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Pollahoney 110kV GIS Substation & MV Control Building

Construction and Environmental Management Plan (CEMP)

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Appendix 1 **Environmental Management Plans**

1 INTRODUCTION

The proposed development includes a new 110kV GIS substation MV Control Building and associated transformer infrastructure. The key elements of the proposed development are outlined below;

- A 110kV Gas Insulated Switchgear (GIS) substation, primarily contained within a building with a gross floor area of approximately 1,377 square metres and a height of approximately 16.8 metres. A MV Control building consists of a gross floor area of approximately 416 square meters and a height of approximately 6 meters. The substation and MV Control Building are sited within an area of approximately 16,954 square metres located in the townland of Arklow, County Wicklow. There will be a palisade fence separating the two buildings and separate access gates are provided to each respected compound. Associated development within the compound includes: associated transformer infrastructure, interface kiosks; ancillary car parking; and all associated site development and landscaping works. An access road of approximately 30 metres in length and 5 metres in width for the GIS Substation and an access road of approximately 10m in length and 8m wide at its narrowest for the MV Control Building with a new entrance onto the Avoca River Park Industrial Estate Road. The substation compound will be bounded by a palisade fence 2.6 metres in height and bounded within a property fence 1.4m in height;

- The installation of bores and associated cable trenches and ancillary equipment connecting the proposed GIS substation to the demand customer transformers and subsequently the MV Control Building.

- All associated and ancillary development including temporary construction compounds adjacent to the proposed GIS substation and MV Control Building in the townland of Arklow, County Wicklow and temporary construction tracks from the proposed development sites onto the Avoca River Industrial Estate Road.

This CEMP outlines construction practices and environmental management measures which are to be implemented during the construction phase of the 110kV GIS substation and MV Control Building only. This will be done to ensure the project is constructed in accordance with best practice and with the minimum impact on the surrounding environment. As works for the other parts of the development progresses, this CEMP will be updated accordingly.

1.1 CEMP PURPOSE AND OBJECTIVES

All Construction Projects require the preparation of a Site Specific Construction Environmental Management Plan (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 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 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-commencement phase of the 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 Contractor that details are updated with progress, including the roles and responsibilities of those appointed on the site for the construction of the project.

This CEMP is intended to be a live document whereby different stages will be completed and submitted as the development progresses. An Environmental Report with Appendices is being prepared for planning stage and all mitigation measures within these documents will be adhered to where they are applicable to the GIS Substation & MV Control Building works.

2 OVERVIEW OF THE SITE

The proposed development is located in the Avoca River Park Industrial Estate in the townland of Arklow, Co Wicklow. The site is located approximately 2.5 km northwest of Arklow town centre. The proposed development extends over the administrative areas of Wicklow County Council and is located within an existing industrial estate. The landholding comprise of a brownfield site with derelict buildings. The site of the proposed development comprises approximately 1.69 hectares and is located near the Avoca River. It is proposed to demolish the existing buildings onsite as part of the enabling works for this project. The total ground floor area of structures to be demolished is 2992m^2.

The site is bound to the north by a local access road which serves Avoca River Park. To the south and to the west the site is bound by Holfeld Plastics Limited. To the east the site is bound by the wider landholding that currently incorporate Harmony Timber and Stunt Drive Ireland which will cease operation and relocate prior to commencement of the proposed neighbouring data storage facility.

The Avoca River Park is well developed; current operations include timber fabrication plant, a plastic manufacturing plant, an existing substation and a storage area for scrapped vehicles. The lands in the immediate vicinity surrounding the industrial park comprise of a mix of agricultural, forested, residential, commercial and institutional development. Shelton Abbey Prison is located to the north-west, Glenart Castle to the south-west and Sigma Aldrich facility to the south-east.

The site is generally fairly level, with much of the site being circa +2.0m to +2.3m OD. The western portion of the site is slightly higher at approx +2.4m to +2.8m OD.

2.1 SITE DETAILS

2.1.1 110kV GIS Substation & MV Control Building

The proposed 110kV GIS substation and MV Control Building will be entirely contained within the site. A narrow strip of land has been extended to provide provision for associated drainage infrastructure. This extends from the main site area to a proposed outfall location at the Avoca River.

There are a number of buildings in close proximity to the proposed substation compound. An existing substation is located approximately 30 metres to the west of the fence-line and Holfeld Plastics bound the site boundary to the east. Access to the proposed GIS Substation compound will be gained via a new proposed access road (approximately 30m in length and 5m in width) while access to the proposed MV Control Building compound will be gained via a separate proposed access road (approximately 10m in length and 8m in width). The new access roads will comprise a tarmac finish with the road sloped to facilitate drainage.

The new access road will be constructed in accordance with Transport Infrastructure Ireland (TII) "DN-GEO-03060: Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions)" where the entrance will have adequate sightlines and will allow access for all type of vehicles.

The proposed 110kV Substation and Compound will comprise the following:

- 110kV GIS Substation building and associated compound
- MV Control Building
- Associated Transformer Infrastructure
- Lightning protection masts
- Interface kiosks
- Property fence/gates
- Palisade fence/gates
- Distribution System Operator (DSO) compound
- Landscaping

The 110kV GIS Substation building will comprise a two-storey over partial basement structure. It will house the new gas insulated switchgear, insulated circuit breakers and other associated equipment. Auxiliary services such as a generator, batteries and welfare facilities (e.g. toilets, mess room etc.) will also be located within the building. The 110kV GIS Substation building will comprise a typical industrial form, with a structural steel frame clad with profiled metallic sheet wall and roof cladding. Internal walling of masonry will be adopted where applicable. The roof will be shallow pitched and constructed of profiled metal decking on purlins spanning between rafters.

The MV Control Building will comprise of a single storey building with a basement of approximately 1.8m depth. The building will comprise of typical structure for buildings of this type - cavity wall construction, concrete floor slab and reinforced concrete roof slab.

The site also comprises of associated transformers and 18 m high lightning protection masts. Fencing around the entire substation compound, with the exception of the site entrance/gates, will comprise of external 1.4m high post and rail property fencing and internal 2.6m high galvanised steel palisade fencing.

2.1.2 Planning Conditions

This CEMP will be updated to address any recommended mitigation measures that might arise from the planning condition for the works.

3 CONSTRUCTION WORKS

3.1 OVERVIEW OF 110KV GIS SUBSTATION & MV CONTROL BUILDING CONSTRUCTION WORKS

Key elements of the civil works and activities associated with the construction phase of the 110kV GIS Substation and MV Control Building are as follows and are discussed in the following subsections:

- Demolition of existing structures on site
- Site preparation and pre-construction activities.
- Environmental measures including tree protection
- Construction of temporary site construction compound.
- Construction traffic routes.
- Site construction drainage system.
- Construction of 110kV GIS substation building and compound.
    - Foundation works
    - Structural steelwork erection
    - Cladding and building finishing works
- Construction of MV Control Building, associated Transformer Infrastructure and compound.
    - Foundation works
    - Structural steelwork erection and Blockwork
    - Building finishing works
- Complete electrical installation at the 110kV GIS substation building, MV Control Building, Transformer Infrastructure and compound.
- Commission and test plant.
- Complete site works, tidy up site, landscaping, restoration.
- Demobilise offices.
- Erect gates, signs etc.
- Substation commissioning.

3.2 WORKING HOURS

Construction is proposed to occur within the following hours:-

- 8.00am – 6.00pm (Monday – Friday inclusive)
- 8.00am – 6.00pm (Saturday)

3.3 CONSTRUCTION PERSONNEL

It is envisaged that the development will have approximately 30 staff members during the peak construction phase to include site contractor(s), engineers, materials delivery personnel, environmental personnel, health and safety personnel.

3.4 CONSTRUCTION METHODOLOGY

3.4.1 Site preparation and pre-construction activities

Before construction commences a number of preparatory activities will be carried out. The following key works will be undertaken as part of the site preparation and pre-construction activities:

3.4.1.1 Pre-Construction Surveys

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

3.4.1.2 Enabling Works

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

3.4.2 Temporary Site Construction Compound

A temporary site construction compound will be set up upon commencement of the construction phase of the GIS building and MV Control Building within the site boundary. The compound will be used as a secure storage area for construction materials and excess spoil and also contain temporary site units to provide welfare facilities for site personnel. Facilities will include office space, meeting rooms, canteen area, a drying room and sanitary provisions. Access will be gained initially via an existing entrance to the site.

The compound will be constructed early in the project in order to provide site offices and accommodation for staff and for the delivery of materials. Any surface water management, bunding, waste management measures etc will also be put in place at the outset. Site security will have to be put in place adjacent to the entrance and will have to be maintained throughout all phases of the work. The compound will be in place for the duration of the construction phase and will be removed once commissioning is complete.

