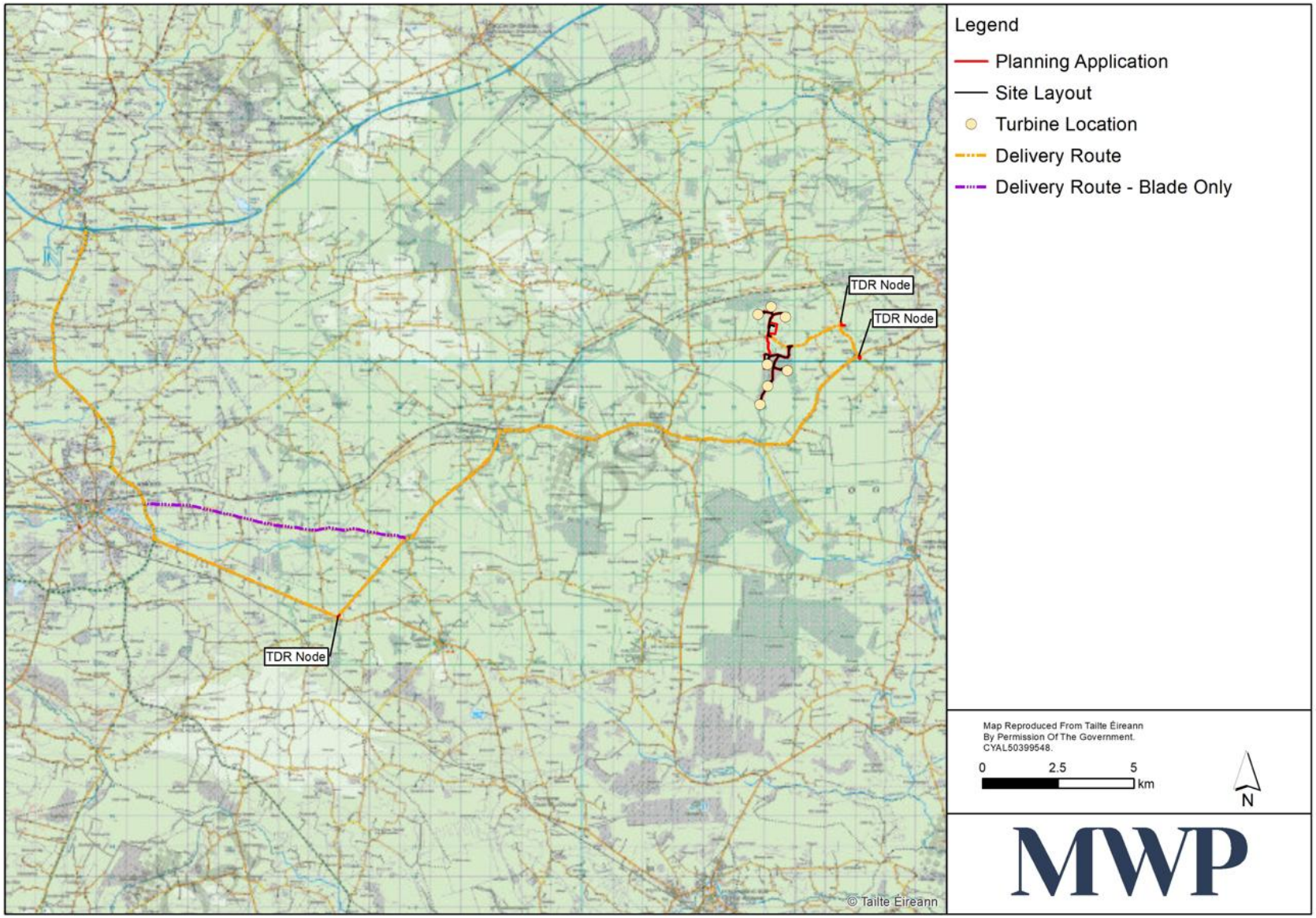


Figure 4-7 Proposed TDR M6 to Ballinla Wind Farm

4.13 Wind Turbine Generator Erection

The erection of turbines will occur in the last months of the construction phase. The erection of turbines is typically phased at an average of one turbine erected per week. The erection of turbines is a specialist process with specially designed large scale cranes required to erect the turbine components. The cranes themselves have to be built up onsite at the turbine hardstand location and will have to be dismantled substantially before progressing to the next turbine base location for erection of the next turbine.

Components can be placed on hardstands prior to assembly. Large cranes will be required for erecting the turbines, supported by smaller assist cranes. The tower of the turbine is erected first followed by the nacelle and blades. The turbine erection process is a carefully managed and precision operation and is heavily dependent on specialist plant and good weather windows. Once the turbine is in place, electrical commissioning and final energisation follows.

The Project Manager for the site will notify Offaly County Council and AirNav Ireland at least 30 days prior to erection of the wind turbines.

After the turbines have been put in place, the project manager will provide confirmation of the coordinates of the as constructed positions of the turbines and the highest point of the turbines to the top of blade spin to the AirNav Ireland.

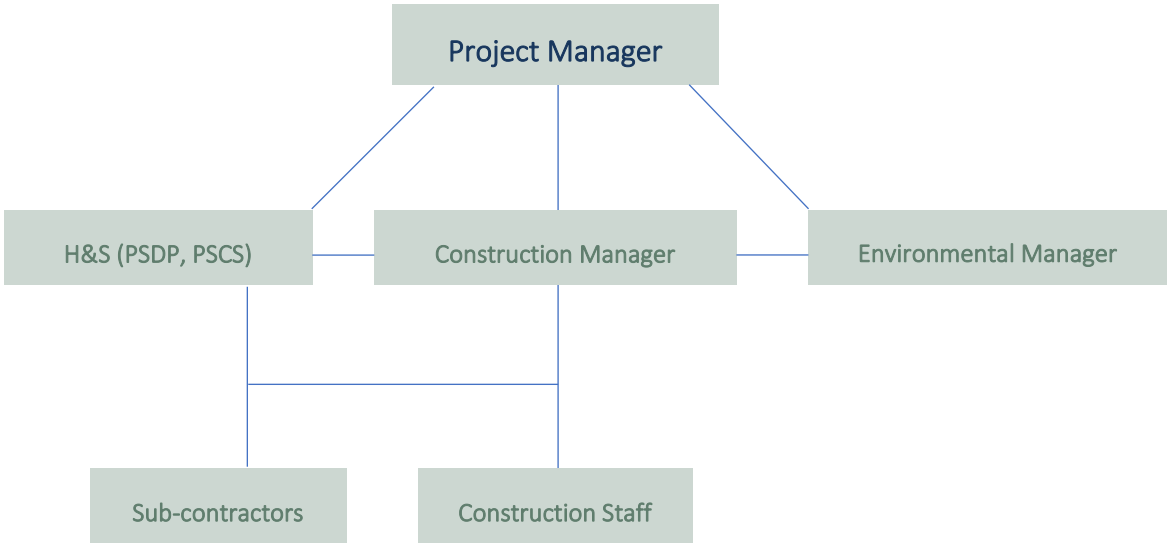
4.14 Wind Farm Commissioning

The final stage of the project construction includes commissioning of the wind farm. It will include testing of the turbines for compliance with standards and for compliance with the National Electricity Grid Code. Once the tests results are satisfactory, the Proposed Wind Farm will be authorised by ESB Networks/EirGrid to export electricity onto the national grid.

5. Construction & Environmental Management – Organisational Structure, Duties and Responsibilities

5.1 On Site Organisational Structure and Responsibility

The Organisational Structure for the Contractor's Project Team is included below. This structure is defined by the Contractor and will include the names of the assigned personnel with the appropriate responsibility and reporting structure reflected.



The Contractor will select the Project Team for the construction of the Project. The Contractor's Project Team will include an overall Project Manager, whose duties will stretch beyond the day-to-day works to budgetary, procurement and scheduling matters. The selected Construction Manager will have overall responsibility for the construction site personnel carrying out the works and the Construction Manager will report to the Project Manager.

A competent Environmental Manager will be appointed for the duration of the works and will report to the Project Manager. The Construction Manager will communicate regularly with the Environmental Manager to ensure mitigation measures are applied to specific works. The Environmental Manager will carry out tasks as required, including installation and maintenance of sediment control measures and implementing and maintaining approved waste management control measures. The use of dedicated staff, under the direction of the Environmental Manager, will ensure the environmental controls are in situ ahead of the works onsite.

5.2 Duties and Responsibilities

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

- The Project Manager - liaises with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor(s)'s project team.
- The Construction Manager - liaises with the Environmental Manager when preparing site works where there is a risk to the environment and manages the construction personnel and general works.
- The Design Engineer - undertakes and certifies the Design and supervises the standard of works, including geotechnical aspects (Geotechnical engineer may need to be consulted).
- The Environmental Manager - ensures that the CEMP is developed, implemented and maintained. The Environmental Manager's tasks at the construction site are described in Section 5.2.4. To ensure adequate cover of environmental tasks, waste management tasks and responsibilities, dedicated construction staff will be assigned to the Environmental Manager to implement and maintain the Sediment and Erosion Plan and any other measures required.

Other roles include:

- Project ecologist/Ecological Clerk of Works (ECoW).
- Health and Safety (PSDP and PSCS).
- Project Archaeologist.
- Project Ornithologist.
- Waste Management Coordinator (report to the Environmental Manager).
- Geotechnical Engineer (as required by Design Engineer).

5.2.1 Project Manager

Name: TBC

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

- Implementing of the Construction and Environmental Management Plan (CEMP).
- Implementing the Health and Safety Plan.
- Management of the construction project.
- Liaison with the client/developer.
- Liaison with the Project Team .
- Assigning duties and responsibilities in relation to the CEMP.
- Production of construction schedule.
- Materials procurement.
- Maintaining a site project diary.

5.2.2 Construction Manager

Name: TBC

The Construction Manager manages all the works to construct the project, on behalf of the Contractor. The Construction Manager reports to the Project Manager. In relation to the CEMP, the Construction Manager is responsible for:

5.2.2.1 Site-Specific Method Statements

- Liaising with the Environmental Manager in preparing site-specific Method Statements for all work activities where there is a risk to the environment, by incorporating relevant Environmental Control Measures and referring to relevant Environmental Control Measure Sheets.
- Liaising with the Environmental Manager in reviewing and updating site-specific Method Statements for all Works activities where Environmental and Waste Management Control Measures and Environmental Control Sheets have been altered, and
- Liaising with the Environmental Manager where third party agreement is required in relation to site-specific Method Statements, Environmental & Waste Management Control Measures and/or Environmental Control Measure Sheets.

5.2.2.2 General

- Being aware of all project environmental commitments and requirements.
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from the Project Manager to the Environmental Manager in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required.
- Programming and planning of excavation works and communicating this schedule to the Environmental Manager.
- Ensuring that adequate resources are provided to design and install any environmental interventions.
- Liaising with the Design Engineer and providing information on environmental management to the Design Engineer during the course of the construction phase.
- Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the Contractor's project staff.
- Ensuring that the Environmental Manager performs regular and frequent environmental site inspections.
- Reviewing and approving all waste management control measures ensuring compliance with National and International Waste legislation and best practice.

5.2.3 Design Engineer

Name: TBC

The Design Engineer is responsible for:

- Design of the Works.
- Review and approval of relevant elements of the method statements – assist the Construction Manager with the overall review.
- Participating in Third Party Consultations.
- Liaising with Third Parties through the Environmental Manager.

5.2.4 Environmental Manager

Name: TBC

The Environmental Manager is responsible for:

- General
    - Being familiar with the project environmental commitments and requirements.

  - Being familiar with baseline data gathered for the various environmental assessments and during pre-construction surveys.
  - Assisting the Construction Manager in liaising with the Design Engineer and the provision of the information on environmental management to the Design Engineer during the course of the construction phase.
  - Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the Contractor's project staff.
  - Implementing the environmental procedures of the CEMP.
  - Liaising with the Construction Manager to ensure that the control measures set out in the Schedule of Environmental Mitigation are implemented.
  - Liaising with the client/developer in relation to environmental issues.
  - Auditing the construction works from an environmental viewpoint.
- Site-Specific Method Statements
  - Liaising with the Construction Manager in preparing site-specific Method Statements for all Works activities where there is a risk to the environment. These site-specific Method statements will incorporate relevant Environmental Control Measures and take account of relevant Environmental Control Measure Sheets.
  - Liaising with the Construction Manager in reviewing and updating site-specific Method Statements for all Works activities where Environmental Control Measure and Environmental Control Sheets have been altered.
  - Liaising with the Construction Manager where third party agreement is required in relation to site-specific Method Statements, Environmental Control Measures and/or Environmental Control Measure Sheets.
- Third Party Consultations
  - Overseeing, ensuring coordination and playing a lead role in third party consultations required statutorily, contractually and in order to fulfil best practice requirements.
  - Ensuring that the minutes of meetings, action lists, formal communications, etc., are well documented and that the consultation certificates are issued to the Design Engineer as required.
  - Liaising with all prescribed bodies during site visits, inspections and consultations.
  - Where new Environmental Control Measures are agreed as a result of third party consultation, ensuring that the CEMP is amended accordingly.
  - Where new Environmental Control Measures are agreed as a result of third party consultation, the Environmental Manager will liaise with the Construction Manager in updating relevant site-specific Method Statements.
  - Where required, liaising with the Construction Manager in agreeing site-specific Method Statements with third parties.
- Licensing
  - Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licences, certificates, planning permissions, etc,.
  - Liaising with the designated licence holders with respect to licences granted pursuant to the Wildlife Act, 1976, as amended (if required).
  - Bringing to the attention of the Project, Design and Construction Team any timing and legal constraints that may be imposed on the carrying out of certain tasks.
- Waste Management Documentation
  - Holding copies of all permits and licences provided by waste contractors.

