



CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN



Laois Kilkenny electricity Reinforcement Project – Unit 1: A new 400kV/110kV Substation at Coolnabacka townland,
Co. Laois.

Main Works Job No 286.

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Appendix Number	Description
1	Site Logistics Plan / Compound Layout
2	Overall Site Drainage Plan (under review updated version to be submitted)
3	Kilwex Organogram
4	Traffic Signage Plan
5	Emergency Response Plan (Under Review – Document to follow)
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1 INTRODUCTION

The Works comprises of the civil engineering and building works for Coolnabacky 400 kV/110kV Substation, this is a Gas Insulated Switchgear (GIS) Substations at Coolnabacky in Co. Laois.

The civil engineering and building works are as described in the tender documents including but not limited to:

- Construction of substation compound roadway.
- Site clearance, earthworks, and site levelling
- Drainage - Compound
- Water supply from drilled well
- Construction of the new 110 kV GIS building and 400 kV GIS building
- Supply, erection & commissioning of gantry crane in both buildings
- M & E services installation
- Building finishing works
- Pair of transformer bunds, foundations and fire walls and various equipment foundations
- Construction of substation compound
- Site and compound fencing & gates
- Trenching, ducting for HV cables, control cables and other services
- Landscaping
- Temporary site compound, including accommodation for the Engineer & Employer
- General site works and services.

The works are to be carried out in two phases as detailed below:

Phase 1

1. Site build-up for entire compound.
2. 110 kV building.
3. Compound fence to the East, West and Southern Boundaries.
4. Compound roads on three sides of 110 kV building.
5. Earth grid to entire compound incl. 1m outside palisade fence.
6. HV Cable ducting: 3 no. cable routes from southeast side of 110 kV building to masts outside compound –PE493-D108-053-001-001.
7. HV Cable ducting from gable ends of 110 kV building to northwest side of transformer access road – PE493-D108-053-001-001.
8. Control cable ducts (surface ducts) to northwest side of transformer access road.
9. Primary, secondary and final settling ponds at both north and south storm water outfall locations.
10. Both temporary settlement ponds.
11. Both berms including drainage associated with berm.
12. Storm drainage around 110 kV building.
13. Foul holding tank.

Phase 2

1. 400 kV building.
2. All works associated with transformer bays incl. external bases.
3. Remaining compound roads.
4. Remaining HV cable ducting.
5. Remaining control cable ducts (surface ducts).
6. Remaining storm drainage.

7. Remaining compound fence (North-West boundary)
8. Landscaping.
9. Site perimeter post and rail fence
10. Gantry foundations and bases to northwest of 400 kV building.
11. Repair of phase 1 earth grid as required.
12. Well drilling (if required)

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 preparation of a CEMP complies with ESB’s Minimum Environmental Requirements document, submitted as part of the tender package for this project and complies with Condition 11 of planning permission VA0015.

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.

Table 1: Relevant Legislation

Title of Legislation	Regulation Relevance to Project
1996 Waste Management Act	All matters relating to waste management, licensing, permitting etc.
200/60/EC Water Framework Directive and Water Services Acts (2007-2012)	Protection and improvement of water quality in all waters to achieve good ecological status.
2006 Waste Framework Directive 2006 and Waste Management Acts (1996 – 2011)	All matters relating to waste management, licensing, permitting etc.
2011 European Communities (Birds and Natural Habitats) Regulations (as amended, 2015)	Protection of birds and habitats in member states and in Natura 2000 sites in particular.
Air Pollution Acts (1987 and 2011)	Protection of air quality
Environmental Protection Agency Act (1992)	Umbrella Act for protection of the Environment in Ireland
Environmental (Misc. Provisions) Act (2011)	Provisions under the EPA Act
EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations (2000-2006)	Regulation of hazardous substances
EC (Environmental Liability) Regulations (2008-2011) (Environmental Liability Regulations)	Regulations on the liability of environmental issues
Wildlife Acts 1976-2012 as amended	Protection of wildlife
EU Regulation No. 1143/2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species	Regulations to manage and reduce spread of invasive species.
Flora (Protection) Order 2022	To protect plants on site
Local Government (Water Pollution Acts (1977-1990)	Prevention of Water Pollution and discharge to sewer consents
National Monuments Act, 1930 as amended in 1954, 1987, 1994, 2004 and 2012 (S.I. 249 of 2012)	Protection of the Archaeological features

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. A CMS Environmental management document was prepared and issued by ESB, this document outlines ESB Networks' requirements relating to proper environmental management and adherence with all associated legislative requirements, all requirements within this document will be adhered to throughout the course of the works.

An Environmental Impact Statement (EIS) and a Natura Impact Statement (NIS) were prepared for this project at planning stage and all mitigation measures within these documents will be adhered to where they are only applicable to the 110kV / 400kV GIS Substation works at Coolnabacky.