The compound will be constructed as follows:

I. The area to be used as the compound will be marked out at the corners using ranging rods or timber posts.
II. Drainage runs and associated settlement ponds will be installed around the perimeter;
III. The compounds will be established using a layer of geogrid / geotextile will be installed and compacted layers of crushed imported stone aggregate will be spread and lightly compacted to provide a hard area for site offices and storage containers;
IV. The finished surface will be formed with a layer of Class 6F aggregate imported from local quarries.

Areas within the compound will be constructed as access roads and used as vehicle hardstandings during deliveries and for parking;

I. A bunded containment area will be provided within the compounds for the storage of lubricants, oils and site generators etc.;
II. If necessary the compound will be fenced and secured with locked gates,
III. 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 Contractor on a regular basis and will be removed from the site on completion of the construction phase.
IV. Upon completion of the project the compound will be decommissioned by backfilling the area with the material arising during excavation, landscaping with topsoil as required.

Figure 3—1 Typical temporary site construction compound

3.4.3 Construction Traffic and Haul Routes

The Proposed Development is located approximately 2km to the north west of Arklow town. Access to Avoca River Park is from the R772 via Beech Road, Kilbride Road and Shelton Abbey. The site is located in close proximity to the M11 Junction 20 approximately 3km north east of the site. Access to the site will be gained. All construction traffic for the GIS Substation and MV Control Room works will enter via the existing Industrial Park road infrastructure.

Construction traffic will include:

- HGVs importing construction materials, including concrete, road build-up materials, building materials, drainage/ducting materials, structural steel, cabling, site boundary fencing and electrical components, etc.
- HGVs exporting waste/spoil/demolition materials
- HGVs delivering plant/cranes and fuel
- Traffic associated with on-site construction personal

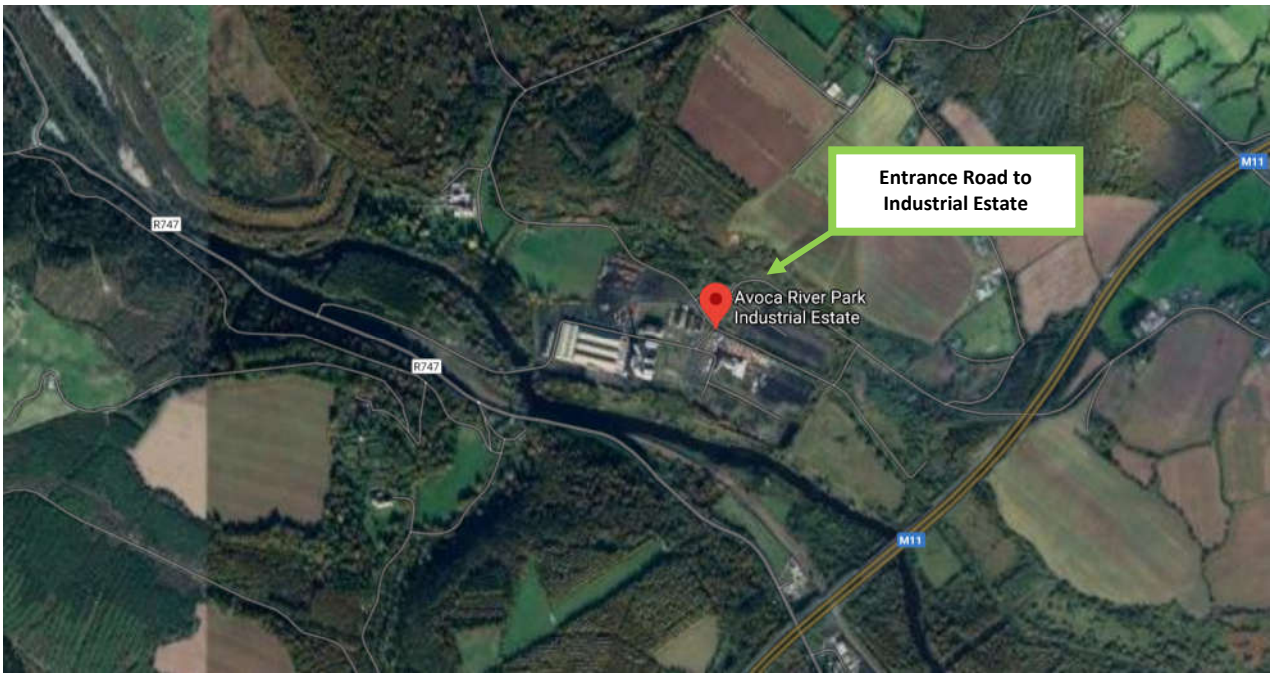


Figure 3—2 Road network around Site

It is expected that the daily traffic on the network will be minimal and will have negligible impact on the local road network in the site vicinity

The proposed haul routes for the delivery of materials associated with the construction of the scheme are described below. The haul routes are primarily along motorways and regional roads, with additional local roads leading to the site. The Avoca River Park can be accessed from the R772 via Beech Road, Kilbride Road and Shelton Abbey.

Pre and post-construction surveys will be carried out to ensure the structural integrity of the haulage routes. Repairs will be carried out on the public road network, as necessary, during the construction phase, to ensure that the condition does not deteriorate below a standard that could affect the use of the site, as required. Following completion of the works, the condition of the public road network will be of at least the same standard as it was prior to commencement of construction.

The construction phase of the 110kV GIS Substation and MV Control Building will require the delivery of concrete, steel, stone aggregate and electrical switchgear to the site via the public road network. The key timing periods when use of the public road network will be at its peak is typically between 8.30am and 10am for school and commuter related traffic. It is proposed to allow routine deliveries such as aggregate into the site between 8.00am and 8.30am. The initial early morning delivery trucks will exit the site empty with the run of traffic but they will be prohibited from delivering again until 10am.

The nuisance of dirt on the local road network during wet weather and dust during dry weather is an area of identified concern where the primary mitigation measure for this impact will be in the form of a proprietary wheel wash facility to be installed on the exit of the site. In addition to this, a road sweeper will operate on a full time basis for the duration of the importation of aggregates and concrete and at regular intervals for the duration of the project. A water bowser will be employed to spray the local roads with water during dry periods when there is a risk of dust nuisance.

Appropriate signage will be maintained for the duration of the project with clear warning signage installed along the Local road on approach to the site entrance.

A road safety and courtesy protocol will be implemented for the duration of the construction works. All companies delivering to site will have to sign up to this protocol as part of their supply contract. The protocol will consist of restricted delivery hours and speed limits along public roads and within the site. Fundamental to the protocol is courtesy for other road users. In this vehicles will always give way to oncoming residential traffic and will always slow down or stop as appropriate for pedestrians and cyclists.

3.4.4 Site Construction Drainage System

A site drainage system will be constructed on the site so as to attenuate run-off, guard against soil erosion and safeguard downstream water quality. The drainage system will be implemented along the substation compound, internal access road and site construction temporary compound. The drainage system will be excavated and constructed in conjunction with the construction works. The surface water run-off drainage system will be implemented along all areas to be developed in order to separate and collect ‘dirty water’ run-off from the roads and compound, and to intercept clean over land surface water flows from upslope areas.

The site drainage system is designed as a measure to ensure that the design will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchment from sediment runoff. To achieve separation, clean water drains will be positioned around the upslope areas of the substation compound, internal access road and site construction temporary compound while dirty water drains will be positioned on the downslope sides, with road surfaces and compounds sloped towards dirty drains.

Measures addressed in the drainage design include:

- Drains carrying construction site runoff will be diverted into settlement ponds, which will promote sediment deposition and reduce hydraulic loading by slowing flow velocities allowing sediment to settle. Settlement ponds will be designed in the form of a three stage tiered pond system. These

will be maintained by the contractor to the satisfaction of Inland Fisheries Ireland for the entire construction period.

- Flow from the settlement ponds will enter the sediment traps where runoff will be cleaned further by a series of graded gravel filters. Hy-Tex Terrastop silt fences will require regular inspection and cleaning and removed material will be disposed of at an appropriate location.
- Hy-Tex Terrastop silt fences will be placed at the end of any locally steep section of drain. They will have the double benefit of effectively producing a localised swale to reduce scour effects and also attenuating and filtering the discharge.
- Temporary deposition areas will be designated adjacent to the site construction compound to hold temporary stockpiles. These will be located away from existing drains. Stockpiles that are at risk of erosion will be protected by Hy-Tex Terrastop silt curtain fencing to prevent contamination of runoff.
- The substation compound and internal access road will be graded so that all runoff is directed to the dirty water drains. A low mound will be constructed between the compounds / road and the clean water drain to ensure that runoff from the compound / road cannot flow into the clean water system.
- A wheel wash will be provided for heavy vehicles exiting the site to ensure that roads outside of the site boundary are clean. These can take the form of dry or wet wheel wash facilities. In the case of a wet wheel wash it is recommended that a designated bunded and impermeable wheel wash area is provided and that the resultant waste water is diverted to a settlement pond for settling out of suspended solids.
- No disturbance will be permitted to the natural vegetative buffer. They can be fenced where necessary.
- The area of exposed ground will be kept to a minimum by maintaining where possible existing vegetation that would otherwise be subject to erosion in the vicinity of the development. The clearing of topsoil will be delayed until just before construction begins rather than stripping the entire site months in advance.
- Permanent drainage measures such as the underground rainwater harvesting tank, foul tank, oil bypass separator and storm water filtration tank will be installed within the compound.
- Piped and channel drainage systems incorporating roadside gullies will be installed to collect storm water from the finished compound areas and internal access road. Collected storm water runoff will pass through the oil bypass separator before discharging to the storm water filtration tank.