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

- Legislation
  - Keeping up to date with changes in environmental legislation that may affect environmental management during the construction phase.
  - Advising the Construction Manager of these changes.
  - Reviewing and amending the CEMP in light of these changes and bringing the changes to the attention of the Contractor's senior management and subcontractors.
  -
- Specialist Environmental Contractors
  - Identifying requirements for specialist environmental contractors (including ecologists, waste contractors and spill clean-up specialists) before commencement of the project.
  - Procuring the services of specialist environmental contractors and liaising with them with respect to site access and report production.
  - Ensuring that the specialist environmental contractors are competent and have sufficient expertise to co-ordinate and manage environmental issues.
  - Co-ordinating the activities of all specialist environmental contractors on environmental matters arising out of the contract.
- Environmental Induction Training and Environmental Toolbox Talks
  - Ensuring that Environmental Induction Training is carried out for all the Contractor's site personnel. The induction training may be carried out in conjunction with Safety Induction Training.
  - Providing toolbox talks on Environmental Control Measures associated with Site-specific Method Statements to those who will undertake the work.
- Environmental Incidents/Spillages
  - Prepare and be in readiness to implement at all times an Emergency Response Plan.
  - Notifying the relevant statutory authority of environmental incidents.
  - Carrying out an investigation and producing a report regarding environmental incidents. The report of the incident and details of remedial actions taken will be made available to the relevant authority, the Design Engineer and the Construction Manager.
  - The Site Environmental Manager shall notify the Client of any complaints or environmental incidents within 24 hours of occurrence. Where significant incidents occur requiring the involvement of statutory authorities or emergency services or where any pollution events occur, the Client shall be notified within 1 hour.
  - Project Specific Note: In the event of encountering a spillage or contaminated land/buried waste being encountered, the Environmental Manager will contact MWP - Engineering and Environmental Consultants who have at their disposal Environmental Engineers and Scientists with experience in addressing spillage or contaminated land/buried waste. MWP - Engineering and Environmental Consultants have personnel based in three offices in Ireland and will be available to dispatch suitably qualified and experienced personnel at short notice in the event of an Environmental Incident.
- Site Environmental Inspections and Auditing
  - Carrying out regular documented inspections of the site to ensure that work is being carried out in accordance with the Environmental Control Measures and relevant site-specific Method Statements, etc.
  - Carrying out inspections of the site drainage system.

- Appending copies of the inspection reports to the CEMP.
- Liaising with the Construction Manager to organise any repairs or maintenance required following the daily inspection of the site.
- Accommodate audits by the Employer and/or independent auditing consultants during the project.
- Accommodate third party environmental auditing when required.
- During audits, the Environmental Site Manager shall make the necessary staff available during each audit and provide access to all documentation and site areas (and provide necessary induction and training to allow access where required).
- If there are any adverse findings arising from the environmental audits, the Environmental Site Manager shall be required to take prompt mitigation actions and provide written reports to the Employer detailing such mitigation.
- The Environmental Site Manager shall notify the Employer of any complaints or environmental incidents within 24 hours of occurrence[1]. Where significant incidents occur requiring the involvement of statutory authorities or emergency services or where any pollution events occur, the Employer shall be notified within 1 hour.

- Environmental Records
  - The Construction Environmental Manager shall provide all CEMP documentation to the Client on completion of the site works. Reports arising during the site works, such as verification reports or waste disposal records shall be provided to the Client within one month of completion of the activity and may be subject to review.

5.2.5 Other Roles

5.2.5.1 Ecological/Environmental Clerk of Works (ECoW)

A suitable qualified and experienced ECoW will be employed during the construction phase of the project. Duties will include the review of all method statements, delivery of toolbox talks, undertaking of all required pre-construction surveys for protected species and monitoring of works throughout the construction phase to ensure all environmental controls and EIAR mitigation is implemented in full. As part of toolbox talks, contractor staff and other site personnel, as relevant, will be made aware of the procedure to follow if a protected species or their resting or breeding site, is encountered. The ECoW will closely work with the Environmental Manager.

The ECoW will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated for in the EIAR. The ECoW will be responsible for pointing out boundaries of exclusion zones as outlined further below.

The appointed ECoW will have demonstrated professional experience in managing large-scale construction works affecting ecological receptors identified within the EIAR.

[1] Communication in respect of the project to regulatory or statutory bodies shall be undertaken by the Employer, unless otherwise agreed, except in the case of incident notification.

5.2.5.2 Health and Safety Personnel – To be updated upon appointment of Contractor(s)/finalisation of CEMP

The Health and Safety personnel for the construction project is appointed by the Contractor in line with the Construction Regulations:

- Carrying out duty of Project Supervisor Construction Stage (PSCS).
- Responsible for safety induction of all staff and personnel on site.
- Implementing the Health and Safety Plan.
- Auditing and updating the Health & Safety Plan.
- All other required legal duties.

5.2.5.3 Project Archaeologist – To be updated upon appointment of Contractor(s)

The Archaeologist may be appointed by the Developer or the Contractor(s) and is responsible for:

- Ensuring implementation of archaeological mitigation measures.
- Monitoring of groundworks associated with the development.
- Liaison with the Environmental Manager/Construction Manager.
- Liaison with the Project Manager/client/developer.

5.2.5.4 Project Ornithologist – To be updated upon appointment of Contractor(s)

The Ornithologist may be appointed by the Developer or the Contractor(s) and is responsible for:

- Ensuring all pre-construction (completed) and construction phase avian monitoring is conducted at the site.
- Advice on any mitigation required.
- Consultations with National Parks and Wildlife Service (NPWS).

5.2.5.5 Geotechnical Engineer – To be updated upon appointment of Contractor(s)

The Geotechnical Engineer may be appointed by the Developer or the Contractor(s) and is responsible for:

- Assisting the Design Engineer as required.
- Providing advice on geotechnical aspects of the works.

5.2.5.6 All Site Personnel – To be updated upon appointment of Contractor(s)

The site personnel appointed by the Contractor are responsible for:

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

5.3 Contacts

5.3.1 Main Contractor Contacts

Table 5-1: Main Contractor Contacts

Position Title	Name	Phone	Email
Main Contractor	TBC		
Project Manager	TBC		
Construction Manager	TBC		
Design Engineer	TBC		
Environmental Manager*	TBC		
Safety (PSCS)*	TBC		
Safety Officer*	TBC		
Site Emergency Number*	TBC		
Project Ecologist/Ornithologist	TBC		
Project Archaeologist	TBC		
Overall Project PSDP	TBC		

**24 hour contact details required*

5.3.2 Employer Contacts

Table 5-2: Employer Contacts

Position Title	Organisation	Name	Phone	Email
ECoW	Employers ECoW			
Project Archaeologist	Employers Archaeologist			
Overall Project PSDP	Safety (PSDP)			
Project Liaison Officer	Employers Public Liaison Officer			

5.3.3 Third Party Contacts

Table 5-3: Third Party Contacts

Organisation	Location	Name/Address	Phone	Email Address
Inland Fisheries Ireland	Galway	Teach Breac Earl's Island Galway H91 E2A2 Ireland	(091) 563118	info@fisheriesireland.ie
National Parks and Wildlife Service	North Eastern Division	District Conservation Officer	(01) 539 3175 (01) 539 3230	nature.conservation@chg.gov.ie
Environmental Protection Agency (EPA)	EPA	EPA Headquarters	(053) 9160600	info@epa.ie
Local Authority	Offaly County Council	Áras an Chontae, Charleville Road, Tullamore Co. Offaly R35 F893	(057) 9346800	customerservices@offalycoco.ie
Health and Safety Authority	Health and Safety Authority		(01) 6147000	wcu@hsa.ie
An Garda Síochána	Rhode Garda Station	Edenderry Road Rhode Co. Offaly R35 A363	(046) 9737002	
Emergency Services	Ambulance and Fire Service	Ambulance and Fire Service	999 or 112	

6. Environmental Commitments

6.1 Environmental Management Plans

A number of environmental management plans (EMP) have been prepared for managing the impacts of Construction Activities associated with the proposed development. See Table 6-1 and refer to Appendix 1 of this CEMP. These plans will be implemented by the Appointed Project Manager and/or Project Contractor(s) as relevant.

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

Table 6-1: Environmental Management Plans

Ref	Procedure
EMP-1	Management of Excavations
EMP-2	Surface Water Management and Runoff Control
EMP-3	Fuels and Oils Management
EMP-4	Management of Concrete
EMP-5	Construction Noise Management
EMP-6	Construction Waste Management Plan
EMP-7	Construction Traffic Management Plan
EMP-8	Construction Dust Management
EMP-9	Archaeological and Heritage Protection
EMP-10	Ecological Management Plan Protection of Habitats and Fauna
EMP-11	Landscape and Visual Management
EMP-12	Emergency Response Plan
EMP-13	Site Environmental Training and Awareness
EMP-14	Monitoring and Auditing
EMP-15	Environmental Accidents, Incidents and Corrective Actions
EMP-16	Environmental Complaints
EMP-17	Management of Material Assets
EMP-18	Invasive Species Management

6.2 Environmental Mitigation, Control Measures and Proposals

6.2.1 Biodiversity

During the construction phase of the Proposed Development, a robust suite of biodiversity mitigation measures will be implemented to safeguard protected species, habitats, and ecological integrity. These measures are designed to minimize disturbance, prevent habitat degradation, and ensure compliance with national guidelines and conservation best practices. Oversight by a qualified Ecological Clerk of Works (ECoW) will ensure that all mitigation actions are executed effectively and adaptively throughout the construction lifecycle, their duties will include:

- Deliver toolbox talks and ecological awareness training
- Conduct pre-construction surveys and oversee clearance works
- Monitor construction activities to ensure full implementation of EIAR mitigation
- Educate staff on procedures if protected species or breeding/resting sites are encountered

6.2.1.1 Protection of Fauna

- Retain all identified badger setts; none within 30–50m of turbines or tracks.
- Conduct pre-construction surveys for badger and otter within 10–12 months before works.
- ECoW to oversee vegetation removal and respond to discovery of unknown breeding/resting sites.
- Cease works within 30m (or 50m during breeding season) of any newly discovered badger sett.
- Consult NPWS and implement mitigation if new setts are found.
- Follow NRA/TII Guidelines for treatment of badger and otter.
- Avoid felling during peak breeding periods for red squirrel and pine marten.
- Survey for breeding sites if felling during sensitive periods is unavoidable.
- Avoid vegetation clearance during bird nesting season (Mar–Aug) to protect stoat.
- Seek NPWS approval for disturbance to breeding sites.
- Check for presence of young Irish hare, hedgehog, pygmy shrew, and hibernating hedgehogs before clearance.

6.2.1.2 Protection of Habitats

- Minimize footprint of works to reduce habitat disturbance.
- Clearly mark development and construction areas with posts and high-visibility tape.
- Mark boundaries using design drawings under supervision of project engineer and ECoW.
- Prohibit habitat removal, machinery movement/storage, or construction activity outside designated areas.

6.2.1.3 Removal of Vegetation (Excluding Conifer Plantation)

- Conduct all vegetation removal outside restricted bird nesting period (Mar 1–Aug 31).
- Comply with Section 40 of the Wildlife Acts to protect broader biodiversity.

6.2.1.4 Forestry Felling

- All tree felling will be undertaken in accordance with the conditions attached to the tree felling licence and in accordance with Forest Service Guidelines.
- Prepare harvesting plan and mapping including:

- Environmental receptors and water features.
- Biodiversity features and machinery selection.
- Silt/sediment control, timing, and extraction management.

6.2.1.5 Water Quality

- Prepare water monitoring programme for pre-, during, and post-construction phases.
- Conduct baseline water quality monitoring of nearby streams.
- Install silt ponds at access tracks and swales; retain post-construction.
- Monitor water quality regularly under varying weather conditions.
- Visually monitor for groundwater seepage, ponding, and drainage system effectiveness.
- Inspect site for siltation risks before construction; install check dams, sandbags, silt fences.
- Halt works during heavy precipitation if risk to water environment is identified.
- Cover temporary fills/stockpiles with polyethylene sheeting.
- Settle silty water and channel into vegetation ≥50m from watercourses.
- Re-vegetate exposed areas with top sod or suitable seed mix.
- Regular road cleaning and use of wheel washes.
- Use of check dams and silt fences on drains.
- Daily and weekly weather forecast monitoring.
- Daily, weekly, and monthly water quality monitoring.
- Follow best practice guidance from DHPLG (2019), IFI (2016), Murnane et al. (2006), NRA (2008).

6.2.1.6 Dewatering

- Remove, treat, and dispose of groundwater/surface water appropriately.
- Do not pump directly into trackside drains or watercourses.
- Pump silted water from turbine foundations to surface drainage system.
- Pump silted water from trenches/joint bays to designated percolation areas.
- Provide settlement ponds near tracks, borrow pit, hardstands, substation.
- Fill ponds with stone for safety or allow natural re-vegetation.

6.2.1.7 Cement Bound Granular Mixtures (CBGM)

- Store CBGM on hardstand or runoff-resistant areas with no direct drainage.
- Bund storage areas using sandbags, geotextile sheeting, or silt fencing.
- Wash concrete truck chutes at dedicated, bunded washout area.

6.2.1.8 Fuel Management

As per EMP3 in Appendix 1.

6.2.1.9 Construction Wheel Wash

- Use wheel wash for vehicles entering/leaving site.
- Route water residue through settlement pond.
- Clean wheel wash area regularly to prevent residue buildup

6.2.1.10 Temporary Construction Compound

- Direct compound drainage to oil interceptor.
- Provide bunded containment area for fuel/lubricant/oil storage.
- Remove compound after commissioning is complete.

6.2.1.11 Storage

Store materials, containers, stockpiles, and waste:

- Away from drains and sensitive habitats.
- On impermeable base, under cover, in secure areas.
- Away from moving plant and vehicles.
- Store containers upright and clearly labelled.
- Provide sufficient storage near working areas.

6.2.1.12 Excavation Works

As per EMP1 in Appendix 1.

6.2.2 Hydrology and Hydrogeology

6.2.2.1 Good Practice Measures

Implementation of good practice measures as a matter of course during the construction of the Proposed Development are not considered to be mitigation measures but form an integral part of the design/construction process.

During the Construction Phase, all works will be undertaken in accordance with the CEMP (MWP, 2025). Following appointment, the contractor will be required to further develop the CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The CEMP will be implemented for the duration of the Construction Phase, covering construction and waste management activities that will take place during the Construction Phase of the Proposed Development. These measures will address the main activities of potential impact which include:

- Control and Management of surface water runoff.
- Control and management of shallow groundwater during excavation and dewatering.
- Management and control of soil and materials.
- Appropriate fuel and chemical handling, transport and storage.
- Management of accidental release of contaminants at the site.
- Control and handling of cementitious materials.

The appointed contractor will produce a Pollution Prevention Plan (or similar document). This will include procedures and diagrams for:

- Dewatering of excavations.
- Temporary soil storage.
- Fuel storage/refuelling.
- Concrete wash-out area.