The following documentation and drawings should be read in conjunction with this CEMP:

- Document No. PE 687-F261-R261-022-003: Planning Report.
- Document No. 05 – 619 – 002 – 01: Resource waste management plan.
- Document No. QD-357597-01-S460-001-000: ESB EMP Employers Minimum Environmental Requirements for Construction & Demolition Projects and Related Works & Activities, doc no: EMS 08_04_01_000)
- Document No. 05 – 619 – 002 – 01: Construction and Environmental Management Plan.
- Document No. DOC – 231117 – CYL: Company Standard CMS 12 Environmental Management.
- Document No. 05 – 619 – 003 – 01: Appendix G Construction Traffic Management Plan.
- Document No. 286-ESB-CEMP_01_APP: Appendices to CEMP
- Document No. 286-ESB-ERP_01: Emergency Response Plan
- Document No. 286-ESB-RWMP_01: Resource Waste Management Plan

2 PROJECT OVERVIEW

The substation will be constructed in a 6.7-hectare field in the townland of Coolnabacky near the village of Timahoe, Co. Laois.



Figure 1: Aerial image of site location

The substation development will consist of 2 no. steel framed buildings within a 117m x 98m plan area secured by a 2.6m high palisade fence. One of the buildings will house the 400kV switchgear (electrical equipment) while the other building will house the 110kV switchgear (electrical equipment). A 400kV gantry and associated line equipment will be required to divert the 400kV overhead lines into the 400kV GIS building. The support gantry will be located outdoors behind the 400kV building. The installation also includes 2 no. 400/110kV, 500MVA transformers. These will be positioned in banded enclosures between the two steel-framed buildings (plan area 25m x 10m each). Both will be surrounded on three sides by fire walls approximately 10m high.

The 400kV indoor station (building dimensions 64m x 15.3m x 12m) will be equipped with 8 bays (2 no. lines (Moneypoint & Dunstown), 2 no. transformers, 4 spare bays)

The 110kV indoor station (building dimensions 50m x 11.5m x 12m) will also be equipped with 8 bays (3 no. lines (Athy, Portlaoise, Ballyragget), 2 no. transformers and 3 spare bays).

Any excavated material will be reused on site to form berms. The berms will be approximately 8500m³ over a plan area of 5,000m².

Eight separate sedimentation/attenuation ponds (average area 110m²) will be constructed on site at the beginning of the construction phase. One group of 4 will be located northwest of the substation and 4 located to the east of the compound. Two of these ponds will be used temporarily to treat the runoff from the berm, with the remaining 6 used to treat surface water being discharged from the compound prior to entry into water courses.

The access to the station will be via a modification to the existing road (that currently serves a farmstead with a dwelling house) in the townlands of Esker and Coolnabacky. The access road will be approximately 1.2km from the R426 (public road) to the substation compound gates. Modification to the existing road will include:

- Moving the junction (at the public road) south by 25m with 160m of new access road to be created to accommodate this new junction.

2.1 SITE DETAILS

The new Coolnabacky substation compound is adjacent to a local laneway and is approximately 1.2 kilometres from the R426 Portlaoise – Timahoe regional public road. The existing access from the R426 to the site area is located southwards of the Money Cross junction.

A greenfield low-lying site, its main surface water drainage feature in the area is the Timahoe River which flows 500m east of the site, which later becomes the Bauteoge River. The un-named stream that borders the site to the north eventually joins the Timahoe River. The majority of the surface water courses in the area are canalised or modified and there is extensive drainage in the low-lying area. There are field drains on the western, eastern, and southern borders of the Sub-station site.

2.1.1 Planning Conditions

This Construction and Environmental Management Plan (CEMP) has been prepared in accordance with Condition 11 and with consideration to the below conditions of the grant of permission dated 23rd April 2014 for the Laois - Kilkenny Reinforcement Project (Reference 11.VA0015).

Condition No. 2 states that:

(a) The mitigation measures identified in the environmental impact statement, Natura impact statement, and associated documentation on file, shall be implemented in full, except as may be required to comply with the following conditions.

(b) The construction of the proposed development shall be supervised by suitably qualified and experienced environmental personnel, to ensure that all environmental mitigation and monitoring measures are implemented in full.

Reason: In the interests of clarity and of environmental protection.

Condition No. 3 states that:

Prior to commencement of development, and following consultation with the National Parks and Wildlife Service, the following shall be submitted to and agreed in writing with the relevant planning authority:

(i) installation details for bird flight diverters,

(ii) details of pre-construction surveys for badgers, otters and bats,

(iii) in the event of these surveys identifying these species, measures for their protection shall be identified and incorporated into the construction management plan, and

(iv) reporting procedures for the above.

Reason: In the interest of safeguarding protected species and bird life.

Condition No. 4 states that:

Works in the vicinity of rivers and streams shall comply with the "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites" issued by the Eastern Regional Fisheries Board.

Reason: In the interest of protecting aquatic ecology.

Condition No. 5 states that:

Water supply and drainage arrangements, including the disposal of surface water, shall comply with the requirements of the planning authority for such works.

Reason: To ensure adequate servicing of the development, and to prevent pollution.