Figure 3—3 Multi tiered settlement pond with stone filter installed during construction works

Figure 3—4 Hy-Tex Terrastop silt curtain fencing installed around temporary deposition areas

3.4.5 110kV GIS Substation & MV Control Building Compound

The layout of the Substation and MV Control Building compound is designed to accommodate access to and around the buildings and cater for the erection of associated infrastructure. The area of the compound

is approximately 40m long x 30m wide. It is intended that the proposed compound will be constructed using excavation methods:

I. The area of the substation compound will be marked out using ranging rods or wooden posts and the soil stripped and removed to a temporary storage area for later use in landscaping. All remaining excavated material will be brought to a licence waste facility for final deposal. The area will be surveyed and all existing services will be identified. All plant operators and general operatives will be inducted and informed as to the location of any services.
II. Perimeter drains will be installed or upgraded to collect surface water run-off from the substation compound which will include the installation of check dams, silt traps and level spreaders to cater for surface run-off.
III. The compound will be formed on competent subgrade of the underlying subsoil / rock which will comprise of locally obtained stone aggregate laid, where necessary, on a geotextile filter membrane.
IV. The formation for the substation compound will be examined and signed off by a Chartered Engineer with geotechnical competence.
V. Layers of imported stone aggregate material will then be provided and compacted in maximum 250mm lifts to foundation formation and hard surface levels. The final formation will be validated with plate bearing tests carried out by a competent testing agency.
VI. Electrical services such as ducting, cable trenches and an earth grid will be installed within the compound.
VII. Concrete bases and plinths will be designed and constructed as required.
VIII. The compound level will be finished to a suitable finish with car parking space provided.
IX. Fencing around the entire substation compound, with the exception of the site entrance/gates, will comprise of external 1.4m high post and rail property fencing and internal 2.6m high galvanised steel palisade fencing.

3.4.6 110kV GIS Substation Building & MV Control Building

The development is proposed to include 110kV GIS Substation building and an MV Control Building within the development lands.

The substation building will comprise a two storey over partial basement structure. It will house the new gas insulated switchgear, comprising of insulated circuit breakers and other high voltage equipment. Auxiliary services equipment, such as control and telecoms equipment, low voltage switchgear, an emergency diesel generator, batteries and welfare facilities will also be located within the building. Underground cables will connect with the substation via the partial basement, which will be designed to prevent any water ingress. The GIS building will comprise a typical industrial from, with a structural steel frame clad with profiled metallic sheet wall and roof cladding. Internal walling of masonry will be adopted where appropriate. The roof will be shallow pitched and constructed of profiled metal decking. The building will have access gantries and walkways for access to equipment. These will be constructed of stainless / galvanised steel open grating type flooring supported on steel beams and columns.

The MV Control Building will comprise of a single storey building with a basement of approximately 1.8m depth. The building will comprise of typical structure for buildings of this type - cavity wall construction, concrete floor slab and reinforced concrete roof slab.

The external doors for the building will be flat steel with a three-point locking system and wind restraints. The floors within the building will consist of a concrete slab with ducts to house electrical cabling. It is proposed that the discharge from the WC facilities in the GIS substation will go to a holding tank located within the substation compound where the effluent will be temporarily stored and removed at regular intervals. Parking will be located within the substation compound area.

The substation building will be constructed by the following methodology:

I. The formation for the substation substructure will be examined and signed off by a Chartered Engineer with geotechnical competence.
II. The foundation for the 110kV GIS substation building and cable entry basement will be excavated down to the level indicated by the designer and appropriately shuttered.
III. A layer of concrete blinding will be laid approximately on top of the newly exposed formation, tamped and finished with a screed board to leave a flat level surface. The concrete should be protected from rainfall during curing and all surface water runoff from the curing concrete should be prevented from entering surface water drainage directly;
IV. Water-proofing of below ground elements will be achieved by means of the radon barrier under the floor slab. A patent radon resistant tanking membrane will be used for the basement construction.
V. Steel reinforcement will be fixed in accordance with the designer's drawings and schedules. Ductwork will be installed as required and will be sealed with a radon proof mastic seal. Formwork will be erected around the foundation as required for any cable trenches required to relevant specifications.
VI. Ready-mix concrete will be delivered by ready-mix concrete trucks via the site entrance. Concrete will placed into the foundation by means of a concrete pump. Upon completion of the concreting works the foundation will be covered and allowed to cure.
VII. Structural steelwork for the building will provide support for the gantry crane and support for the roof and wall cladding. A steel portal frame will be constructed as a braced structure to adequately transfer wind loads on the building to the foundations via braced bays. A fully braced roof will be constructed to distribute all of the lateral loadings across the building and into the vertical bracing.
VIII. The internal blockwork walls and precast concrete stairways will be built up from ground floor level.
IX. The insulated steel wall cladding panels will be installed along the hanging rails on the portal frame structure using an adequately sized mobile crane.
X. The insulated steel roof cladding panels will then be lifted into position using a mobile crane and checked to ensure they are sealed against the weather.
XI. Installation of internal fittings and fit outs (e.g. installation of fire doors, plastering, painting, WC facilities, gantry crane etc.) will be carried out.
XII. Installation of footpaths and ramps will be provided at external doorways for level access.
XIII. Installation of electrical equipment will occur within the substation building, includes switchgear, circuit breakers, cable supports, panels etc., and all associated cabling.
XIV. The construction and components of the substation building will be to ESB Networks specifications.

Figure 3—5 Typical finished GIS substation building

3.4.7 Commissioning

The final stage of the project construction includes commissioning of the 110kV GIS Substation. It will include testing of the electrical equipment for compliance with standards and for compliance with the Electricity Distribution Grid Code. Once the tests results are satisfactory, the substation will be authorised to connect onto the national grid.

3.4.7.1 Other elements of the Construction Phase

3.4.7.1.1 Disposal of Spoil

Excavated materials from construction activities will be temporarily stockpiled during construction and subsequently reused on site for backfill/re-grading or re-vegetation. It is envisaged that the amount of excavated material from site will be kept to a minimum as the site investigation data indicated the presence of fertiliser material buried on site. Excess excavated material, where applicable, will be transported off site in trucks and disposed of to a licensed waste facility. This will prevent any contaminated run-off to public roadside drains during heavy rainfall.

3.4.7.1.2 Concrete Pouring

Due to the large concrete pours required to construct the substation, the pours will be planned in advance. Special procedures will be adopted in advance of and during all concrete pours to minimise the risk of pollution. These may include:

- Using weather forecasting to assist in planning concrete pours, and avoiding large pours where prolonged periods of heavy rain is forecast.

- Ensuring that excavations are sufficiently dewatered before concreting begins. It is expected that extensive dewatering will not be required within excavations as the NIS planning report stated that groundwater is at a sufficient depth with water ingress unlikely to occur.
- Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain.

3.4.7.1.3 Dust Suppression

In periods of extended dry weather, dust suppression may be necessary within the site compound and internal access road to ensure dust does not cause a nuisance. If necessary, water will be taken from settlement ponds in the site construction drainage system, and will be pumped into a bowser or water spreader to dampen down the internal access road and site compounds to prevent the generation of dust. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.

3.4.7.1.4 Water requirement / Water supply

Potable water will be required for the substation construction employees. Potable water demand will differ greatly between the construction phases and the long term operational and maintenance phase. Average potable water requirement will drop from an estimated maximum average of 2,250 litres per day during peak construction to approximately 60 litres during the operational and maintenance phase. It is proposed to import water by tanker to the site during the construction phase unless a temporary construction connection can be obtained.

3.4.7.1.5 Waste-Water Treatment / Effluent disposal

During the construction time period, the maximum wastewater production is estimated to be the same as the maximum water consumption (2,250 litres per day). The project will include an enclosed wastewater management system at the temporary site construction compounds capable of handling the demand during the construction phase when as many as 75 people will be working on site. A holding tank is included for wastewater management.