- Controlling surface water entering Site.
- Preventing existing drainage features becoming pathways for construction runoff.
- Reducing soil exposure and reinstating as rapidly as possible.
- Contingency measures.

Emergency procedures will be developed by the main contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with best practice standards and legislative requirements including but not limited to the Environmental Protection Agency Act, 1992 (as amended), Waste Management Act, 1996 (as amended) and the Safety, Health and Welfare at Work Act, 2005 (as amended).

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Proposed Development site and compliantly disposed of offsite. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff onsite will be fully trained on the use of equipment.

6.2.2.2 In-Stream Works

Where instream works are required for the construction of watercourse crossings and culverts, the following mitigation measures will be implemented to protect water quality and maintain the integrity of the receiving waterbodies:

- All instream and near-stream works will be carried out in accordance with:
    - Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (2016).
    - Transport Infrastructure Ireland (TII) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (2008).
    - CIRIA C648 – Control of Water Pollution from Linear Construction Projects (2006).
- No instream works will be carried out outside the permitted IFI window of July 1st to September 30th, to protect aquatic habitats and fish spawning periods.
- A qualified Environmental Clerk of Works (ECoW) will be present onsite during all instream works (e.g., bridge and culvert installations) to oversee environmental protection measures and ensure compliance with best practice.
- The ECoW will conduct regular water quality monitoring upstream and downstream of the works area to detect any changes and initiate corrective actions if necessary.
- Silt fences and sediment control measures will be installed as required to prevent sediment from entering watercourses.

- Prior to construction, defined works areas will be fenced off at each crossing location. Silt fences will be attached to these fences to create a barrier between the works and adjacent watercourses (e.g., the Leitrim stream and its tributaries).
- Silt fences will be constructed using geotextile membranes that allow water to pass through while retaining sediment.
- Heras fencing will be installed in front of the silt fences to prevent "site creep" — the gradual encroachment of construction activities toward sensitive areas.
- Precast concrete culverts will be used to minimise in-stream construction time and reduce the risk of pollution.
- Existing vegetation will be preserved where possible, and disturbed areas will be promptly replanted to stabilise soils and reduce erosion.
- All river protection measures (e.g., silt fences, settlement ponds) will be maintained in effective condition throughout the works and inspected regularly.
- Daily monitoring of silt fences and settlement ponds will be carried out by the contractor or ECoW, particularly during sensitive phases such as site clearance, concrete pours, and after heavy rainfall events.
- Maintenance of sediment control infrastructure will be undertaken as needed to ensure continued effectiveness.
- Monitoring frequency will be adjusted based on the stage of works and environmental conditions, with increased checks during high-risk activities or adverse weather.

6.2.2.3 Hydrological and Hydrogeological Flow Regime

Excavation, dewatering, and construction activities may disrupt natural surface and subsurface water flow paths, potentially altering the hydrological and hydrogeological regime. Mitigation and monitoring measures to limit potential impacts are as follows:

- Implement a site-specific surface water management system based on SuDS principles incorporating features such as:
    - Swales, filter drains, and attenuation basins to manage runoff volumes and rates.
    - Check dams and level spreaders to reduce flow velocity and promote infiltration.
    - Settlement ponds or silt traps to capture suspended solids before discharge.
- All watercourse crossings (e.g. for access tracks or cable routes) will be designed in accordance with OPW Section 50 requirements, ensuring that culverts or bridges are appropriately sized to accommodate the 1-in-100-year flood event plus climate change allowance.
- Crossings will be constructed using methods that maintain flow continuity and minimise in-stream works.
- Drainage infrastructure will be designed to replicate pre-development greenfield runoff rates and avoid increasing flood risk downstream.
- Maintain existing drainage patterns where possible; reinstate any disturbed field drains or watercourses post-construction.
- Use shallow recharge wells where dewatering is required to maintain local groundwater levels.
- All dewatering will be managed in accordance with best practice standards (i.e., CIRIA C750).
- The dewatering methodology to be implemented by the appointed contractor will ensure that any dewatering is confined to the localised zone and does not extend towards the site boundaries.
- Seal and backfill cable trenches to prevent preferential flow paths.
- Monitor groundwater levels during construction and adjust dewatering practices accordingly.

6.2.2.4 Sedimentation

The following mitigation measures would be implemented to reduce the potential for sedimentation during the construction phase:

- No work will take place within the 20m buffer zones of EPA mapped watercourses, except for drainage/stream crossings, associated track construction and minor works.
- Site traffic will only be permitted within this buffer to access watercourse crossings or to facilitate instream and near-stream works (near-stream works on EPA watercourses will include some forestry felling carried out to forestry felling 10m buffer standards).
- There will be no storage of material/equipment or overnight parking of machinery inside the 15m buffer zone to the watercourse.
- Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channel along the buffer zone boundary.
- Where works are necessary inside the 20m buffer double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction phase.
- Drainage channels and streams will be clearly identified onsite and shown on method statements and site plans.
- During the construction activities there will be a requirement for diverting rainwater away from the construction areas, into nearby drainage channels and streams.
- Visual inspections of roads and wheel washing at site entry/exit points will be undertaken to prevent the accumulation of dirt.
- Excavations will only remain open for limited time periods to reduce groundwater and surface water ingress and water containing silt will be passed through a settlement pond prior to discharge.
- Dewatering, where required, will incorporate the use of filter media. There will be no direct discharges into the watercourses.
- Spoil and temporary stockpiles including stone stockpile areas will be positioned in locations which are distant from drainage systems and retained drainage channels, away from areas subject to flooding.
- To help shed rainwater and prevent ponding and infiltration, the sides and top of the stockpiles will be regraded to form a smooth gradient with compacted sides reducing infiltration and silt runoff.
- Where required, silt fences will be erected at the toe of stockpiles to prevent runoff. The silt fences will be monitored daily by the appointed contractor and silt will be removed as required.
- Runoff from spoil heaps will be prevented from entering watercourses by diverting it through onsite settlement ponds and removing material as soon as possible to designated storage areas.
- Silt traps will be placed across the works boundary in any areas adjacent to watercourses to avoid siltation of watercourses. These will be maintained and cleaned regularly throughout the construction phase.
- Use biodegradable erosion control matting on exposed slopes.
- Phase vegetation clearance and re-seed disturbed areas promptly.
- Monitor and maintain sediment control measures daily, especially after rainfall events.

6.2.2.5 Accidental Spills and Leaks

The following mitigation measures would be implemented to reduce the potential for accidental spills and leaks during the construction phase:

- The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the main contractor in advance of any works commencing.
- The main contractor will prepare method statements for weather and flood forecasting and continuous monitoring of water levels in the Leitrim stream and its tributaries. These will be made available to the local

authority where requested. The main contractor will also provide method statements for the removal of site materials, fuels, tools, vehicles, and persons from flood zones in order to minimise the risk to persons working on the site as well as potential input of sediment or construction materials into the waterbodies during flood events.

- No work will take place within the 20m buffer zones of EPA mapped watercourses, except for drainage/stream crossings, associated track construction and minor works.
- Site traffic will only be permitted within this buffer to access watercourse crossings or to facilitate instream and near-stream works (near-stream works on EPA watercourses will include some forestry felling carried out to forestry felling 10m buffer standards).
- Wastewater from the construction welfare facilities will be managed by means of a sealed storage tank. All wastewaters will be removed from site by permitted waste collector to wastewater treatment plants.
- There will be no tracking of machinery within watercourses.
- There will be no storage of material/equipment or overnight parking of machinery inside the 15m buffer zone to the watercourse.
- Before any ground works are undertaken, double silt fencing will be placed upslope of the watercourse channel along the 15m buffer zone boundary.
- Designate a bunded storage area at the contractor's compound(s) and away from surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area or 25% of the total capacity of all the tanks within the bund, whichever is the greater.
- Chemicals will be stored within a storage container with an accompanying Control of Substances Hazardous to Health ("COSHH") Datasheet in accordance with health and safety regulations. All chemicals will be stored in designated bunded areas at least 15m away from watercourses.
- Drainage from the bunded area shall be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled, so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the site plot, a suitably sized spill pallet will be used for containing any spillages during transit.
- All plant and equipment utilised onsite will be maintained is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development. Only emergency breakdown maintenance will be carried out onsite.
- Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed offsite.
- Drip trays will be located under all static plant.
- Hoses and valves will be checked regularly for signs of wear and will be turned off and securely locked when not in use.
- Diesel pumps and similar equipment will be checked regularly, and any accumulated oil removed for appropriate disposal.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains.
- There will be no refuelling allowed within 15m of the watercourses.
- Where mobile fuel bowsers are used on the site, in the event of a machine requiring refuelling outside of the designated impermeable area, fuel will be transported in a mobile double skinned tank.
- Adequate stocks of hydrocarbon absorbent materials (e.g., spill-kits and/or booms) shall be held onsite to facilitate response to accidental spills. Spill response materials shall also be stored on all construction vehicles.
- In the event of an accidental spillage, or water pollution incident, the site manager or designate shall notify the Local Authority as soon as possible.

6.2.2.6 Use of Cementitious Materials

Mitigation and monitoring measures to limit potential impacts associated with the use of natural resources throughout the course of the Proposed Development are as follows:

- No work will take place within the 20m buffer zones of EPA mapped watercourses, except for drainage/stream crossings, associated track construction and minor works.
- Site traffic will only be permitted within this buffer to access watercourse crossings or to facilitate instream and near-stream works (near-stream works on EPA watercourses will include some forestry felling carried out to forestry felling 10m buffer standards).
- Ready-mixed concrete will be brought to the site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated water (for example storm water) to the underlying subsoil and groundwater.
- The pouring of concrete will take place within a designated area protected (for example by a geosynthetic material) to prevent concrete runoff into the soil/groundwater media.
- Any use of concrete in proximity to watercourses will be carefully controlled to avoid spillage. No onsite batching should occur. Washout from mixing will be carried out only in a designated contained impermeable area.
- Wash down and washout of concrete transporting vehicles will take place at an appropriate designated area and direct discharge of wash water to ground or surface waters will be strictly prohibited. Alternatively, where washout takes place onsite, it will be carried out in a designated, carefully managed onsite washout area.
- Wastewater from washing of concrete lorry chutes will be directed into a concrete washout container, lined with an impermeable membrane. The container should be of good condition, should not overflow or leak and should be easily accessible to vehicles. The containers must be checked and emptied at a frequency equivalent to the volume of concrete being used and no runoff should leave the washout location. The area much be clearly marked and must be located away from storm drain inlets, open drainage facilities, water courses and ditches.

6.2.2.7 Flood Risk

Construction activities undertaken in or near flood-prone areas can significantly increase the risk of flooding and associated impacts on the water environment. Improper site drainage, obstruction of natural flow paths, or the alteration of existing hydrological regimes may exacerbate flood risk both on-site and downstream. These effects can lead to the mobilisation of sediments, pollutants, or construction materials into nearby watercourses, potentially degrading water quality and affecting the Water Framework Directive (WFD) status of receiving waterbodies. To mitigate these risks and ensure the protection of the water environment during flood events, the following mitigation measures are required:

- Develop and implement a Flood Risk Management Plan tailored to the site.
- Avoid storing materials, fuels, or machinery in flood-prone areas.
- Install temporary bunds, berms, or barriers to divert floodwaters from sensitive zones.
- Store hazardous substances above predicted flood levels and in secure, weather-resistant containers.
- Use permeable surfaces to reduce surface water flow.
- Regularly inspect and maintain site drainage systems.
- Monitor water levels during high-risk periods.
- Conduct pre and post flood inspections and adapt mitigation measures based on weather forecasts and site conditions.

6.2.2.8 Wastewater Management

Improper handling or unauthorised discharge of foul water or construction-related wastewater (e.g., from equipment washing or dewatering) could lead to contamination of surface water or groundwater, potentially affecting the WFD status of receiving waterbodies. The following mitigation measures are required:

- All foul water from temporary welfare facilities will be collected in sealed holding tanks and regularly removed offsite by a licensed contractor to a permitted wastewater treatment facility.
- No unauthorised discharge of water to ground or surface water will occur during the construction phase. All discharges will be subject to the appropriate consents under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from OCC under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.
- Where water must be pumped from excavations, it will be treated (e.g., via settlement or hydrocarbon interceptors) before discharge and only in accordance with the relevant discharge licence.
- All existing drainage channels and public sewers will be clearly identified, protected, and shown on site plans and method statements to prevent accidental discharge of untreated water.
- Under no circumstances will untreated wastewater from equipment washing, road sweeping, or other construction activities be released offsite.

6.2.3 Land and Soils

6.2.3.1 Soil Erosion

The following mitigation measures will be implemented to reduce the soil erosion during the construction phase:

- Areas of exposed soil will be minimised by phasing construction and reinstating disturbed areas as early as possible.
- Unnecessary stripping of topsoil and subsoil will be avoided by optimising the layout and reusing existing access tracks.
- Stockpiles of stripped topsoil will be in locations with minimum trafficking to prevent damage and dusting.
- Exposed soil surfaces will be stabilised using biodegradable geotextiles, mulch, or hydroseeding, particularly on slopes and embankments.
- Temporary soil stockpiles will be shaped and compacted to reduce erosion and will be located in sheltered areas away from construction traffic.
- Access tracks and hardstands will be constructed using clean stone and geotextile membranes to prevent soil disturbance and erosion.
- Brash mats or bog mats will be deployed on soft ground to protect soil structure and prevent rutting and surface erosion.
- Heavy machinery will be restricted to designated haul routes and will not traffic over stripped or stockpiled soils.
- Buffer zones will be maintained between soil storage areas and steep slopes to prevent slippage or downslope erosion.
- All exposed soil areas will be inspected regularly for signs of erosion, and corrective actions will be implemented immediately.
- An Environmental Clerk of Works (ECoW) will be appointed to oversee soil protection measures and ensure compliance with the CEMP.

- Stripped topsoil and subsoil will be reused in landscaping and reinstatement works as soon as practicable to reduce exposure time.
- The duration and intensity of construction traffic in sensitive areas will be limited to avoid over-compaction of subsoil layers.
- A log of soil management activities, inspections, and remedial actions will be maintained throughout the construction phase.