3.4.7.1.6 Waste Management

From a waste management perspective the project can be divided into three phases:

- Construction;
- Operation/Maintenance; and
- Decommissioning.

3.4.7.1.7 Construction

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, ducting, 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 on-site 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.

3.4.7.1.8 Operation

Wastes arising during the operation phase of the project include but are not limited to lubricating oils, cooling oils, unused paint and packaging from spare parts. The containment and disposal of such oils will be carried out in a safe manner by an approved contractor(s). Such operations will be carried out in accordance with the Waste Management (Hazardous Waste) Regulations, 1998. The remaining wastes will all be removed from site and reused, recycled or disposed of in an authorised facility in accordance with best practice.

3.4.7.1.9 Decommissioning

Wastes generated during the decommissioning phase will be taken off site, and disposed of appropriately.

3.4.7.1.10 Fuel storage and management

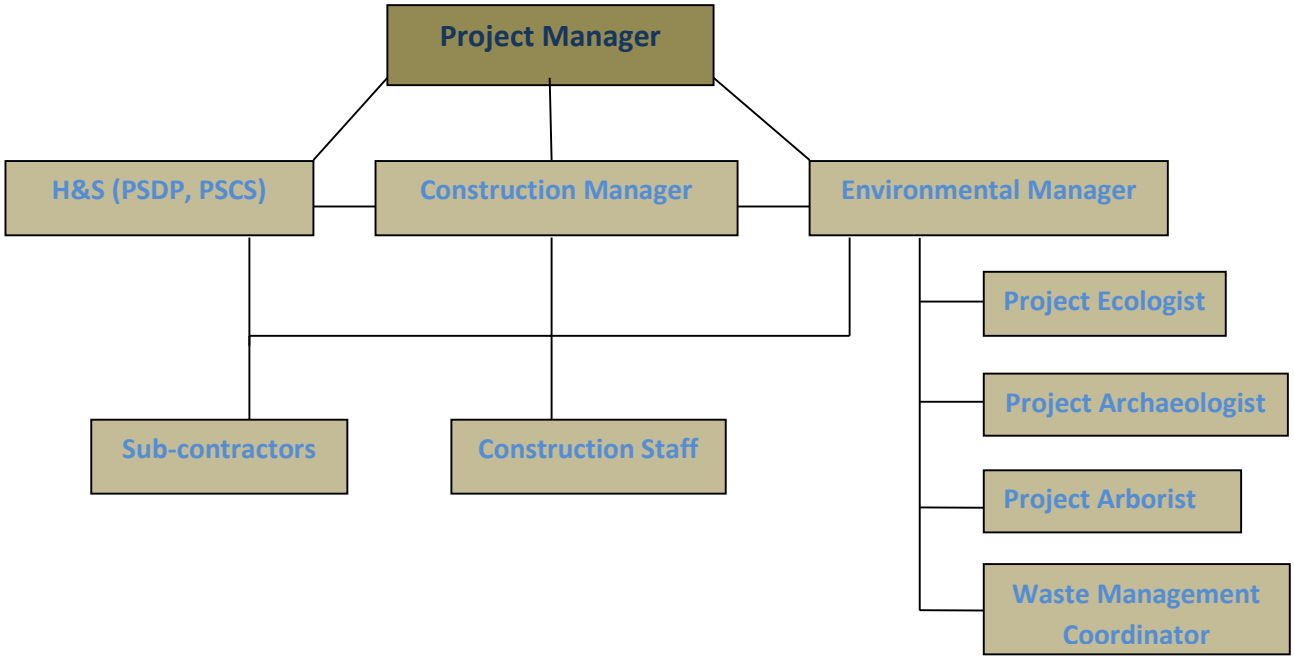
All plant will be refuelled on site e.g. excavators, dumpers etc, while rigid and articulated vehicles will be filled off site as would all site vehicles (jeeps, cars and vans). A fuel management plan will be developed in relevance to the site, and the specific plant and equipment required for construction. 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;
- Only designated trained operators will be authorised to refuel plant on site;
- Procedures and contingency plans will be set up to deal with an emergency accidents or spills; including availability of specialist 24/7 spill contractor in case of major incident

4 CONSTRUCTION & ENVIRONMENTAL MANAGEMENT - ORGANISATIONAL STRUCTURE, DUTIES & RESPONSIBILITIES

4.1 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 includes 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 110kV GIS Substation, MV Control Building and associated infrastructure.

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. The use of dedicated staff, under the direction of the Environmental Manager, will ensure the environmental controls are in situ ahead of the works on site. There will be a Design Engineer on site who will be responsible for the design of the Works. This engineer will be supported by a Geotechnical Engineer, as required for relevant elements of the Works.

4.2 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 of environmental damage 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 below at Section 4.2.4. To ensure adequate cover of environmental 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 may include (if required):

- Health and Safety (PSDP and PSCS)
- Project Archaeologist (report to the Environmental Manager)
- Project Ecologist (report to the Environmental Manager)
- Project Arborist (report to the Environmental Manager)
- Waste Management Coordinator (report to the Environmental Manager)
- Geotechnical Engineer (as required by Design Engineer)

4.2.1 Project Manager

Name: _____

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

4.2.2 Construction Manager

Name: _____

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:

4.2.2.1 Site-Specific Method Statements

- Liaising with the Environmental Manager in preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage, 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 Control Measure 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 Control Measures and/or Environmental Control Measure Sheets.

4.2.2.2 General

- Being aware of all project Environmental Commitments and Requirements including the EIAR mitigation measures
- 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 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; and
- Ensuring that the Environmental Manager performs regular and frequent environmental site inspections.

4.2.3 Design Engineer

Name: _____

The Design Engineer reports to the Project Manager and 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; and
- Liaising with Third Parties through the Environmental Manager.

4.2.4 Environmental Manager

Name: _____ _____

The Environmental Manager is responsible for:

4.2.4.1 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, and
- 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

4.2.4.2 Site-Specific Method Statements

- Liaising with the Construction Manager in preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage. These site-specific Method statements should 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, and
- 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.

4.2.4.3 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 should liaise with the Construction Manager in updating relevant site-specific Method Statements, and
- Where required, liaising with the Construction Manager in agreeing site-specific Method Statements with third parties.

4.2.4.4 Licensing

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

4.2.4.5 Waste Management Documentation

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

4.2.4.6 Legislation

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

4.2.4.7 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, and
- Co-ordinating the activities of all specialist environmental contractors on environmental matters arising out of the contract.

4.2.4.8 Environmental Induction Training and Environmental Tool Box 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.

4.2.4.9 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, and
- Carrying out an investigation and producing a report regarding environmental incidents. The report of the incident and details of remedial actions taken should be made available to the relevant authority, the Design Engineer and the Construction Manager.

4.2.4.10 Site Environmental Inspections

- Carrying out regular documented inspections of the site to ensure that work is being carried out in accordance with the Environmental Control Measures and relevant site-specific Method Statements, 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.

4.2.5 Other Roles

4.2.5.1 Health and Safety Personnel

The Health and Safety personnel for the construction project are 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

4.2.5.2 Project Archaeologist

The Archaeologist will be appointed by the Contractor (if required) and is responsible for:

- Ensuring implementation of archaeological mitigation measures
- Monitoring of groundwork's associated with the development
- Liaison with the Environmental Manager / Construction Manager
- Liaison with the Project Manager / Client / Developer

4.2.5.3 Project Ecologist

The Ecologist will be appointed by the Developer or the Contractor (if required) and is responsible for:

- Ensuring implementation of ecological mitigation measures
- Advising on re-vegetation onsite
- Monitoring of success of on re-vegetation
- Undertaking applicable pre-construction surveys

4.2.5.4 Project Arborist

The Arborist will be appointed by the Developer or the Contractor (if required) and is responsible for:

- Ensuring post construction tree protection monitoring is conducted at the site.
- Advice on any mitigation required.
- Consultations with the Project or Environmental Manager.

4.2.5.5 Geotechnical Engineer

The Geotechnical Engineer has been appointed by the Contractor and is responsible for:

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

4.2.5.6 Waste Management Coordinator

The Waste Management Coordinator has been appointed by the Contractor and is responsible for:

- Distinguish reusable materials from materials suitable for recycling
- Ensure maximum segregation at source
- Cooperate with Site Management, on locations for stockpiling reusable materials
- Separate materials for recovery
- Identify and liaise with operators for recovery outlets

4.2.5.7 All site personnel

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.