6.2.3.2 Soil Compaction

The following mitigation measures will be implemented to reduce the soil compaction during the construction phase:

- Works will be carried out in accordance with the TMP (Appendix 15 of the EIAR) to manage and control vehicular movement on site. Measures will include the scheduling of HGVs during the construction phase to reduce the number of vehicle movements in, through and offsite.
- Earthworks haulage will be along predetermined routes within the Development and any deliveries to site will be along existing national, regional, and local routes for importation and exportation of materials.
- Haulage with the Proposed Development will be along internal haul roads/access tracks, where practicable.
- Heavy vehicles will only follow designated and newly constructed access tracks and avoid loading areas which are not contained within the footprint of the main works to minimise disturbance of the original soil and subsoil formations and to retain soil structure.
- Machinery will not operate directly on excavated/stockpiled soils.
- Within and around excavations, pore water pressure will be kept low by avoiding loading the soil/subsoil and giving careful attention to the existing drainage.
- Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in-situ along the site will be avoided.

6.2.3.3 Soil Stability

The following mitigation measures will be implemented to reduce the soil compaction during the construction phase:

- All temporary cuts and excavations will be designed and executed to ensure long-term stability or will be adequately supported using engineered solutions.
- Temporary works will be planned and implemented to avoid interference with existing drainage channels and natural flow regimes.
- A suitably qualified and experienced geotechnical or civil engineer will supervise all site excavations and construction activities.
- The contractor's method statements for each element of work will be reviewed and approved by the supervising engineer prior to commencement.
- Surface water interception drains will be installed upslope of all excavation areas prior to earthworks to prevent overland flow from entering exposed soil zones.
- A site-specific emergency response plan will be developed to address slope instability risks, particularly during the early excavation phase.
- The emergency response plan will include a rainfall-triggered alert system based on 24-hour advance meteorological forecasting (e.g. Met Éireann data).

- Construction activities will be suspended when rainfall exceeds a pre-defined threshold (e.g. >25 mm/hr or a 1-in-100-year storm event) and will only resume once conditions have stabilised and runoff has subsided.
- All plant, materials, and equipment will be stored in designated, level areas such as the temporary site compound and will not be placed on or near existing or newly formed slopes.
- Construction traffic will be routed to avoid surcharging or destabilising slopes, and no loading will occur near excavation edges or embankments.
- Where necessary, temporary slope reinforcement (e.g. geogrids, soil nails, or retaining structures) will be installed to maintain slope integrity.
- All excavations will be monitored for signs of instability (e.g. cracking, slumping, or water ingress), and corrective actions will be implemented immediately if required.
- A geotechnical risk register will be maintained throughout the construction phase, documenting inspections, rainfall events, and any slope-related incidents or interventions.
- All personnel will be briefed on slope stability risks and emergency procedures during site induction and toolbox talks.

6.2.3.4 Accidental Spills and Contamination/Pollution

The following mitigation measures would be implemented to reduce the potential for accidental spills and leaks during the construction phase:

- The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the main contractor in advance of any works commencing.
- Designate a bunded storage area at the contractor's compound(s) and away from surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area or 25% of the total capacity of all the tanks within the bund, whichever is the greater.
- Chemicals will be stored within a storage container with an accompanying Control of Substances Hazardous to Health ("COSHH") Datasheet in accordance with health and safety regulations. All chemicals will be stored in designated bunded areas at least 15m away from watercourses.
- Drainage from the bunded area shall be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled, so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the site plot, a suitably sized spill pallet will be used for containing any spillages during transit.
- All plant and equipment utilised onsite will be maintained is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development. Only emergency breakdown maintenance will be carried out onsite.
- Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed offsite.
- Drip trays will be located under all static plant.
- Hoses and valves will be checked regularly for signs of wear and will be turned off and securely locked when not in use.
- Diesel pumps and similar equipment will be checked regularly, and any accumulated oil removed for appropriate disposal.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains.
- Where mobile fuel bowsers are used on the site, in the event of a machine requiring refuelling outside of the designated impermeable area, fuel will be transported in a mobile double skinned tank.

- Adequate stocks of hydrocarbon absorbent materials (e.g., spill-kits and/or booms) shall be held onsite to facilitate response to accidental spills. Spill response materials shall also be stored on all construction vehicles.
- Ready-mixed concrete will be brought to the site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated water (for example storm water) to the underlying subsoil and groundwater.
- The pouring of concrete will take place within a designated area protected (for example by a geosynthetic material) to prevent concrete runoff into the soil/groundwater media.
- Any use of concrete in proximity to watercourses will be carefully controlled to avoid spillage. No onsite batching should occur. Washout from mixing will be carried out only in a designated contained impermeable area.
- Wash down and washout of concrete transporting vehicles will take place at an appropriate designated area and direct discharge of wash water to ground or surface waters will be strictly prohibited. Alternatively, where washout takes place onsite, it will be carried out in a designated, carefully managed onsite washout area.
- Wastewater from washing of concrete lorry chutes will be directed into a concrete washout container, lined with an impermeable membrane. The container should be of good condition, should not overflow or leak and should be easily accessible to vehicles. The containers must be checked and emptied at a frequency equivalent to the volume of concrete being used and no runoff should leave the washout location. The area much be clearly marked and must be located away from storm drain inlets, open drainage facilities, water courses and ditches.
- Access tracks will be cleaned regularly during wet weather to prevent sediment build-up and runoff.
- The drainage and treatment system will be regularly inspected and maintained by assigned personnel, especially after heavy rainfall, to ensure it functions properly and prevents leaks or failures during construction.
- In the event of an accidental spillage or pollution incident, the site manager or designate shall notify the Local Authority as soon as possible.

6.2.3.5 Tree Felling

The following mitigation measures would be implemented to reduce the potential for felling impacts during the construction phase:

- Topsoil removed from felled areas will be reused in landscaping or placed in designated deposition areas.
- Vegetative layers will be stored right-side-up where possible to promote natural regrowth.
- Felling areas will be monitored and maintained post-construction and into the operational phase.
- Runoff from clear-felled areas will be managed using berms, silt traps, and settlement ponds to separate clean and dirty water.
- Discharge rates from drainage systems will be controlled to match pre-construction conditions using engineered settlement ponds.
- Brash mats will be used on soft ground to reduce soil erosion and prevent rutting; mats will be renewed when worn.
- Brash mats will also be provided along off-track routes where practicable to minimise soil compaction.
- All felling and reforestation works will comply with the Department of Agriculture, Food and the Marine's forestry standards (2019) and Forest Service licence conditions.
- Felling activities at the end of the forestry cycle will follow felling licence requirements and associated environmental mitigation measures.

6.2.4 Noise and Vibration

Notwithstanding the noise impacts being assessed as not significant, the following best practice measures will be implemented during construction of the Proposed Development:

- Fixed and semi-fixed ancillary plant such as generators, compressors etc. to be positioned to cause minimum noise disturbance. If necessary, acoustic barriers or enclosures to be provided for specific items of fixed plant.
- All plant used onsite will comply with the EC Directive on Noise Emissions for Outdoor Equipment (2000/14/EC), where applicable.
- Operation of plant in accordance with the manufacturer's instructions.
- All major compressors to be 'sound reduced' models fitted with properly lined and sealed acoustic covers which are kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools to be fitted with mufflers or silencers of the type recommended by the manufacturers.
- All plant used onsite will be regularly maintained.
- Machines in intermittent use to be shut down in the intervening periods between work or throttled down to a minimum.
- Drop heights of materials from lorries and other plant will be kept to a minimum.
- Adherence to the codes of practice for construction working given in BS 5228-1: 2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and the guidance given therein for minimising noise emissions from the site.
- Adherence to the codes of practice for construction working given in Noise and BS 5228-2: 2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration and the guidance given therein for minimising vibration emissions from the site.
- Compliance with normal construction working hours of 07:00 to 19:00 Monday to Friday, 08:00 to 14:00 on Saturdays. This excludes public holidays, emergency work provisions and other working periods which would be agreed in writing with the Planning Authority.
- Periodically check that mitigation measures are being implemented and are fit for purpose during the works with corrective action mechanisms in place.
- Local residents will be kept informed and provision of a contact name and number for any queries or complaints.
- All complaints of an environmental nature related to the operation of the activity will be recorded. Each such record shall give details of the date and time of the complaint, the name of the complainant (if provided), and give details of the nature of the complaint. A record shall also be kept of the response made in the case of each complaint.

Notwithstanding the vibration impacts being assessed as not significant, the following best practice measures will be implemented during construction of the Proposed Development:

- A clear communication programme will be established to inform closest building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to exceed perceptible levels. The nature and duration of the works will be clearly set out in all communication circulars.
- Alternative less intensive working methods and/or plant items shall be employed, where feasible.

- Appropriate vibration isolation shall be applied to plant, where feasible.

6.2.5 Cultural Heritage

Prior to construction of the Proposed Wind Farm, a comprehensive archaeological mitigation strategy is essential to ensure the protection and proper documentation of any potential heritage assets. The following mitigation measures will be implemented prior to construction:

- Carry out a geophysical survey and test trenching should be carried out at the locations of each turbine and adjoining working area where soil removal is proposed as well as the location of the Proposed Substation and access road under licence from NMS.
- Arrange for licensed archaeological monitoring during all groundworks and record any finds.
- Ensure all archaeological work is done to the satisfaction of the Department of Housing, Local Government and Heritage (DHLGH) and the National Museum of Ireland (NMI).

6.2.6 Air Climate

6.2.6.1 Dust Generation

Construction phase generated dust will be minimised by the following measures :

- The use of water as a dust suppressant, e.g. a water bowser to spray access tracks and crane hardstanding areas during any extended dry periods when fugitive dust emissions could potentially arise.
- Public roads will be inspected regularly for cleanliness and cleaned as necessary.
- All loads entering and leaving the site will be covered during dry periods if dust results in a disturbance on site.
- Control of vehicle speeds passing over access tracks and crane hardstanding areas within the site.
- Wheel wash facilities will be implemented at the site entrance from the public road to facilitate removal of any material collected by vehicles entering or leaving the site and preventing its deposition on public roads.
- Site stockpiling of materials will be designed and laid out to minimise exposure to wind.
- Daily site inspections will take place to examine dust measures and their effectiveness.

6.2.6.2 Construction Traffic Emissions

Construction traffic emissions will be reduced using the following measures:

- Ensure regular maintenance of plant and equipment. Carry out periodic technical inspection of vehicles to ensure they perform most efficiently.
- Implementation of the TMP (Appendix 15 of EIAR) to minimise congestion.
- All site vehicles and machinery will be switched off when not in use, and no idling of engines will be permitted.

6.2.7 Material Assets – Built Services

6.2.7.1 Grid Capacity and Electrical Infrastructure

- The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.

- All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines.
- There is a slight chance of potential electricity outage during rerouting of the 38kV overhead line. Any outage will be kept to a minimum and any customers affected by a potential outage will be contacted prior to works commencing.
- The Proposed Development will not result in any significant effects on grid capacity but will provide a potentially positive effect of the electricity supply infrastructure. No specific mitigation measures are proposed beyond good construction practices.

6.2.7.2 Aviation

Whilst the Proposed Development will not impede aircraft, IAA Electronic Air Navigation Obstacle Data sets has identified obstacles as objects whose height above ground level is 90m or higher, affecting air navigation. IWEA Guidelines have set out the following measures to ensure that pilots of aircraft are fully aware of the presence of wind turbines.

- All turbines and meteorological masts having a height of 90m, or more are promulgated in the Irish Air Navigation Obstacle database.
- Wind turbines or any structure exceeding 90m in height may require appropriate aviation warning lighting as agreed with IAA.
- The IAA should be informed 30 days in advance of the erection of any structure exceeding 45m in height.

Having regard to the above:

- The developer will agree an aeronautical obstacle warning light scheme for the wind farm development with the IAA.
- The developer will provide the IAA with as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location.
- The developer will notify the IAA of intention to commence crane operations with a minimum of 30 days prior notification of turbine erection.

6.2.7.3 Water and Wastewater Infrastructure

- All water and wastewater networks potentially affected by the Proposed Grid Connection will be identified prior to construction.
- The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with Uisce Eireann or other relevant authorities.
- All works affecting the water and wastewater infrastructure will be carried out in ongoing consultation with the local authorities and service providers and will be in compliance with any requirements or guidelines they may have.
- All construction phase and operation phase wastewater will be taken offsite by an authorised waste contractor and brought to an authorised waste facility.

6.2.7.4 Waste Management

As per EMP6 in Appendix 1.

6.2.8 Material Assets – Traffic and Transport

As per EMP 7 in Appendix 1.

7. Auditing, Monitoring and Response

The environmental Monitoring Schedule (Table 7-1) will take cognisance of all mitigation measures outlined in the Environmental Report. The Monitoring Schedule for construction will also provide for the checking of equipment, materials storage and transfer areas and specific environmental controls.

The Contractor will assign a full-time Environmental Manager who will be on site to monitor the construction activities on a day-to-day basis. The duties will include completing the required checklists (sample checklist included below) and coordinating with the relevant personnel (e.g. Design Engineer as required) ensuring all environmental monitoring is carried out.