4.3 CONTACTS

4.3.1 Main Contractor Contacts

Position Title:	Name:	Phone:	Email:
Main Contractor			
Project Manager			
Construction Manager*			
Design Engineer			
Environmental Manager*			
Safety (PSCS)*			
Safety Officers*			
Site Emergency Number*			
Project Ecologist			
Project Archaeologist			
Project Arborist			
Waste Management Coordinator			
Overall Project PSDP			

*24 hour contact details required

4.3.2 Employer Contacts

Organisation:	Position:	Name:	Phone:	Email:
Employer	Echelon Data Centres			
Employer's Representative	TBC			

4.3.3 Third Party Contacts

Organisation:	Position:	Name:	Phone:	Email Address:
Inland Fisheries Ireland	Eastern River Basin District	Dublin Regional Office	(01) 2787022	blackrock@fisheriesireland.ie
National Parks and Wildlife Service	North Eastern Region	District Conservation Officer	(076) 1002594	nature.conservation@chg.gov.ie
Environmental Protection Agency (EPA)	EPA	EPA Headquarters	(053) 9160600	info@epa.ie
Local Authority	Wicklow County Council	Wicklow County Council Headquarters	(040) 420100	plandev@wicklowcoco.ie
Department of Culture, Heritage and the Gaeltacht	National Monuments Service	Custom House, Dublin	(01) 8882000	nationalmonuments@chg.gov.ie
Health and Safety Authority	Health and Safety Authority	Head Office, Dublin	(01) 6147000	wcu@hsa.ie
Emergency Services	An Garda Síochána	Arklow Garda Station	(040) 232304	
Emergency Services	Ambulance and Fire Service	Ambulance and Fire Service	999 or 112	

5 ENVIRONMENTAL COMMITMENTS

5.1 ENVIRONMENTAL MANAGEMENT PLANS (EMP)

See Table 5—1 below and refer to Appendix 1. These plans are to be implemented by the Appointed Project Manager and/or Project Contractor(s) as relevant.

Once appointed, it is the Contractor's 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.

Ref:	Procedure:
EMP-1	Surface Water Management and Run-off Control (Sediment and Erosion Control)
EMP-2	Fuels and Oils Management
EMP-3	Management of Concrete
EMP-4	Construction Waste Management
EMP-5	Construction Traffic Management Plan
EMP-6	Wheel Wash Management Procedure
EMP-7	Construction Dust Management
EMP-8	Construction Noise Management
EMP-9	Archaeological & Heritage Protection
EMP-10	Ecological Management Plan Protection of Habitats and Fauna
EMP-11	Emergency Response
EMP-12	Site Environmental Training and Awareness
EMP-13	Monitoring and Auditing
EMP-14	Environmental Accidents, Incidents and Corrective Actions
EMP-15	Environmental Complaints

Table 5—1 Plans for managing Impacts of Construction Activities

6 AUDITING, MONITORING AND RESPONSE

The environmental Monitoring Schedule (Table 6-1) will take cognisance of all mitigation measures outlined in the Environmental Report and relevant planning conditions outlined in the grant of planning permission. 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 an on-site Environmental Manager 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. Project Ecologist, Project Archaeologist and the Design Engineer as required) ensuring all environmental monitoring is carried out.

Table 6—1 Environmental Monitoring Schedule

Aspect	Area of Inspection	Monitoring Required	Note/Checks	Frequency	Responsibility
Surface Water Run-off Controls	Settlement ponds	Visual inspection	• Leaks • Cracks/broken plastic piling • Build up of sediment & peat	Regular/daily/weekly during the construction phase as well as during and after significant rainfall events	Environmental Manager
	Silt filters	Visual inspection	• Missing filters • Blocked filters - build up of sediment & peat		Environmental Manager
	Roadside drains	Visual inspection	• Damage • Silt build-up • Blockages in the pipes conveying the runoff to the settlement pond drains		Environmental Manager
	Cross drains	Visual inspection	• Damage • Silt build-up • Blockages in the pipes		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)	Every 24 hours at a minimum	Project Manager
Water quality monitoring	Discharges from on-site sediment and erosion controls	Visual inspection	• Colour, presents of silts	Daily	Environmental Manager
		Physiochemical analysis	• pH, Suspended Solids,	Weekly	Environmental Manager
Roads	Internal site road	Visual inspection	• Unacceptable level of sediment/silt on the road surface • Presence of waste	Daily	Project Manager

Aspect	Area of Inspection	Monitoring Required	Note/Checks	Frequency	Responsibility
	Site Entrance	Visual inspection	• Unacceptable level of sediment/silt on the road surface • Presence of waste • Surface condition	Daily	Project Manager
Temporary Site Compound Area	Fuel & Oil Storage areas	Visual inspection	• Damage to containers or ancillary equipment • Leakages • Unlocked storage container	Daily	Environmental Manager
	Construction Materials Storage Areas	Visual inspection	• Damage • Untidiness	Daily	Environmental Manager
	Spoil Storage areas	Visual inspection	• Levels/Slippage • Re-vegetation	Daily early/weekly	Environmental Manager
	Waste Collection Areas	Visual inspection	• Damage • Untidiness • Full skips	Daily	Environmental Manager
	Concrete chute washout area	Visual inspection	• Damages • Leakages • Unacceptable level of concrete washings	Daily	Environmental Manager
Operation Control	Dry wheel wash	Visual inspection	• Build up of sediment	Weekly	Project Manager
	Waste water facilities	Visual inspection	• Holding tank requiring emptying	Weekly	Project Manager
	Post and wire boundary fence	Visual inspection	• Signs of movement (i.e. not in a straight line)	Weekly	Project Manager

Aspect	Area of Inspection	Monitoring Required	Note/Checks	Frequency	Responsibility
			• Damaged or fallen sections of fence		
	Concrete pours	Visual inspection	• Run-off / spills	To be scheduled with pours	Project Manager
	Dust generation	Visual Inspection	• Cleanliness of roads and compound area • Dust at stockpiles • Dust from delivery vehicles	Daily	Project Manager
	Emissions	Visual Inspection	• Technical inspection of vehicles for emissions	Monthly	Project Manager
	Tree Protection Areas	Visual Inspection	• Check integrity of fencing • Ensuring no works occur within RPA	Weekly	Project Manager
Specialist Surveys (As required)	Trees	Post-Construction Surveys	Inspection of site to ensure all retained trees have been protected in accordance with the site specific Tree Protection Plan	At least one	Arborist
	Ecology	Pre-Construction Surveys	Invasive Species Survey	At least one	Ecologist
	Archaeology	During Construction	Archaeological Monitoring Monitor ground works & excavations	As Required by Environmental Report	Archaeologist

7 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 must also be specified.

Appendix 1

Environmental Management Plans

EMP-1	Surface Water Management and Run-off Control (Sediment and Erosion Control)
EMP-2	Fuels and Oils Management
EMP-3	Management of Concrete
EMP-4	Construction Waste Management Plan
EMP-5	Construction Traffic Management
EMP-6	Wheel Wash Management Procedure
EMP-7	Construction Dust Management
EMP-8	Construction Noise Management
EMP-9	Archaeological and Heritage Protection
EMP-10	Ecological Management Plan for the Protection of Habitats and Fauna
EMP-11	Emergency Response Plan
EMP-12	Site Environmental Training and Awareness
EMP-13	Monitoring and Auditing
EMP-14	Environmental Accidents, Incidents and Corrective Actions
EMP-15	Environmental Complaints

EMP 1: SURFACE WATER MANAGEMENT AND RUN-OFF CONTROL (SEDIMENT AND EROSION CONTROL)

Purpose

To describe measures for the management of all surface water and run-off on the site, and in particular, sediment and erosion control.

The plan as further outlined in Section 3.4.4 of the CEMP contains the following:

- Erosion controls are required to be implemented to prevent runoff flowing across exposed ground and become polluted by sediments;
- Clean water will be intercepted through use of interceptor drains and diverted away from construction site runoff to avoid cross-contamination of clean water with soiled water
- Sediment control measures such as check dams and Hy-Tex Terrastop silt fences will be installed in drains to slow down runoff allowing suspended sediments to settle in situ particularly on the access road and substation compound;
- Erosion and sediment controls as outlined in Section 3.4.4 of the CEMP will be installed before starting site clearance works;
- Areas of exposed ground will be minimized by maintaining existing vegetation that would otherwise be subject to erosion in the vicinity of the substation infrastructure and keeping excavated areas to a minimum;
- Working near drains during or after prolonged or an intense rainfall event will be avoided and work ceased entirely near drains when it is evident that pollution is occurring;
- Hy-Tex Terrastop silt fences and silt curtains will be installed where there is a risk of erosion runoff from construction related activity particularly if working during prolonged wet weather period or if working during an intense rainfall event;
- The Hy-Tex Terrastop silt fences will have the following design features:
    - The geotextile fabric will be entrenched at least 100mm into the ground with the ends upturned inward towards the works;
    - The fence posts will have a maximum spacing of 2m to prevent sag on the fence;
    - The geotextile fabric will be anchored to the fence posts as opposed to wrapped;
- Sediment control measures that includes for the prevention of runoff from adjacent intact ground will be implemented through the separation of clean and 'dirty' water.
- Silt control measures such as Hy-Tex Terrastop silt-traps, check dams and sedimentation ponds will be installed.
- Public road cleaning through use of a road sweeper will be provided along the Local Road where required during the construction works;
- Controls will be regularly inspected and maintained to ensure a failure, such as a build up of silt or tear in a fence, does not occur which may lead to water pollution. Controls will work well until the vegetation has re-established. Inspection and maintenance will occur after prolonged or intense rainfall.