Table 7-1: Environmental Monitoring Schedule

Aspect	Area of Inspection	Monitoring Required	Note/Checks	Frequency	Responsibility
Surface Water Runoff Controls	Settlement ponds	Visual inspection	• Leaks • Cracks/broken plastic piling • Build up of sediment & soil	Regular/daily/weekly during the construction phase as well as during and after significant rainfall events	Environmental Manager
	Weather Forecast	Met Éireann download	Pre-determined rainfall trigger levels (e.g. 1 in 5 year storm event or heavy rainfall at >25mm/hr)		Environmental Manager
	Discharges from onsite sediment and erosion controls	Visual inspection	Colour, presence of silts	Regular/daily/weekly during the construction phase as well as during and after significant rainfall events	Environmental Manager
Water quality monitoring	Discharges from onsite sediment and erosion controls	Visual inspection	• Unacceptable level of sediment/silt on the access track surface • Presence of waste	Weekly	Environmental Manager
	Internal site tracks Site Entrance	Visual inspection	• Unacceptable level of sediment/silt on the access track surface • Presence of waste • Surface Condition	Daily	Environmental Manager
	Water quality sampling at watercourses draining site	Water Samples	• Minimum parameters: pH, Suspended Solids, metals , nitrates, phosphates	Monthly	Environmental Manager
	Areas of concrete pours	Visual inspection	• Monitoring of concrete pours to ensure no discharge of concrete to watercourses	To be scheduled with pours	Environmental Manager
Archaeology	Area of ground works & excavations	Visual Inspection	• Archaeological monitoring during ground works & excavations	To be scheduled with ground works & excavations	Archaeologist
Waste Management	Material and Waste Storage	Daily	• Monitoring of waste storage areas to ensure correct waste management practices are being applied	Daily	Project Manager/Environmental Manager

Aspect	Area of Inspection	Monitoring Required	Note/Checks	Frequency	Responsibility
Access Tracks	Fuel & Oil Storage areas	Visual inspection	• Damage to containers or ancillary equipment • Leakages • Unlocked storage container • Fuels stored within bunded area	Daily	Project Manager
	Construction Materials Storage Areas	Visual inspection	• Damage • Untidiness	Daily	Environmental Manager
Operation Control	Concrete pours	Visual inspection	• Runoff/spills	Weekly	Project Manager
	Dust generation	Visual Inspection	• Cleanliness of tracks and compound area • Dust at stockpiles • Dust from delivery vehicles	To be scheduled with pours	Project Manager

8. Environmental Performance Indicators

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

Environmental performance indicators will include:

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

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

8.1 Response Procedure/ Corrective Action

In the event of an environmental incident, or breach of procedure, or where a complaint is received, or in the event of encountering buried waste or contaminated soils/groundwater, the contributing factors are to be investigated and remedial action taken as necessary. The Contractor will ensure that the following respond actions will take place:

- The Project Manager will be informed of any incident, breach of procedure and/or complaint received and details will be recorded in the incident/complaint register.
- The Project Manager will conduct/co-ordinate an investigation to determine the potential influence that could have led to the non-compliance.
- The Project Manager will notify and liaise with the appropriate site personnel where required, e.g. Site Environmental Manager, ECoW, Project Archaeologist.
- The Project Manager will notify the Client of any complaints or environmental incidents within 24 hours of occurrence. Where significant incidents occur requiring the involvement of statutory authorities or emergency services or where any pollution events occur, the Client will be notified within 1 hour.
- If necessary, the Project Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Incident/Complaints Form which is to record information such as the cause, extent, actions and remedial measures used following the incident/complaint. The form will also include any recommendations made to avoid reoccurrence of the incident.
- The Project Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Designer and Client as appropriate.
- The Site Project Manager will ensure that the relevant environmental management plans/procedures are revised and updated as necessary.

Appendix 1

Environmental Management Plans

Appendix 1

Environmental Management Plans

EMP-1 Management of Excavations

EMP-2 Surface Water Management and Runoff Control

EMP-3 Fuels and Oils Management

EMP-4 Management of Concrete

EMP-5 Construction Noise Management

EMP-6 Construction Waste Management Plan

EMP-7 Construction Traffic Management Plan

EMP-8 Construction Dust Management

EMP-9 Archaeological and Heritage Protection

EMP-10 Ecological Management Plan Protection of Habitats and Fauna

EMP-11 Landscape and Visual Management

EMP-12 Emergency Response Plan

EMP-13 Site Environmental Training and Awareness

EMP-14 Monitoring and Auditing

EMP-15 Environmental Accidents, Incidents and Corrective Actions

EMP-16 Environmental Complaints

EMP-17 Management of Material Assets

EMP-18 Invasive species and Biosecurity

EMP1: Management of Excavations

Purpose

To describe measures for the management of all excavations and excavated soil and rock on the site.

Procedure

General

Bulk excavations will be done during dry weather periods so as to avoid run off from exposed excavation areas. Weather will be monitored during the project and no excavation works will be allowed during severe or heavy rainfall events.

All temporary cuts/excavations will be carried out such that they are stable or adequately supported. Where appropriate and necessary, cuts and excavations will be protected against ingress of water or erosion by the use of cut off drains around the excavation works. Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.

Plant and materials will be stored in approved locations only (such as the proposed site compound) and will not be positioned or trafficked in a manner that would surcharge existing or newly-formed slopes.

Vehicular movements will be restricted to the footprint of the permitted development, particularly with respect to the newly constructed access tracks. This implies that machinery will be kept on existing/newly formed tracks/hardstands/yard areas and aside from advancing excavations, do not move onto areas that are not permitted for the development.

Management for Slope Failure/Ground Instability

All site excavations and construction will be supervised by a suitably qualified and experienced engineer. The Contractor's method statements for each element of work will be reviewed and approved by the engineer prior to site operations. Specific method statements will be developed for each turbine and hardstanding location within the site.

Prior to excavation, drains will be established to effectively intercept overland flow prior to earthworks.

The existing network of drainage within the site will be utilised whenever possible.

Management and Storage of Excavated Materials and Soil Management

Site management will include the checking of equipment, materials storage and transfer areas, drainage structures and their attenuation ability on a regular basis during the construction phase of the project. The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages, and identify potential breaches in the protective retention and attenuation network during earthworks operations.

Excavated Material Storage

All soils generated from excavation works within the wind farm associated with turbines, access track, substation, grid connection and internal cable construction will be retained on site and reused in bunding, landscaping and restoration of the deposition area. No soils will be removed from the site. Permanent stockpiling of soils will not take place.

During excavations in the existing tracks, excavated material will be temporarily stockpiled adjacent to the section of trench, with appropriate material used as backfill. Appropriate siltation measures will be put in place prior to excavations. Stockpiles will be stored a minimum of 50m back from rivers/streams on level ground with a silt barrier installed at the base.

Temporary Storage of Excavated Material

No permanent stockpiles will be left on site after the completion of the construction phase works. After completion of the turbine base reinstatement works all remaining stockpiles are to be removed for permanent disposal at the proposed deposition areas within the site.

Any materials excavated during the construction phase which are to be used in the site reinstatement and landscaping process shall, in the first instance, be stored on site in an environmentally safe manner that will not result in the pollution of waters or the smothering of ecologically sensitive habitats.

Excavation works relate mainly to trench digging and excavations. The following measures will be undertaken to avoid or minimise negative effects to water quality as a result of excavation works:

- Earth movement activities will be suspended during periods of prolonged rainfall events.
- The earthworks material will be placed and compacted in layers to prevent water ingress and degradation of the material.
- Drainage and associated pollution control measures will be implemented on site before the main body of construction activity commences.

Any temporary onsite stockpiles of soil, rock and other excavated material will be removed and utilised in the site reinstatement programme to infill any excavated areas which will then be mounded and capped with sod prior to the completion of works.

The following principles will be adhered to when considering the temporary storage of excavated materials.

- Spoil disposal will take place within a 30m radius of each structure.
- Preparation of the spoil disposal site will involve the removal of the “top mat” which will be transplanted to a suitable area and maintained for re-use during restoration operations.
- Spoil will be deposited, in layers of 0.5m and will not exceed a total thickness of 1m.
- Spoil will only be deposited on slopes of less than 5 degrees to the horizontal and greater than 10m from the top of a cutting. The exact location of such areas will be confirmed on consultation with the geotechnical engineer.
- Once reinstatement is complete the disposal sites will be re-vegetated with the “top mat” removed at the commencement of disposal operations.
- Upon commencement of the restoration phase, guidance from a suitably qualified environmental professional will be sought to confirm the methodology and programme.

It is proposed that any temporary onsite stockpiles of soil, rock and other excavated material shall be removed and utilised in the site reinstatement programme to infill any excavated areas which will then be mounded and capped with sod prior to the completion of works.

Permanent Deposition Areas

A deposition area is proposed on the site near turbine 4. The deposition area will be used for the permanent storage of the excavated spoil material generated from the construction of the turbine bases, crane hardstands, substation and internal access track.

Excess cohesive material will be placed around the permitter of the deposition pit and will act to retain peat material stored inside the permitter. The cohesive material will be laid at a shallow batter angle of max 20 degrees and up to a maximum height of 2m .

The area will then be enclosed with three layers of silt fencing to prevent sediment runoff. Water buildup within the disposal area will not be permitted.

Upon completion, the surface of the deposited spoil will be profiled to a gradient not exceeding 5%.

Following completion, it is proposed to replant the deposition area.

Monitoring

This is to be detailed in the Contractors Final Method Statement.

Responsibility

- The Environmental Manager will monitor the excavation areas and associated drainage.
- The Construction Manager will monitor vehicle movements throughout the construction phase.
- The Project Manager will oversee the phasing of the excavation and machinery movement across the site.
- Construction personnel will be informed of the measures to prevent pollution of water courses.
- The Design Engineer, Geotechnical Engineer and Sub-contractors will have responsibilities as appropriate.
- All responsibilities will be finalised by the Appointed Contractor.

EMP 2: Surface Water Management and Run off Control

Purpose

To describe measures for the management of all surface water and runoff on the site, for the protection of watercourses and in particular, sediment and erosion control.

Surface Water Protection Measures

Surface water runoff management will be required to prevent runoff entering excavations during construction. Surface water will require diversion around the open excavations using standard temporary drainage methods to ensure that surface water is effectively conveyed around works areas.

All open water bodies adjacent to areas of proposed works, including settlement ponds, will be protected by fencing. A 20m buffer will be retained for construction works from EPA mapped watercourses. Site traffic will only be permitted within this buffer to access watercourse crossings or to facilitate instream and near-stream works (near-stream works on EPA watercourses will include some forestry felling carried out to forestry felling 10m buffer standards).

Entry to the Leitrim stream and its tributaries by vehicles will be avoided, while vehicle usage along the banks will be restricted as much as practicable. Any machines working in close proximity of the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels. No instream works will take place outside the period July 1st to September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.

To prevent elevated levels of erosion and sedimentation at the site during the construction phase, surface water at the site will be managed and controlled via the newly constructed site surface water management system to attenuate runoff, guard against soil erosion and safeguard downstream water quality. Silt traps, silt fences and settlement ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction phase. As a minimum, silt fencing will be provided at all water crossings, and the settlement ponds will be designed to ensure they are not overwhelmed by one-off adverse precipitation events. The silt fencing and settlement ponds will be monitored daily by the appointed contractor and silt will be removed as required.

Where practical, cut-off V drains will be utilised to divert water entering the site and reduce the amount of water to be managed onsite. Attention will be given to the maintenance and protection of all drains and temporary channels to minimise scour and the mobilisation of suspended solids (e.g. lining with hessian or clean stone, check dams, silt fencing etc.

The silt fences and settlement ponds will be monitored to ensure that they remain functional throughout construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences and settlement ponds to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the appointed contractor or ECoW. The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of watercourses and during and after storm events. It is noted that the frequency of monitoring will depend on the stage of works, and local environmental conditions. The frequency of checks will be increased during critical works including the initial decommissioning works, during concrete pours and after storm events.

Where required, standard design and construction measures (i.e., groundwater drainage around impermeable subsurface structures) will ensure that groundwater flow across the site is maintained and that there will be no impact on groundwater levels.

The main contractor will prepare method statements for weather and flood forecasting and continuous monitoring of water levels in the Leitrim stream and its tributaries. These will be made available to the local authority where requested. The main contractor will also provide method statements for the removal of site materials, fuels, tools, vehicles, and persons from flood zones in order to minimise the risk to persons working on the site as well as potential input of sediment or construction materials into the waterbodies during flood events.

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the Construction Phase of the Proposed Development will be discharged to temporary holding tank(s), the contents of which will periodically be tankered off site to a licensed facility. Therefore, there will be no potential impact on water quality and the WFD status of receiving waterbodies and any Natura 2000 sites associated with discharges from the site.

Silt control will be a primary concern during the construction stage, as silt has been identified as a sediment source to downstream areas. Silt ponds will be required as mitigation at access tracks and swales within the proposed development site as these are considered an effective method of retaining silt. The design of these features will be in accordance with best practice, oversized and retained post construction.

During the construction phase of the project, water quality in the streams and outflow from the drainage and attenuation system will be monitored, field-tested and laboratory tested on a regular basis during different weather conditions. This monitoring together with the visual monitoring will help to ensure that the mitigation measures that are in place to protect water quality are working effectively.

During the construction phase of the project, the development areas will be monitored regularly for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system to ensure it does not become blocked, eroded, or damaged during the construction process.

Prior to any construction activity being carried out, the subject part(s) of the proposed development site will be inspected for areas that may be prone to siltation of nearby rivers/streams and drains as appropriate. Where necessary, check dams, sand-bags and/or silt fences will be installed in adjacent trackside drainage ditches to ensure an optimum standard of water running into adjacent streams from the trackside drainage. During periods of heavy precipitation and runoff, works will be halted if posing a risk to the water environment or working surfaces/pads will be provided to minimise soil disturbance. Any requirement for temporary fills or stockpiles will be covered with polyethylene sheeting of suitable grade/gauge to avoid sediment release during periods of heavy rainfall.

Additional infrastructure and measures used to control water quality will include:

- Settling out as far as reasonably practicable any silty water generated on site through drainage mitigation measures (silt traps, etc.) and channelled into suitable vegetation (as defined by ECoW) at least 50 m from watercourses.
- Establishing vegetation on exposed areas by using top sod or reseeding with a suitable seed mix.
- Regular road cleaning.
- Use of wheel washes.
- Use of check dams on drains to slow water velocity.
- Use of silt fences on drains to reduce sediment loading.
- Daily and weekly weather forecast monitoring.

- Programme of daily, weekly, and monthly water quality monitoring.

All design and works in proximity to watercourses will follow the best practice guidance outlined in the following documents:

- Draft Revised Wind Energy Development Guidelines (DHPLG, 2019).
- Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (IFI, 2016).
- Control of water pollution from linear construction projects' (Murnane et al. 2006).
- Guidelines for the crossing of Watercourses during Construction of National Road Schemes (NRA, 2008).

Instream works

All works requiring instream works during the construction of watercourse crossings and culverts will include the following measures:

- The ECoW will be present onsite during instream works (i.e., bridge crossings and culverts) to ensure there is no potential for surface water runoff to the receiving waterbodies. The ECoW will undertake regular monitoring of water quality upstream and downstream of the works area to detect any changes and take corrective actions if necessary.
- Silt fences and other sediment control measures will be utilised as required to prevent sedimentation in the watercourse.
- Prior to the commencement of the construction works, small defined works areas will be fenced off at the location of the proposed crossings (between the main construction site and the water courses). Silt fences will be attached to these fences. The silt fences will provide a solid barrier between the proposed works and the Leitrim stream and its tributaries. The silt fences will be constructed of a suitable geotextile membrane to ensure water can pass through, but that silt will be retained.
- Heras fencing will be installed in front of the silt fencing at the Site to prevent “Site creep”, the progressive movement of site activities towards this silt fence.
- The proposed culvert crossings will be constructed from precast concrete to allow its construction offsite.
- Existing vegetation will be preserved where possible and replant disturbed areas promptly to stabilize soil and reduce erosion.

It will be ensured that all river protection measures will be maintained in good and effective condition for the duration of the proposed works and checked regularly to ensure that the silt fencing and other mitigation measures are operating effectively.

All instream works or works carried out in or adjacent to watercourses will adhere to the Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016), the Transport Infrastructure Ireland (TII) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008) and CIRIA C648 Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

EMP 3: Fuel and Oils Management

Purpose

To describe measures for the management of all fuel and oils on site for the protection of watercourses from any spills.

Procedure

Refuelling will be carried out using a bunded mobile bowser. The refuelling bowser will be operated by trained personnel. The bowser will have spill containment equipment which the operators will be fully trained in using. Plant nappies or absorbent mats will be placed under refuelling points during all refuelling to absorb drips. Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas, away from drains and open water.

Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits, all oil and any contaminated material will be removed and properly disposed of in a licensed facility. Immediate action will be facilitated by easy access to oil spill kits. An oil spill kit that includes absorbing pads and socks will be kept at the site compound and also in site vehicles and machinery. Correct action in the event of a leak or spill will be facilitated by training all vehicle/machinery operators in the use of spill kits and the correct containment and cleaning up of oil spills or leaks. This training will be provided by the Environmental Manager at site induction. In the event of a major oil spill, a company who provide a rapid response emergency service for major fuel spills will be immediately called for assistance, their contact details will be kept in the site office and in the spill kits kept in site vehicles and machinery.

During the construction phase, fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite). Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas. These areas will be bunded and located away from surface water drainage and features. Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013).

The main contractor will maintain an emergency response action plan and emergency procedures will be developed by the main contractor in advance of any works commencing.

To reduce the potential for oil leaks, only vehicles and machinery will be allowed onto the site that are mechanically sound. An up to date service record will be required from the main contractor.

The main contractor will ensure that strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised onsite is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development site. Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the Construction Phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

Emergency procedures will be developed by the main contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with best practice standards and legislative requirements including but not limited to the Environmental Protection Agency Act, 1992 (as amended), Waste Management Act, 1996 (as amended) and the Safety, Health and Welfare at Work Act, 2005 (as amended).

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Proposed Development site and compliantly disposed of off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff onsite will be fully trained on the use of equipment.
- Refuelling will be carried out using 110% capacity double bunded mobile bowsers. The refuelling bowser will be operated by trained personnel. The bowser will have spill containment equipment which the operators will be fully trained in using.
- Mobile bowsers, tanks and drums will be stored in secure, impermeable storage area, away from drains and open water.
- Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits. The nearby dirty water drain outlet will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and all oil and any contaminated material removed from the area. This contaminated material will be properly disposed of in a licensed facility.
- Immediate action will be facilitated by easy access to oil spill kits. An oil spill kit that includes absorbing pads and socks will be kept at the site compound and also in site vehicles and machinery.
- In the event of a major oil spill, a company who provide a rapid response emergency service for major fuel spills will be immediately called for assistance, their contact details will be kept in the site office and in the spill kits kept in site vehicles and machinery.

All plant will be refuelled on site e.g. excavators, dumpers etc, while rigid and articulated vehicles will be fuelled off site as will all site vehicles (jeeps, cars and vans). At construction stage, a Fuel Management Plan will be developed specific to the site and the particular plant and equipment required for construction.

The plan outlined will have regard to the following elements:

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

All below ground drainage infrastructure will be constructed in accordance with current UE requirements to ensure that there are no potential impacts to groundwater quality.

Responsibilities

The Construction Manager and Environmental Manager are responsible for ensuring Fuel and Oils are managed in line with this procedure. The Contractor, in updating the CEMP, will designate personnel to the tasks relating to Fuels and Oil, as outlined above.

Reference

Best Practice Guidelines BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).

EMP 4: Management of Concrete

Purpose

To describe measures for the management of concrete on site for the protection of watercourses from any spillages.

Procedure

Supervision of Concrete Pours

- To reduce the potential for cementitious material entering watercourses, concrete pours will be supervised by the Construction Manager, a suitably qualified Engineer and the Environmental Manager.
- The Construction Manager will ensure that the area of the pour is completely drained of water before a pour commences.
- Pours will not take place during forecasted heavy rainfall.
- Incidental rainfall from light showers during the period of a pour is typically absorbed into the concrete matrix but heavier showers can result in some run off from the top surface of the concrete pour. If runoff is encountered, the Environmental Manager will block the outflow from the drains to retain or treat the runoff until the pH is neutral before discharge to the drainage network.
- In the event of a spillage on site, the Environmental Manager will temporarily block the dirty water drains in the immediate area and monitor the pH levels of the water in the associated settlement ponds and if necessary will adjust the pH levels using CO2 entrainment. Any spillage will be cleared immediately and deposited in the chute wash down area.

Concrete Water

- Pours will not take place during heavy rainfall.
- There will be no onsite batching of concrete. concrete requirements will be met by ready-mix suppliers.
- To reduce the volume of cementitious water, washout of concrete trucks will not take place on site.
- Concrete trucks will be washed out off site at the source quarry.
- To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site, reducing water volume to approximately 25 liters. The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound. The wash down area will consist of a polythene lined bunded area with a capacity of about $20m^3$. This capacity will be sufficient to accommodate the chute washdown from the various anticipated concrete pours. The system is sealed with no overflow discharge to the drainage system.
- Any overflow of water will be collected in the site compound drainage system which will be connected to a settlement pond for treatment prior to discharge to the external drainage system.
- The concrete sediment in the construction compound washout area will be removed at regular intervals.

Responsibilities

- All concrete pours will be supervised by suitable personnel.
- The environmental manager will monitor the pH of the water in the chute wash out bund and can dose with CO_2 or acidic water from the drains until the wash out water achieves neutrality before discharge.
- The Environmental Manager is responsible for ensuring that appropriate water pollution prevention measures are put in place and that water sampling is carried out. Where standards are breached he/she will carry out an investigation and in conjunction with the Construction Manager, he/she will ensure remedial action is taken and further samples taken to verify that the situation has returned to normal.
- The Environmental Manager is responsible for ensuring spill kits are readily available in vulnerable locations and that booms for watercourses are long enough and have adequate anchorage.

EMP 5: Construction Noise and Vibration Management

Purpose

To describe measures for the management of impacts from construction noise.

Procedure

Control of Noise at Source

- Plant will be properly and regularly maintained.
- Compressors, if needed, will be 'sound related' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever machines are in use.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers.

Construction Phase

Best practice in the form of BS5228 –1&2:2009 + A1 2014, *Code of Practice for the Control of Noise and Vibration on Construction and Open Sites* will be adopted during the construction phase in order to minimise the noise generated by construction activities and nuisance to neighbours.

Wherever possible the contractor will inform residents where appropriate of the proposed blasting times (if blasting is required) and any deviation from this programme in advance. Where blasting takes place, it will be restricted to regular times. Each blast will be carefully designed to maximise its efficiency and reduce transmission of noise. These details will be finalised by the appointed contractor in agreement with the local authority and design team prior to any blast taking place and documented in a Blast Management Plan. The Blast Management Plan will include full details of the locations of the bores for the blasts, the types of materials to be used, details of the necessary controls and responsibilities, and compliance with the relevant safety legislation.

All plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations 1996 (SI 359/1996) and other relevant legislation.

Vibration levels will not exceed those described in BS5228 –1&2:2009 + A1 2014, *Code of Practice for the Control of Noise and Vibration on Construction and Open Sites*.

Responsibility

The Construction Manager will be familiar with the noise sensitive receptors and alert the Environmental Manager in good time prior to work commencing in the areas closest to any noise sensitive receptors.

The Environmental Manager will review any relevant planning conditions in updating this plan.

References

BS5228 –1&2:2009, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites

IOA GPG Supplementary Guidance Note 5: *Post Completion Measurements* (July 2014).

Details of management of noise on the site to be finalised by Appointed Contractor

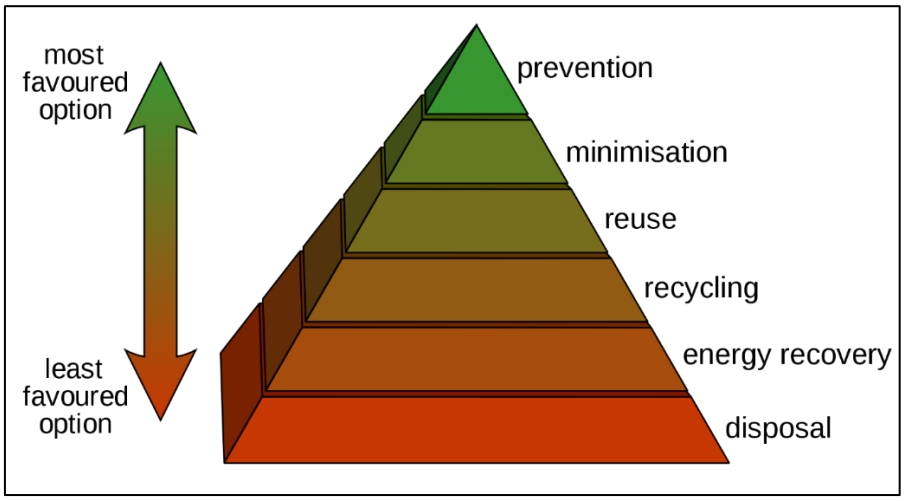
EMP 6: Construction Waste Management Plan

Purpose

To describe measures for the management of all wastes associated with the construction of the wind farm.

Procedure

- Waste Management Plan:
    - Waste will be managed in accordance with the waste hierarchy in Council Directive 98/2008/EC on waste and section 21A of the Waste Management Act 1996, as amended, as follows:
        - (a)Prevention.
        - (b)Re-use.
        - (c)Recycling.
        - (d)Other recovery (including energy recovery).
        - (e) Disposal.



    - All waste for offsite treatment/disposal will be stored temporarily in appropriate dedicated storage areas. The areas in which wastes are stored on site will be segregated to prevent material and contaminated surface water runoff entering local surface water drains.
    - All chemical, hydrocarbon or other controlled wastes will be stored in designated areas in appropriate approved containers within bunds or on spill pallets, as required.
    - All waste to be removed from site will be undertaken by authorised waste contractors and transported to an authorised facility in accordance with best practice and the site waste management plan.
- Construction and Waste Generated:
    - Contractors working on site during the works will be responsible for the collection, control and disposal of all waste generated by the works. Construction phase waste may consist of hardcore, stone, concrete, steel reinforcement, shuttering timber, food waste from the canteen and unused oil, diesel and building materials. This waste will be collected at the end of the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. Domestic wastewater from the onsite holding tank will be collected on a regular basis by approved contractors and disposed of in an authorised facility in

accordance with best practice. Plastic waste will be taken for recycling by an approved contractor(s) and disposed or recycled at an approved facility.

- Construction Compound:
    - Construction phase waste may consist of hardcore, concrete, spare steel reinforcement, shuttering timber and unused oil, diesel and building materials. This waste will be stored in the construction compound and collected at the end of the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. Plastic waste will be taken for recycling by an approved contractor and disposed or recycled at an approved facility. Domestic type waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compound and disposed of at a licensed landfill facility.
- General Waste Generation and Management:
    - Best practice procedures in general will minimise waste generated onsite. Measures including good site management will be taken to limit the quantity of waste generated during the construction phase. Waste such as excavated material onsite will be recycled where possible.
    - Surplus materials will include materials generated by the excavation works during construction of tracks and construction compound mainly comprising excavated excess sub-soils.
    - Waste streams will include wastes generated by plant, machinery and construction workers over the period of the works, for example waste oils, sewage, refuse (paper, carton, plastic etc), wooden pallets, waste batteries, fluorescent tubes etc.
    - Access to materials will be controlled. A dedicated storage area will be provided in the site construction compound for building materials such as cables, plastic piling for the settlement ponds, geotexile matting, blocks, tools and equipment, fence posts and wire, booms, pipes etc.
    - Access to stored materials will be restricted. the site compound will be securely fenced from the outset and will be locked when there are no site personnel present.
    - To contain and manage construction phase waste, multiple skips will be provided at the temporary site construction compound. one for recyclable waste and others for various construction waste. These skips will be emptied when required by a licensed waste management company. Waste oil and waste oil drums will be collected and stored in containers and on a bunded tray within the storage container.
    - At the end of each phase, the completed works areas will be tidied of any unused material or waste. this material will be brought to the site compound for storage and reuse or placed in the appropriate skip for disposal.
    - Construction waste (timber, steel, concrete etc) elements will be segregated and stored in dedicated bins on site for recycling.
    - Timber waste will be kept to a minimum through the re-use of shutters etc. throughout the works. At the end of the works, the majority of timber will be sent onto a new site for re-use. Any timber that cannot be re-used because of poor quality etc. will be recycled.
    - All waste steel reinforcing will be stockpiled and at the end of each work unit, it will be collected for recycling by a Licensed Facility.
    - Plastics and packaging will be segregated and stored in dedicated bins on site for recycling.

- Waste oil stored on site will be stored in labelled containers and will be collected by licensed facility/licensed oil-recycling contractor as necessary. Records will be maintained on the volumes of waste oil generated.
- Paper/cardboard will be recycled.
- Wastewater generated from the office and welfare facilities will be regularly emptied by licensed/suitable contractors.

- **Waste-Water Treatment/Effluent disposal:**
  - Wastewater from welfare facilities on site will drain to integrated wastewater holding tanks associated with the toilet units. The stored effluent will then be collected on a regular basis from site by a permitted waste contractor and removed to a licenced/permitted waste facility for treatment and disposal.
  - During the construction time period, wastewater production is estimated to be 3,000 litres per day (based on an estimated workforce of 60 people generating on average 50L/person.

- Sustainable Resource and Waste Management:
  - The principle objective of sustainable resource and waste management is to use material resources more efficiently, to re-use, recycle and recover material and to reduce the amount of waste requiring waste disposal. The value of products, material and resources is maintained in the economy for as long as possible such that the generation of waste is minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy. Resource efficiency techniques will include the following:
    - Excavated spoil will be resourced efficiently on site and will be reused for the backfilling, landscaping, and restoration around wind farm infrastructure such as turbines and hardstands. Dedicated spoil storage areas are proposed within the site. These will be used for generating material for the construction of access tracks and hardstands and for spoil storage.
    - When possible, soil to be removed from site will be treated as Article 27 by-product (a non-waste) or treated to comply with Article 28 if practicable and recycled if possible.
    - Spoil will also be stored around the turbines to a maximum height of 1m. The felled areas around the turbines have been identified as a potential additional area that will be used to store material. however, priority will be given to restoration of the dedicated spoil storage areas.
    - Berms will be formed along sections of access tracks and hardstands that will act as a physical edge protection measure to prevent vehicles falling off where a drop off greater than 1m exists from the road/hardstand edge. Spoil generated onsite will be used to create these berms.