It is envisioned to retain all excavated soils on-site for use as fill and landscaping materials where suitable. As such it will be necessary to stockpile soil in these areas where there will be minimal construction activities. These deposition areas will not be located within 15m of an open drain. Where excess spoil or

soil material is left over from the landscaping works, this material will be brought to a licensed waste facility for disposal.
Stockpile Control Measures:

- Excavation and stockpiling activities will be minimized during wet weather periods.
- Soil and/or subsoil will be left undisturbed in situ for as long as possible prior to excavation.
- Stockpiles of excavated soil and/or subsoil will be graded so as to shed water.
- Hy-Tex Terrastop silt fences will be constructed at an early stage in the construction programme.
- Interception and channelling of surface water runoff over exposed soil/subsoil surfaces to sumps, silt traps or settlement ponds, will occur prior to discharge to existing drains or outfalls.
- Interception and diversion of surface water runoff away from open excavations will occur.
- Stockpiles of soil/subsoil will be restricted to less than 3m in height.
- Repeated handling of soil will be avoided and ideally all soil stockpiles will remain undisturbed pending later re-use for landscaping.

Monitoring

- The Environmental Manager will regularly monitor the general level of suspended solids at designated sampling points in the rivers/streams downslope of the active construction areas using a turbidity meter.
- The Environmental Manager will regularly inspect the site and check the cross-drain pipes, dirty water drains and outlets, settlement ponds, interceptor drains and silt fences for any damage or blockages. Any damage or blockages will be repaired or cleared promptly.
- As detailed above, weather forecasts will be regularly monitored during the construction phase. The 24 hour advance meteorological forecasting service from Met Éireann will be used.
- Water Monitoring Programme to include monitoring from end points of Sediment and Erosion Control system and visual monitoring of Sediment and Erosion Control measures.

Responsibility

- 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 and remedial action is taken, an investigation must be carried out in conjunction with the Construction Manager, and further samples must be 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.
- The Construction Manager (or a designate) is responsible for ensuring the spill kits are adequately stocked and should inform the Environmental Manager when items have been used.

EMP 2: 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

Construction machinery and vehicles

- The potential for hydrocarbons getting into the existing drains and local watercourses will be mitigated by only refuelling construction machinery and vehicles in designated refuelling areas using a prescribed re-fuelling procedure.
- 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.
- Plant nappies or absorbent mats to be place under refuelling point during all refuelling to absorb drips. Plant nappies to be provided beneath small mobile plant (e.g. small generators, pumps etc).
- Mobile bowsers, tanks and drums should be stored in secure, impermeable storage area, away from drains and open water;
- 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
- Potential leaks from delivery vehicles will be reduced by visually inspecting all delivery vehicles for major leaks. Contractors supplying concrete and crushed stone to the site will be contractually required to supply their products using roadworthy vehicles.
- 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.
- The Environmental Manager will be immediately informed of the oil leak/spill, and will assess the cause and the management of the clean-up of the leak or spill. They will inspect nearby drains for the presence of oil, and initiate the clean-up if necessary.
- 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 the 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.

Oil storage during the construction phase

- The scale of potential impacts on downstream water quality will be reduced by only storing the required volume of oils for the works taking place at the time.
- Fuel containers must be stored within a secondary containment system e.g. bund for static tanks or a drip tray for mobile stores;
- Access to oil stores will be controlled by the storage of oils within a locked steel container within the site compound. The site compound will be surrounded by a palisade fence and locked when there are no site personnel present.
- Collision with oil stores will be prevented by locating oils within a steel container in a designated area of the site compound away from vehicle movements.
- Leakages of oil from oil stores will be prevented by storing these oils in bunded tanks which have a capacity of 110% of the total volume of the stored oil. Ancillary equipment such as hoses and pipes will be contained within the bunded storage container. Taps, nozzles or valves will be fitted with a lock system.
- The volume of leakages will be prevented through monitoring oil storage tanks/drums for leaks and signs of damage. This will be carried out daily by the Environmental Manager.
- Long term storage of waste oils will not be allowed on site. These waste oils will be collected in leak-proof containers and removed from the site for disposal or re-cycling by an approved service provider.

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, must designate personnel to the tasks relating to Fuels and Oil, as outlined below.

_____ is the designated person for _____ area responsible for being present during tanker refilling operations of oil storage tanks.

_____ is the designated person responsible for checking bunds weekly.

_____ is the designated person authorised to pump from the bund only when accumulated rainwater is clear.

Reference

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

EMP 3: 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 run-off is encountered the Environmental Manager will block the outflow from the drains to retain or treat the run-off 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 CO_2 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.
- 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. 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 foundation pours. The location of the chute washdown area will be appropriately located. The system is sealed with no overflow discharge to the drainage system.

Responsibilities

- All concrete pours will be supervised by suitable personnel.
- 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 should carry out an investigation and in conjunction with the Construction Manager, he/she should 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 4: CONSTRUCTION WASTE MANAGEMENT PLAN

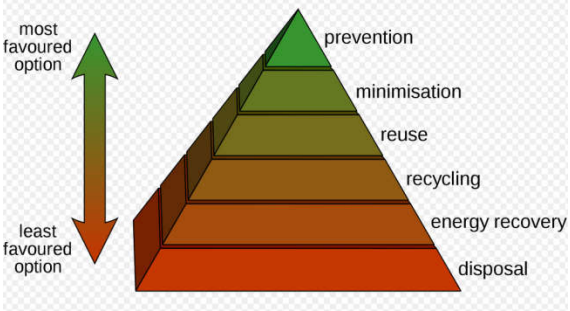
Purpose

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

Procedure

Waste Management Plan

- The Waste Management Hierarchy (illustrated below) will be assessed and applied in the preparation and maintenance of the Construction Phase Waste Management Plan.
- The Construction Phase Waste Management Plan will address the following aspects of the Project:
- Analysis of the waste arising/material surpluses;
- Specific waste management objectives for the project;
- Methods proposed for prevention, reuse and recycling of wastes, and
- Material handling procedures.



Construction

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 on-site 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.

General Waste Management on Site

To manage waste effectively, focus on the following:

- Ordering the correct amount of materials to be delivered when needed.
- Ensuring materials are not delivered to site damaged and unusable
- Reducing the amount of packaging used by suppliers
- Where possible, establish a 'take back' system with suppliers
- Ensuring wastes are handled and stored correctly
- Limiting the amount waste going to landfill by reusing and recycling where possible.

Construction Compound

Construction compound / waste storage area will be created for storage of waste materials, plant, and equipment and for site offices, and welfare facilities.

Wastes Generation

Best practice procedures in general will minimise waste generated on-site. Measures including good site management will be taken to limit the quantity of waste generated during construction phase. Waste such as excavated material on-site will be recycled where possible.

Surplus materials will include materials generated by the excavation/extraction works during construction of tracks, construction compounds and turbine foundations, mainly comprising excavated excess peat and 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.

Minimisation, Reuse, Recycling, and Management of Construction Waste

The primary aim of this Waste Management Plan is to ensure that wastes generated during the course of the project are managed in a systematic manner in accordance with Waste Management Legislation and the principles of the waste Hierarchy, i.e. Prevention, Minimisation, Reuse, Recovery, and Recycling.

Wastes generated during the construction phase will be identified and segregated according to their category as described by the European Waste Catalogue (EWC). In order to affect this designated waste storage areas will be created at the site construction compound, other suitable locations, for storage and segregation of wastes prior to transport for recovery/disposal at suitably licensed/permitted facilities. Suitably sized containers for each waste stream will be provided and will be supervised by the Waste Management Coordinator (WMC). The WMC will be responsible for the management of wastes during the entire project. The numbers and sizing of the containers will be agreed with the Waste Contractors/Hauliers in advance of the commencement of the road improvement works. Source segregation of the wastes generated will result in cost savings, in addition to providing an environmentally sound route for the management of all the Construction and Demolition Waste.

Under Waste Management Regulations 2007 a waste collection permit, for appropriate waste codes and destinations is required by the waste haulier, to transport the waste from one site to another. The contractor will ensure the movement of all wastes are carried out in compliance with relevant waste regulations.