Responsibility

The Environmental Manager will be responsible for adherence to correct waste management procedures. They will also identify a waste contractor to remove waste that can be recycled or reused.

The Environmental Manager will keep records provided by waste contractors of all waste being removed from site. The Environmental Manager will record waste removed from site regularly. This information will be recorded in a standard format. It will be the construction manager's responsibility to organise the removal of skips from their area when they are full.

The Environmental Manager will inspect waste segregation and temporary soil/rock storage stockpiles during his regular site visits.

Training

Copies of the Waste Management Plan will be available to all site personnel. All site personnel and sub-contractors will be instructed about the objectives of the Waste Management Plan for the site and informed of the responsibilities which fall upon them as a consequence of its provisions. This will be carried out during the site induction process for all site personnel. Where source segregation and materials reuse techniques apply, each member of the construction team will be given instructions on how to comply with the Waste Management Plan for the site. Site notices will be designed to reinforce the key messages of the waste management plan and will be displayed prominently for the benefit for all on site personnel.

Waste Records

All details of wastes (arising/generated/movement, etc.) will be recorded during the project. Each consignment of waste removed from the site will be documented in the form of a waste management movement record form which will ensure full traceability of the material to its final destination. All records will be retained at a designated location at the site office/construction compound and made available for auditing of the waste management plan.

References

Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, July 2006).

Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015).

EMP 7: Construction Traffic Management

Purpose:

To describe measures for the management of all traffic, including construction traffic and oversized loads, for the minimisation of disturbance and nuisance to the local community.

Scope:

All Site Construction Areas, approach roads to the site and internal access track traffic.

Procedure:

All traffic management and road signage will be in accordance with the Department of Transport (DoT) Traffic Signs Manual Chapter 8: Temporary Traffic Measures and Signs for Road Works. in agreement with Laois County Council and Offaly County Council.

In consultation with Offaly County Council's Roads Department, vehicle passing bays will be provided along the L5010, prior to the commencement of the proposed site construction, to facilitate two-way vehicle traffic movements.

A Traffic Management Plan (TMP) outlining the required traffic management procedures to be implemented on the public roads during the construction of the proposed development is included as Appendix 3 in EIAR Volume 3. The Traffic Management Plan will be updated, as appropriate, following the proposed project detailed design/tendering stage, and submitted for the approval of Offaly County Council, prior to construction.

The Proposed Grid Connection will require a Road Opening License (ROL) prior to the commencement of any grid connection works on the public road. The road surface of the public roads will be reinstated to the standards set out by the Department of Transport (DoT) Guidelines on the Opening, Backfilling and Reinstatement of Trenches on Public Roads (April 2017). All road permanent reinstatement works will be in accordance with the requirements of Offaly County Council.

No construction delivery vehicles would access the site via the northern section of the L5006 and its Trimblestown Bridge on the Grand Canal.

A construction wheel wash facility will be provided at the construction compound to wash truck tyres leaving the construction site.

Responsibility

- Project Manager
- Construction Manager
- Construction personnel
- Sub-contractors as appropriate
- Delivery personnel

EMP 8: Construction Dust Management

Purpose

To describe the measures for the management of nuisance impacts on air quality from construction generated dust.

Procedure

A dust minimisation plan has been formulated for the construction phase of the project, as construction activities are likely to generate some dust emissions. 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 several hundred metres of the construction area.

It is not envisaged that a dust monitoring nor a sampling programme is required for this site. Ongoing good practice measure for the management of dust on site is to be implemented as set out below. Ongoing visual monitoring of dust will be carried out by Site Management.

In order to ensure that no dust nuisance occurs, a series of measures will be implemented:

- The use of water as a dust suppressant, e.g. a water bowser to spray access tracks and crane hardstanding areas during any extended dry periods when fugitive dust emissions could potentially arise.
- Site tracks and compound will be regularly cleaned and maintained as appropriate.
- Public roads will be swept to remove mud and aggregate materials from their surface.
- Furthermore, any track that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Speeds will be restricted on access tracks as site management dictates.
- Public roads in the vicinity of the site will be regularly inspected for cleanliness, and cleaned as necessary.
- Site stockpiling of materials will be designed and laid out to minimise exposure to wind.
- Daily site inspections will take place to examine dust measures and their effectiveness.
- A temporary vehicle wheel wash facility will be installed in proximity to the site entrance.
- Any materials leaving the site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation.
- The transportation contractor shall take all reasonable measures while transporting waste or any other materials likely to cause fugitive loses from a vehicle during transportation to and from site, including but not limited to:
    - Covering of all waste or material with suitably secured tarpaulin/covers to prevent loss.
    - Utilisation of enclosed units to prevent loss.

The dust minimisation plan will 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 through the use of best practice and procedures.

Construction Wheel Wash

A Construction Wheel Wash will be used for vehicle wheels and undersides entering and leaving the construction site. Water residue from the wheel wash will be fed through a settlement pond for settling out of suspended solids. The wheel wash area will be cleaned regularly so as to avoid the buildup of residue.

Responsibility

- The Environmental Manager is responsible for reviewing the site Dust Minimisation Plan.
- The Construction Manager is responsible for:
    - Organising dust suppression through use of bowsers and cleaners.
    - Plan site layout so that machinery and dust causing activities are located away from receptors as far as possible.
    - Keep site fencing, barriers and scaffolding clean using wet methods.
    - Remove materials that have the potential to produce dust from sit as soon as possible.
    - Cover seed of fence stockpiles to prevent wind whipping.
    - Ensure all vehicles switch off their engines when stationary – no idling vehicles.
    - Use enclosed chutes and covered skips.
- The Project Manager is responsible for:
    - Recording all dust and air quality complaints, identify causes and take appropriate measures to reduce emissions in a timely manner.
    - Make a compliant log available to Offaly County Council when requested.
    - Record any exceptional incidents that cause dust or air emissions.

References

Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (Consultation Draft, National Roads Authority, October 2006).

Control of Dust from Construction and Demolition Activities (BRE, 2003).

EMP 9: Archaeological and Heritage Protection

The purpose of this plan is to describe measures for the management and protection of the archaeological and cultural heritage sites that have been found on the development site.

Archaeological Management Measures During Construction

Pre construction and during construction it is a recommended mitigation that the appointed contractor make provision for archaeological monitoring to be carried out under license to the Department of Housing, Local Government and Heritage (DHLGH) and the National Museum of Ireland (NMI), and will ensure the full recognition of, and the proper excavation and recording of all archaeological soils features, finds and deposits which may be disturbed in the course of the works. All archaeological issues will be resolved to the satisfaction of the DHLGH and the NMI. The archaeologist should be provided with information on where and when the various elements and ground disturbance will take place.

The risk of inadvertent impact on hitherto unknown buried archaeological material can be mitigated by archaeological monitoring of ground works associated with the project. It is recommended that a condition reflecting the suggested mitigation may form part of any grant of planning permission.

Responsibility

- Project Archaeologist
- Environmental Manager
- Construction Manager

EMP 10: Ecological Management Plan for the Protection of Habitats and Fauna

Purpose

To describe measures for the management and protection of habitats and fauna on the site.

Project Ecologist/Ecological Clerk of Works (ECoW)

A suitably qualified and experienced Project Ecologist/ECoW will be employed during the construction phase of the project. Duties will include the delivery of toolbox talks, undertaking of all required pre-construction surveys, clearance works, and monitoring of works throughout the construction phase to ensure all EIAR mitigation measures are implemented in full. As part of toolbox talks, contractor staff and site personnel will be made aware of the procedure to follow if a protected species and/or their resting and/or breeding site, i.e., badger sett, is encountered.

Protection of Fauna

A number of badger setts were identified during baseline ecology surveys, at least three of which were confirmed active at the time of surveying. These setts will be retained. None of the identified setts are located within 30m or 50m of a proposed turbine location or access track.

No otter holts were identified within the development site, however evidence of otter including spraint were found during ecology surveys. Pre-construction surveys for badger and otter will be undertaken prior to the commencement of any construction activity to identify any changes within the site with regard to protected mammals. Pre-construction surveys will be undertaken no more than 10-12 months prior to site works commencing.

Where areas of dense vegetation are to be removed, the Project Ecologist/ECoW will be present to oversee removal of vegetation and ensure any necessary mitigation measures are in place in the event that a previously unknown breeding or resting site of any protected mammal species e.g., badger sett, are encountered during the works.

If any new badger setts are discovered during the pre-construction surveys within or in proximity to the construction corridor, then all works within a 30 m buffer (50 m buffer during the breeding season) will cease. NPWS will be contacted, and the necessary mitigation implemented further to consultation.

Surveys and implementation of best-practice guidelines for badger and otter will be overseen by the ECoW and in accordance with NRA/TII Guidelines 'Guidelines for the Treatment of otters prior to the Construction of National Road Schemes' (NRA 2008) and 'Guidelines for the Treatment of badgers prior to the Construction of National Road Schemes' (NRA, 2008). Where relevant, mitigation for badger and otter will be carried out in full accordance with NRA/TII Guidelines.

Where possible, felling of forestry will be limited to periods outside of when red squirrel and pine marten are likely to have young in dreys/dens (peak period January to March for red squirrel, March and April for pine marten). If felling of forestry during these time periods is unavoidable, then the area to be cleared will be surveyed by a suitably-qualified ecologist to search for the presence of breeding sites. The general avoidance of removal of vegetation during the bird-nesting period (March to August, inclusive) will avoid disturbance to stoat during their peak breeding season.

Where any breeding sites will be disturbed, mitigation will be carried out under approval from NPWS as necessary and in full accordance with NRA/TII Guidelines.

Irish hare, hedgehog, and pygmy shrew are mobile species and so are expected to disperse from the area. however, young are vulnerable to impacts during vegetation clearance and/or during periods of hibernation, such as is the case with hedgehog. Prior to any vegetation clearance, the area to be cleared will be checked by a suitably-qualified ecologist to check for the presence of young mammals, or hibernating hedgehog, as appropriate.

NatureScot (2021) recommends a minimum 50 m buffer from the blade tip to the nearest key habitat features (e.g. woodland, hedgerow etc.) to be implemented to avoid encouraging bat activity within the 'blade-swept' area. These areas will be cleared of tall vegetation during the operational life of the development whilst existing hedgerow found within these buffer areas will be intensively managed to ensure the height is kept as low as possible (1 m – 1.5 m) whilst still retaining their function as filed boundaries for livestock.

A methodology for determining the recommended clearance area at ground level is presented in NatureScot (2021). This buffer creates a clearance setback of 50 m between the arc of the blade's sweep and the forest edge which reduces risk of collision with the turbine blades. Based on this methodology, the following felling distances were calculated for each of the turbines: T1 = 77 m, T2 = 89 m, T3 = 77 m, T4 = 83 m, T5 = 91 m.

A modified buffer around turbines T6 and T7 will be required to ensure the stream and bordering tree lines, found in the southwest of the site, are retained. This feature was found to be used at a low activity level and by low numbers of individual species of bats. This approach is to ensure there is no net habitat change in this area. If the full SNH (2021) felling buffer area were to be applied at these turbine locations, this would create an opening within the current treeline along the stream corridor which could potentially encourage bat species to forage within this newly created open habitat and increase risk of collisions with turbine blades.

Control of regrowth of trees/encroachment of scrub will be managed and controlled within turbine felling buffer areas for the lifetime of the wind farm to maintain vegetation at low-height and thus retain recommended clearance setbacks around relevant turbines. Vegetation will be managed by appropriate mechanical means.

Any proposed lighting shall adhere to the following guidelines, taken from the Bat Conservation Trust 2023 'Guidance Note 08/23', to ensure that any unnecessary light spill from the proposed development and its potential impacts to any roosting, foraging and commuting bats are minimized. Lighting will only occur at substation during operations and will be motion sensored. Lights on turbines will be limited to those required for safe aviation, used to enhance the visibility of the turbines by aircraft.

- LED luminaires to be used due to the fact that they are highly directional, and have a sharp cut-off, lower intensity, good colour rendition and dimming capability.
- All luminaires should lack UV elements to reduce impact. Metal halide, compact fluorescent sources should not be used.
- A warm white light source (<2700 Kelvins) is to be adopted to reduce the blue light component).
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where they are installed in proximity to windows to reduce glare and light spill.
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
- Column heights will be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards. The shortest column height allowed will be used where possible.
- Only luminaires with a negligible or zero upward light ratio and with good optical control will be used.
- Luminaires should always be mounted horizontally with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1- or 2-minute timer is likely to be appropriate.

- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand.
- Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS.
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output and increased upward light scatter from surfaces. Therefore, they should only be considered in specific cases where these issues can be resolved.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the mitigating effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

Protection of Habitats

The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats and flora. The footprint of the development area and construction area will be clearly marked prior to commencement of construction with secure posts and high visibility tape. These areas will be marked out with reference to design drawings, under the supervision of the project engineer and ECoW. There will be no removal of habitat, movement/storage of construction machinery or any other construction related activities permitted outside the proposed development area.

Removal of Vegetation (excluding conifer plantation)

In accordance with Section 40 of the Wildlife Acts, vegetation removal, including hedgerow and tree removal, will be conducted outside of the restricted bird nesting period (March 1st to 31st August). The provisions of Section 40 of the Acts do not relate exclusively to birds, but to broader biodiversity, the protection of which will contribute to local food chains and ecosystem functioning.

Protection of Birds (avifauna)

Preconstruction

A re-confirmatory ornithological survey will be undertaken in March or April prior to the commencement of construction to identify any new breeding territories or nesting activity, particularly for species such as snipe and woodcock. Should any active nests be identified, works in those areas will be delayed until the breeding season has concluded or until fledging has been confirmed through monitoring. A 500m buffer will be applied around any confirmed snipe territories, and a 250m buffer will be maintained for woodcock.