Wastes will only be treated or disposed of at waste facilities to carry out a specific activity (i.e. chemical treatment, landfill, incineration etc.) for the specific waste types. Records of all waste movements and associated documentation will be held on site. It is planned that all waste activities at the site will comprise of;

- source,
- segregation,
- storage, and
- collection

In order to prevent/minimise the generation of wastes, the Contractor will ensure that raw materials are ordered so that the timing of the delivery/quantity delivered, and the storage is not conducive to the creation of unnecessary waste.

The Contractor will continuously seek to improve the waste management process on the site during all stages of the construction phase and maximise opportunities for reuse/recycling where ever they exist. For example in relation to waste packaging, the Contractor will seek to negotiate take back of as much packaging waste as possible at source, to ensure maximum recycling. The Construction Waste Management Plan will be included in the team weekly meetings. In addition the plan will be communicated to the whole construction team regularly on site, including any updates form earlier revisions of the plan.

An overview of the methods to manage the primary waste streams is presented in the following sections;

Soils and Spoil

Any materials excavated on site in the course of the construction works (i.e. soil stripping for internal access road, substation compound and building) will be stored on site and re-used on site where applicable. Any excess spoil material will be transported off site to a suitable licensed waste facility for disposal.

Concrete

Concrete waste may potentially occur. There shall be no washout of trucks at site. Excess concrete will be returned to the supplier for reuse. 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. 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 20m³. This capacity will be sufficient to accommodate the chute wash down for two turbine base pours.

The environmental manager will monitor the pH of the water in the chute wash down bund(s) and can dose with CO_2 or acidic water from the drains until the wash out water achieves neutrality before discharge.

Waste-Water Treatment / Effluent disposal

During the construction time period, the maximum wastewater production is estimated to be the same as the maximum water consumption (2,250 litres per day). The project will include an enclosed wastewater management system at the temporary compound capable of handling the demand during the construction phase when as many as 75 people will be working on site. A holding tank is proposed for wastewater management.

During the construction phase, staff facilities will be provided at the site compound/other suitable locations. A cabin comprising a canteen, washroom and toilets will be provided. This cabin will contain three integrated holding tanks; one for clean water, one for waste water and the third for sewage. The waste water tank and sewage tank will be emptied as required by a vacuum tanker and removed from site to a licensed facility. These staff facilities will be removed at the end of the construction phase.

Hazardous and Other Waste

The following Table lists some of the waste types that may be generated during the construction works. Although some waste types may be generated in locations other than the construction compounds (for example if absorbent filters are required at foundation/track locations etc., such waste materials will be

stored within the construction compounds only. Waste materials generated out with the construction compounds will be taken to the compounds on a daily basis.

Common Construction Wastes					
Concrete	Wood	Cables	Ducting	Metallic packaging/tins	Cardboard Packaging
Paper packaging	Plastic packaging	Wooden packaging	Office paper	Non hazardous detergent	Plastic containers
Plastic bottles	Mixed waste	Septic tank sludge	Ferrous metal	Non hazardous waste electrical(s)	
Hazardous Waste, as categorised by the European Waste Catalogue					
13 01 10: Used mineral hydraulic oil (non-chlorinated)			13 02 08: Other waste engine, gear or lube oil		
13 02 05: Waste engine, gear or lube oil (non-chlorinated)			13 02 08: Other waste engine, gear or lube oil		
16 01 07: Oil filters			20 01 23: Discarded equipment containing CFCs		
16 06 01: Lead batteries			16 07 08: Oily waste from transport and storage tanks		
16 10 01: Hazardous liquid wastes to be treated off-site			20 01 21: Fluorescent tubes and other mercury-containing waste		
20 01 33: Hazardous batteries and accumulators that are collected separately			15 02 02: Absorbents, filter materials, wiping cloths, clothing contaminated by dangerous substances		

If hazardous waste is encountered, then appropriate handling, storage, transportation, and disposal will be carried out. Prior to being removed from the site, the waste will undergo a comprehensive waste assessment and classification by suitably trained/qualified person(s), in accordance with the European Waste Catalogue hazardous waste list. If non hazardous waste becomes contaminated with hazardous waste, the entire load will be considered hazardous. At the site every effort will be made to segregate waste, and properly segregate hazardous waste from non hazardous and inert waste arising. Hazard wastes will be identified, removed and kept separate from other wastes in order to avoid cross contamination. Specific method statement detailing the necessary mitigation measures during the excavation/handling, transportation, and disposal of hazardous materials encountered at the site will be prepared as required.

Oils, paints, adhesives and chemicals will be kept in a separate contained secured storage area. Lids will be kept on containers to avoid spillage/evaporation. Waste oils, adhesives etc will be handled, and disposed of appropriately. Every effort will be made at the site for no long term storage of hazardous materials/fuels/oils/chemicals, etc. There shall be no long term storage of waste oils etc. at the site.

<u>Gravel/Stone/Asphalt/ Bituminous Materials</u>

There will be no requirement for the storage of Asphalt/bitumen materials on site. Road surface materials will be delivered to site as required, with excess returned to supplier.

<u>Metals</u>

It is now common practice to segregate metals for reuse and recycling, however there are still sites where waste metal is thrown away in the general rubbish. One of primary sources of metal on sites is rebar. Waste of rebar will be reduced by ordering 'made to measure' from the source and detailed scheduling of all reinforced concrete structural elements.

Timber

Timber waste will be stored separately. Any pallets will be returned to the supplier for reuse. Off-cuts/trimmings will be used in formwork where at all possible. A container for waste wood, covered where possible will be located at compound/other storage areas. This waste will be collected by the waste contractor and will forward it for wood recycling.

- A 40 cubic metre open skip will be put in place to collect at the temporary site construction compound.
- Special care will be taken to segregate the timber into treated and untreated fractions.
- The following timber materials are considered as waste by timber recyclers - plywood, painted timber and pressure treated timber. This waste timber fraction will be disposed of to mixed waste skip.
- This material will be collected by the contracted and licensed non-hazardous waste collectors and brought to a licensed waste recycling facility.

Blocks, Bricks, and Tiles

The careful storage of these materials will significantly reduce the volumes of wastes occurring at the site. Every effort will be made to use broken blocks/off-cuts. Final quantities of these wastes generated will be stockpiled (possibly crushed/screened), and reused at the site as sub base materials for road/other suitable hardstanding locations.

Packaging/Plastic

Double handling will be avoided by segregating packaging wastes immediately after un-wrapping. Waste packaging will be segregated and in separate containers, at storage area for collection by the waste contractor for disposal to licensed facility.

Mixed Waste

- This waste stream will arise from waste packaging of electrical and engineering components.
- A 40 cubic metre open skip will be put in place to collect mixed waste within a designated waste area at the temporary site construction compound.
- This skip will accept plastic packaging, plastic piping, cardboard and timber waste.
- Special care will be taken to ensure that no green waste or food waste will be disposed of in this skip. The purpose of this arrangement is to stop birds scattering food items across the site and therefore prevent vermin infestation.
- This material will be collected by contracted and licensed non-hazardous waste collectors.

Mixed Waste/Canteen Waste

Staff canteens have the potential to generate food waste and packaging waste. Designated receptacles will be provided at the canteen(s) to allow for segregation, and storage of individual waste streams. These will include receptacles for food waste, dry recyclables, and residual bin. All offices and canteens will be equipped with black plastic refuse bags and wheelie bins for the purpose of collecting and delivering this

waste stream to the compactor. This material will be collected by the contracted waste management company/transported to licensed facility.

Dry recyclable collection from welfare facilities

- All offices and canteens will be equipped with clear plastic bags and wheelie bins for the purpose of collecting dry recyclables. This will be strictly managed to prevent any food waste entering the dry recyclable stream.
- Recycling wheelie bins will be located at all welfare facilities and offices associated with the project.
- This material will be collected by the contracted and licensed non-hazardous waste collectors.

Other waste

Other wastes which may be generated may include residual non recyclable waste such as paper, cloth, some cardboards, or plastics. Others may include fibreglass and geotextiles, and polystyrene. These types of materials will be stored in a dedicated container at the site compound. All residual wastes will be dispatched to suitably licensed facility for disposal. Other construction and demolition waste will be collected and disposed of appropriately.

Management of General Waste

- 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 compounds; 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 Phase General Waste

- 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 job. At the end of the job, 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 by Higgins waste.
- All waste steel reinforcing will be stockpiled and at the end of each work unit, it will be collected for recycling by 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, this material will be recycled.

- Wastewater from office and welfare facilities. These facilities will be regularly emptied by licensed/suitable contractors.

Assignment of Responsibilities

A Waste Management Coordinator (WMC) will be assigned at the substation site, to have an overall responsibility for the management of waste that may be generated at the site. As part of the record keeping procedures, the WMC will keep records of all waste being removed from site. This information will be recorded in a standard format. The effectiveness and accuracy of the documentation will be monitored on a regular basis. The Waste Management Plan will be updated on a regular basis where required and made available as required (i.e. sub contractors). The WMC will be appropriately trained/suitably qualified in all aspects of materials wastes management, and the site personnel will be in a position to;

- Distinguish reusable materials from materials suitable for recycling
- Ensure maximum segregation at source
- Cooperate with Site Management, on locations for stockpiling reusable materials
- Separate materials for recovery
- Identify and liaise with operators for recovery outlets

The WMC will be responsible for educating site personnel, sub contractors, and suppliers, about the best alternatives to conventional waste disposal/Waste Management Regime at the 110kV GIS Substation and MV Control Building site. Training will also be given to site personnel in materials management on site. The WMC will continually identify waste minimisation actions on site and these will be updated in the plan.

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.

Waste Management Plan Summary

Wastes will inevitably be generated during the construction phase of the project. A certain amount of surplus soils/materials will be generated. These materials will be reused as backfill/landscaping around the substation or brought to a licensed waste facility.

Other than spoils from excavations, waste arising during the construction phase will be minimised by site management, by timing the ordering of materials required at the site, in a manner which reduces the likelihood of over ordering, or damaging during storage. Furthermore several of the traditional waste

streams arising maybe used at the site where appropriate. Waste will be segregated and stored on site at designated locations/in containers prior to transport to appropriate licensed facilities.

A Waste Management Coordinator will be appointed to ensure the Waste Management Plan is followed. Training will be given to all site personnel, so that they are aware of the Waste Management Regime at the site, and know their responsibilities.

Records will be kept to trace the inputs and outputs of the construction works at the site. These records will be made available to relevant authorities, should it be required.

The design and implementation of the Waste Management Plan will provide for the optimum planning/management and handling of wastes generated during the construction phase of the 110kV GIS Substation and MV Control Building. An estimate has been prepared by the contractor of the likely volumes of waste that will be generated during the construction phase. This is indicated on Table W1 below. The mixed municipal waste content will be managed by the management contractor, and is estimated at 20m³. Any waste material, inert material, concrete, asphalt will be removed by a company with suitable waste permits.

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 5: CONSTRUCTION TRAFFIC MANAGEMENT

Purpose:-

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

Scope:-

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

Procedure:

General

The Contractor will prepare a detailed Traffic Management Plan prior to the works commencing. This Plan will be finalised in agreement with Wicklow County Council.

The plan will include provision for:

- Communicating with the community, An Garda Síochána and Wicklow County Council.
- Details of site access and any site traffic rules, including security, parking, loading and unloading, required speed or other relevant details.
- Programme of maintenance and upkeep of public roads.
- Site operating hours (including delivery) to be outlined.

Public Roads

- In order to mitigate from a significant impact during peak traffic hours, the majority of staff will either arrive on-site before or after the peak morning traffic and finish work before or after the evening peak traffic hours.
- The condition of the public roads will be monitored on an on-going basis and a road sweeper provided to clean the public roads if required.

Site Entrance

- There will be no parking of any vehicles on the public road near the site entrance.
- Adequate parking will be provided on site for both employees and visitors.
- The condition of the site entrance will be monitored on an on-going basis and a road sweeper provided to clean the public road if required.

Responsibility

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

EMP 6: WHEEL WASH MANAGEMENT PROCEDURE

Purpose:
To describe Measures for the protection of Watercourses and the Public Roads from dirty water from vehicles.

Responsibility:-
Construction Project Manager

Procedure:-
The Contractor will reduce the potential for the roads being dirtied by heavy vehicle traffic, by including a wet Wheel Wash facility at the Site Entrance.

The wheel wash station will remain on site until the development is complete. The wheel cleaning procedure will consist of:

1) Before leaving the site, vehicles will enter the wheel wash and be inspected for any heavy deposits left on wheels. If present, these will be removed manually.
2) Following inspection, all wheels are to be cleaned down with the washing system, until clear of all deposits.
3) Vehicles will be permitted to leave site following approval of the operating manager/ site representative that the above steps have been completed to a satisfactory standard.

Daily inspections of the wheel wash will be completed to check it is operating as described above, and to make sure there is no excess material collected posing risk during periods of rain. The washout area will be cleaned as required, with excess material disposed of appropriately.

On site roads/local roads will be kept as free of mud as is practicable during ground working operations. Machine trafficking around the site will be kept to a minimum in order to reduce the effects of rain on 'broken' ground.

If wheel wash facility is not sufficient, a road sweeper will also be used in the immediate area which will be ordered directly via the site manager.

Responsibility
The Construction Manager/Environmental Manager will monitor the Wheel Wash Area/Sediment Controls, and carry out corrective action where required.

EMP 7: 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.

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

- Site road and compounds will be regularly cleaned and maintained as appropriate.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface.
- Furthermore, any road 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 hard surfaced roads as site management dictates.
- Public roads in the vicinity of the site will be regularly inspected for cleanliness, and cleaned as necessary.
- A temporary vehicle wheel wash facility will be installed in proximity to the site entrance.
- Loads of materials leaving each 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.

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 Wicklow 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 8: CONSTRUCTION NOISE MANAGEMENT

Purpose

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

Procedure

Control of Noise at Source

- Only sound plant/equipment will be permitted on site.
- No unnecessary revving of machinery on site.
- Plant will be properly used 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.

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

EMP 9: ARCHAEOLOGICAL AND HERITAGE PROTECTION

Purpose

To describe measures for the management and protection of archaeological and cultural heritage on the site

Procedure

- During the course of development, all excavations will be monitored by a suitably qualified archaeologist, under licence to the National Monuments Service at the Department of Culture, Heritage and the Gaeltacht.
- In the event of archaeological material being uncovered consultation will take place with the National Monuments Service and the National Museum of Ireland to decide on an appropriate course of action.

Responsibility

Project Manager
Environmental Manager
Construction Manager
Project Archaeologist

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

Procedure

- ensuring implementation of ecological protection measures outlined below
- advising on re-vegetation onsite
- monitoring of success of re-vegetation

Ecological Protection Measures

General Habitats

- Habitat degradation will be limited by controlling the movement of construction vehicles and machinery. Construction vehicles and machinery will not encroach onto habitats beyond the proposed development footprint and will be required to travel via the constructed roads when moving between works areas. To emphasise this requirement, the boundaries of the footprint of the development will be fenced off with post and wire. The Environmental Manager will also monitor vehicle movements.
- In accordance with Section 40 of the Wildlife (Amendment) Act all vegetation clearance within the footprint of the site took place outside of the birds nesting season (1st March to 31st August).

Monitoring

- The following pre-construction surveys will be undertaken:
- Management of the Root Protection Area (RPA) around the existing trees on the site as set out in Section 3.4.2 of the CEMP.
- Routine inspections and maintenance of sediment and erosion control measures will take place regularly during the construction phase and during the operational life of the project. Silt traps and settlement ponds will be cleaned on a regular basis to ensure their effectiveness.
- In the unlikely event that protected faunal species are found actively using the Site for breeding/roosting during the construction phase, works will cease immediately, and the area will be cordoned off until advice is sought from a suitable qualified expert / NPWS.

Responsibility

Environmental Manager
Construction Manager
Project Ecologist
Project Arborist

EMP 11: 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 Wicklow 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 should 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 roadside 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 should 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 Wicklow 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 roadside 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 Roadside 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
- Wicklow 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, Wicklow County Council and any other relevant authority.

EMP 12: SITE ENVIRONMENTAL TRAINING AND AWARENESS

Purpose

To describe measures for the training of all site personnel in the protection of the environment and the relevant controls.

Scope

All site personnel and construction teams which may influence environmental impacts.

Procedure

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
- Environmental buffers and exclusion zones
- Housekeeping of materials and waste storage areas
- Environmental Emergency Response Plan

Housekeeping and Storage of hazardous materials

- Hazardous materials marked with the following symbols will only be stored in a secure storage container in the temporary site construction compounds.

- Subcontractors will provide a copy of the Material Safety Data Sheets for all hazardous substances brought on site.

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 13: 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 will be carried to ensure adherence with the following;

EMP-1	Surface Water Management and Run-off Control (Sediment and Erosion Control)
EMP-2	Fuels and Oils Management
EMP-3	Management of Concrete
EMP-4	Construction Waste Management Plan
EMP-5	Construction Traffic Management
EMP-6	Wheel Wash Management Procedure
EMP-7	Construction Dust Management
EMP-8	Construction Noise Management
EMP-9	Archaeological & Heritage Protection
EMP-10	Ecological Management Plan Protection of Habitats and Fauna

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 run-off control measures of the 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 14: 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 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 15 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. It is recommended that immediate action is 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

Responsibility

Project Manager
Environmental Manager
Construction Manager