Construction

To avoid disturbance to nesting birds, vegetation clearance, including removal of scrub and trimming of trees, will be undertaken outside the bird breeding season (March 1st to August 31st inclusive), subject to other environmental constraints such as runoff control. Where clearance is required during this period, a suitably qualified ecologist will carry out pre-clearance surveys to identify any active nests. If nesting birds are present, appropriate mitigation will be implemented, including the establishment of species-specific buffer zones and/or seasonal constraints based on the known breeding cycles of the species involved. For example, a minimum buffer of 10 metres will be applied around active small passerine nests, while raptor species such as kestrel, peregrine, or merlin will require a 500m buffer. Lower sensitivity raptors such as sparrowhawk and buzzard will be afforded a 200m buffer, and woodcock nests (if identified) will be protected by a 250m exclusion zone.

A re-confirmatory ornithological survey for wintering birds will also be undertaken during the winter moths. In the event that grazing whooper swans are recorded within 600m of the Proposed Development prior to construction, targeted monitoring will be undertaken to assess potential disturbance or displacement. If significant disturbance is observed, or if regular use of the area by wintering swans is confirmed, a 600m exclusion

zone will be implemented until the birds have departed in spring. Similar monitoring and exclusion protocols will be applied for lapwing (both breeding and non-breeding seasons) and golden plover (non-breeding season), based on their observed use of the site and surrounding habitats.

Where possible, works in the vicinity of areas (shown on Figure 7-4 of the EIAR) which could potentially be used by roosting hen harrier on a casual basis during winter will avoided/minimised during the winter season. If works are required in these areas during winter, the ECoW will undertake roost watches to check for hen harrier activity and if required, working hours in the vicinity of these areas shall be restricted to avoid night, dawn and late afternoon/dusk.

Construction activities will generally be restricted to daylight hours to minimise disturbance to roosting and nocturnal bird species. Where night-time works are unavoidable, such as during concrete pours or turbine erection, these will be supervised by the project ecologist or Environmental Clerk of Works (ECoW). All construction personnel will receive toolbox talks on ornithological sensitivities and the importance of adhering to mitigation protocols.

Finally, turbine lighting will be designed to minimise attraction of nocturnal migrants and insects. White lights will not be used. Where required by the Irish Aviation Authority, turbines will be fitted with medium-intensity fixed red obstacle lights (2000 candelas), equipped with baffles to direct light skyward and reduce ground-level visibility.

Responsibility

- Environmental Manager
- Construction Manager
- Environmental Clerk of Works

References

Refer to EIAR Chapter 6 Biodiversity and Chapter 7 Ornithology

EMP 11: Landscape and Visual Management

Purpose

To describe measures to avoid, reduce or remediate, wherever possible significant negative landscape and visual effects of the Construction Stage of the proposed development.

Management Measures for Landscape and Visual

The following mitigation measures are proposed:

- Landscaping will be carried out where necessary during the construction phase, specifically in the vicinity of the substation.
- Mitigation measures including the reinstatement of areas following the construction phase, including replanting of hedgerows with native species similar to what is to be removed will be carried out. The deposition areas will be re-vegetated.
- Areas of cut and fill will be minimised and any bare will naturally re-vegetate (or as otherwise advised by ecologist).

Responsibility

- Environmental Manager
- Construction Manager

EMP 12: Emergency Response Plan

Purpose

To describe measures for the prevention of an environmental accident or incident and the response required to minimise the impact of such an event.

Procedure

In the event of an environmental emergency, all personnel will react quickly and adhere to this procedure.

All site personnel will be inducted in the provisions of the Emergency Response Plan.

The following outlines some of the information, on the types of emergency, which must be communicated to site staff:

- Release of hazardous substance – Fuel and oil spill.
- Concrete spill or release of concrete or silt.
- Flood event – extreme rainfall event.
- Environmental buffers and exclusion zones breach.
- Housekeeping of materials and waste storage areas breach.
- Stop works order due to environmental issue or concern (threat to archaeological or ecological feature).
- Fire on site (cross-reference site Safety Emergency Plan as appropriate).

If any of the above situations occur. the Emergency Response Plan is activated. The Environmental Manager will most likely be responsible for overseeing the Emergency Response Plan (to be confirmed by the Appointed Contractor(s)) and will be prepared and ready to implement the plan at all times. The Environmental Manager will be immediately informed and report to the scene. He/she must be aware of the:

- Nature of the situation – brief description of what has happened.
- Location of the incident.
- Whether any spill has been released.
- Whether the situation is under control.

Oil Spillages

The following list outlines issues likely to be appropriate for inclusion the plan:

- Site staff will report the spillage immediately to the Environmental Manager or Construction Manager.
- Where relevant, the Environmental Manager will report the spillage to Inland Fisheries Ireland and Offaly County Council.
- Where possible, the source of pollution will be identified.
- Switch off all sources of ignition.
- Stop the spillage spreading.
- Use absorbent materials from the spill kit to mop up the spill (sand or absorbent materials will be used rather than detergents).
- Place boom across watercourse or in nearby downstream existing drains as a precaution.
- Do not wash spillage into drainage system. Washing will only make the situation worse and extend the pollution to other water bodies/drainage systems.
- If the spill has already reached drains, block the inlet of the dirty water cross pipes in the nearby drainage outflow points on the trackside drains with oil absorbent booms, which will prevent oils flowing into the existing drains.
- Shovel contaminated sand/earth/absorbent granules into sacks or skips.
- A specialist oil removal company will remove pooled oil.

Concrete Spillages

The following list outlines issues likely to be appropriate for inclusion in such a plan:

- Site staff will report the concrete spillage immediately to the Environmental Manager or Construction Manager.
- Where relevant, the Environmental Manager will report the spillage to Inland Fisheries Ireland and Offaly County Council.
- If there is a risk of concrete spreading into the drainage system, the inlet of the dirty water cross pipes in the nearby drainage outflow points on the trackside drains will be blocked using the absorbent booms, which will prevent concrete flowing into the existing drains.
- Do not wash spillage into drainage system. Washing will only make the situation worse and extend the pollution to other water bodies/drainage systems.
- If the spill has already reached drains, acid may be added to the drains by the Environmental Manager to neutralise the alkalinity of the concrete.
- Shovel contaminated concrete granules into sacks or skips for treatment in the trackside Concrete Wash unit.

Contacts

As an Environmental Control Measure, the Environmental Manager will append the relevant contact details to the Emergency Response Plan document. Examples of such contact details include:

- Environmental Manager.
- Specialist oil removal company.
- Offaly County Council.
- Inland Fisheries Ireland.
- National Parks and Wildlife Service.

Location of Emergency Spill Kits

- A map indicating the location of all emergency spill kits will be attached to the Emergency Response Plan document.
- Emergency oil spill kits will also be carried in all site vehicles and machinery and in the site office.

Responsibility

- The Environmental Manager will prepare and finalise an Emergency Response Plan to be ready to respond to any incident.
- All site personnel will report any spillages of oil or chemicals to the Environmental Manager and Construction Manager immediately.
- As appropriate, the Environmental Manager will report the spillage to the Regional Fisheries Board, Offaly County Council and any other relevant authority.

EMP 13: Environmental Training Awareness

Purpose

To describe measures for informing the public of no public access to the construction site and the training of all site personnel in the protection of the environment and the relevant controls.

Scope

Notification to the public of no public access to the site. All site personnel and construction teams which may influence environmental impacts.

Procedure

Site signage will be provided at the entrance to the site to inform the public that access to the site is restricted to those directly involved in the construction of the proposed development.

External to the site, areas of knotweed will be clearly barriered off with signage warning that access to the area is not permitted.

An initial site environmental induction and ongoing training will be provided to communicate the main provisions of the CEMP including this EMP to all site personnel. Two-way communication will be encouraged to promote a culture of environmental protection.

The following outlines some of the information which will be communicated to site staff:

- Environmental procedures of the CEMP.
- Housekeeping of materials and waste storage areas.
- Environmental Emergency Response Plan.

Housekeeping and Storage of hazardous materials

- Hazardous materials will only be stored in a secure storage container in the temporary site construction compound.
- Sub-contractors will provide a copy of the Material Safety Data Sheets for all hazardous substances brought onsite.

All finalised CEMP policies will be adhered to, in the management of fuels and oils, concrete, and installation of sediment and erosion controls and drainage features. All finalised details will be communicated with site personnel. Environmental Training including spill kit training, installation of silt fence training is to be provided by the Appointed Contractor(s). Environmental training records will be retained in the site office.

Responsibility

- Construction Manager
- Environmental Manager
- All site personnel

EMP 14: Monitoring and Auditing

Purpose

To describe measures for environmental monitoring during the construction works and audit of control measures to ensure environmental protection.

Procedure

All mitigation measures, any planning conditions and relevant construction methods will be monitored on site. The Contractor will nominate an Environmental Manager for the works. The Environmental Manager will provide Audit Checklists to ensure regular checks of the site's control measures for the ongoing protection of the environment.

Monitoring

Monitoring will be carried to ensure adherence EMPs 1 to EMP 18.

Checklists for daily, weekly or monthly site audits will be finalised by the Environmental Manager and the relevant personnel informed of their duties. Checklists will include (but are not limited to) confirmation that fuel is stored appropriately, waste management rules are adhered to, all environmental buffers are maintained, surface water and runoff control measures are in place and functioning, and concrete chute wash-out procedure is being followed. Checklists will be finalised with the Contractor's EOP.

All environmental records, including completed checklists, will be retained at the site office.

Responsibility

- Project Manager
- Environmental Manager
- Construction Manager
- Project Ecologist
- Project Archaeologist

EMP 15: Environmental Accidents, Incidents and Corrective Actions

Purpose

To describe measures for the recording, investigating and close-out of any environmental accidents or incidents on the site.

Procedure

- The Environmental Manager or Construction Manager will be contacted as soon as possible where there is any incident that carries the possibility of negative environmental consequences (e.g. minor oil leakage or blockage of drainage pipe).
- The Emergency Response Plan and standard emergency procedures will be applied to get the incident under control and prevent injury or loss of life in the first instance.
- Work in the area will be halted and the Environmental Manager will be called to the scene to assess the situation and to decide on initial responses and remedial measures.
- Once the situation is under control, the environmental accident or incident will be recorded and the cause investigated.
- Any remedial action required will be taken to mitigate any damage and prevent a reoccurrence.
- Corrective actions will be communicated to personnel and sub-contractors where relevant – particularly where it results to a change in procedure.

Example list of environmental accidents & incidents

- Accidents involving a large spill of fuel or concrete from delivery truck (emergency response required).
- Spills of fuel and oil (minor).
- Waste or rubbish left around the site (not in dedicated waste areas).
- Breach of any buffers (archaeological, ecological, watercourse).
- Failure of any control measures (silt fences collapsed in a storm).
- Concrete chute wash out in a non-dedicated area.
- Unplanned vehicle movement off the access tracks.
- Unplanned vehicle movement within a buffer zone.

Responsibility

- Site staff will contact the Environmental Manager or Construction Manager as soon as possible where there is any incident that carries the possibility of negative environmental consequences.
- The Environmental Manager is responsible for alerting the relevant authorities.

EMP 16: Environmental Complaints

Purpose

To describe measures for the recording and resolving complaints by third parties, including local residents or members of the public.

Procedure

Any environmental complaints received, whether internal or external, will be recorded and investigated. Immediate action will be taken as relevant to resolve environmental complaints to avoid any nuisance to the local community or any environmental damage.

This procedure includes:

- Recording of any complaints to a Site Log.
- Follow up by the relevant site representative – Environmental Manager.
- Remedial measures where required.
- Ongoing communication with complainant to confirm resolution.
- Any required training or communication with site personnel and sub-contractors as a result.

The out of hours contact number for the site is: TBC

Responsibility

- Project Manager
- Environmental Manager
- Construction Manager

EMP 17: Management of Material Assets

Purpose

To describe measures to avoid, reduce or remediate, wherever possible significant negative material assets effects of the Construction Stage of the proposed development.

Management Measures for Material Assets

The following mitigation measures are proposed:

Forestry Felling

Overall, felling of appropriately 21 ha of commercial forestry will be required. All tree felling will be undertaken in accordance with the conditions attached to the tree felling licence and in accordance with Forest Service Guidelines. Harvesting is the main of two forest operations that can cause nutrient runoff to water bodies and contribute to their eutrophication unless mitigating measures are taken. The *Forestry and Water Quality Guidelines* (DMNR, 2000) and *Standards for Felling & Reforestation* (DAFM, 2019) describe best practice that must be adopted if carrying out felling. A harvesting plan and associated mapping will be prepared and will include a review of the felling areas, environmental receptors – water features (including aquatic zones, relevant watercourses, hotspots, water abstraction points and crossing points), biodiversity (including hedgerows and other habitats), selection of felling and extraction system and machinery, silt and sediment control, timing, and extraction management.

Electrical Infrastructure

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.

All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines.

There is a slight chance of potential electricity outage during rerouting of the 38kV overhead line. Any outage will be kept to a minimum and any customers affected by a potential outage will be contacted prior to works commencing.

The proposed project will not result in any significant effects on grid capacity but will provide a potentially positive effect of the electricity supply infrastructure. No specific mitigation measures are proposed beyond good construction practices.

Aviation

- The developer will agree an aeronautical obstacle warning light scheme for the wind farm development with the IAA.
- The developer will provide the IAA with as-constructed coordinates in WGS84 format together with ground and tip height elevations at each wind turbine location.
- The developer will notify the IAA of intention to commence crane operations with a minimum of 30 days prior notification of turbine erection.

Responsibility

- Applicant
- Project Manager
- Environmental Manager
- Construction Manager

EMP 18: Invasive Species and Biosecurity

Prior to being brought onto site, all plant, equipment and PPE will have to be clean and free of soil/mud/debris or any attached plant or animal material. Prior to entering the site, all plant and equipment will be thoroughly cleaned down using a power washer unit to prevent the spread of IAS. All plant/equipment will be visually inspected to ensure all adherent material and debris has been removed.

Prior to being brought to site, certification is to be obtained from suppliers that all raw materials including soil, fill, sand, gravel and landscaping materials to be imported are free from IAS. Locations for supply e.g. quarries etc., are to be assessed for the presence of IAS prior to materials being brought to site.

All footwear/waders and/or equipment that is to be used within the aquatic environment should be treated to prevent foreign flora/fauna entering the water, and again after use, to prevent spread to other catchments.

Responsibility

- Applicant
- Project Manager
- Environmental Manager
- Construction Manager