Condition No. 6 states that:

The proposed wastewater treatment and disposal systems to serve the two substations shall be designed, constructed and maintained in accordance with the requirements of the "Code of Practice - Wastewater Treatment and Disposal Systems Serving Single Houses", issued by the Environmental Protection Agency (2021), and in accordance with the details set out in the documentation submitted by the undertaker on file and at the oral hearing. Construction stage details of the measures for the collection and final disposal of wastewater shall be submitted to and agreed in writing with the relevant planning authority, prior to the commencement of development at each substation site.

Reason: In the interests of public health and the prevention of pollution.

Condition No. 7 states that:

The two substation sites shall be landscaped using only indigenous deciduous tree and hedging species. The proposed landscaping at the Ballyragget substation shall be supplemented by the dense planting of indigenous tree and hedging species along the entire northern boundary of the site.

Reason: In order to screen the development and assimilate it into the surrounding rural landscape and in the interest of the visual amenity of the neighbouring cemetery.

Condition No. 8 states that:

All road surfaces, culverts, watercourses, verges and public lands shall be protected during construction, and in the event of any damage occurring, shall be reinstated to the satisfaction of the relevant planning authority.

Reason: To ensure a satisfactory standard of development.

Condition No. 9 states that:

Prior to commencement of development, and following consultation with the Department of Arts, Heritage and the Gaeltacht, a methodology shall be submitted to and agreed in writing with the relevant planning authority for the replacement of existing polesets that are situated in close proximity to existing archaeological features.

Reason: In the interest of the protection of archaeological features.

Condition No. 10 states that:

The undertaker shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard, the undertaker shall: -

(a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development,

(b) employ a suitably-qualified archaeologist prior to commencement of development. The archaeologist shall assess the site and monitor all site development works. The assessment shall address the following issues: -

(i) the nature and location of archaeological material on the site, and

(ii) the impact of the proposed development on such archaeological material, and

(c) particular care shall be taken in replacing polesets close to archaeological features.

A report, containing the results of the assessment, shall be submitted to the planning authority and, arising from this assessment, the undertaker shall agree in writing with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works. In default of agreement on any of these requirements, the matter shall be referred to An Board Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the area and to secure the preservation (in-situ or by record) and protection of any archaeological remains that may exist within the site.

Condition No. 11 states that:

The construction of the development shall be managed in accordance with a Construction Management Plan, which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. This plan shall provide details of intended construction practice for the development, including:

- (a) location of any site and materials compound(s) including area(s) identified for the storage of construction refuse;
- (b) location of areas for any construction site offices and staff facilities;
- (c) details of site security fencing and hoardings;
- (d) details of on-site car parking facilities for site workers during the course of construction;
- (e) details of the timing and routing of construction traffic and any required directional signage, to include proposals to facilitate the delivery of abnormal loads to the site;
- (f) measures to obviate queuing of construction traffic on the adjoining road network;
- (g) measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;
- (h) alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works;
- (i) provision of parking for existing properties during the construction period;
- (j) details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;
- (k) containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater;
- (l) off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil;
- (m) means to ensure that surface water run-off is controlled such that no silt or other pollutants enter watercourses;
- (n) hours of site development and construction; and
- (o) provision for the prevention of the invasive spread of plant species.

A record of daily checks that the works are being undertaken in accordance with the Construction Management Plan shall be kept for inspection by the planning authority.

Reason: In the interests of amenities, public health and safety.

The table below presents the details of condition number 11 of the planning permission and outlines how these items will be addressed. Greater detail is also provided throughout this document.

Table 2: Compliance with Condition 11

Description	Refer to CEMP or Environmental Management Procedures (EMP)
(a) location of any site and materials compound(s) including area(s) identified for the storage of construction refuse;	All material and waste holding areas will be stored well away from water courses - see site logistics plan in Appendix 2
(b) location of areas for any construction site offices and staff facilities;	See Site Logistics Plan in Appendix 1 for proposed site set up
(c) details of site security fencing and hoardings;	See Site Logistics Plan in Appendix 1 for proposed site fencing. Note: Kilwex will also have a 24/7 remote intruder monitoring system in place to prevent unauthorised access.
(d) details of on-site car parking facilities for site workers during the course of construction;	Dedicated parking will be provided adjacent to site office and welfare compound. There will be a “reverse in” policy for all parking - see Site Logistics Plan in Appendix 1.
(e) details of the timing and routing of construction traffic and any required directional signage, to include proposals to facilitate the delivery of abnormal loads to the site;	Refer to Traffic Signage Plan in Appendix 4. This outlines all signage that will be implemented for the duration of the project. Kilwex do not envisage the requirement for any abnormal loads or vehicle movements for the duration of their works.
(f) measures to obviate queuing of construction traffic on the adjoining road network;	Kilwex do not envisage any adverse impact on adjoining roads due to queuing construction traffic. All excavated material is to be maintained on site and this will mean there are no large vehicle movements for any concentrated period of time. For all other deliveries Kilwex will mainly operate a “just in time” delivery process. This, together with site planning, sequencing of works and coordination will mean there are no large volume of delivery vehicles arriving to site at any one time. In the event of large local events resulting in increased localised traffic, Kilwex can alter delivery plans and sequencing of works to reduce impact on local traffic routes. It is also worth noting that there is over 1km of private access route to site from the public road, which also alleviates any risk to impact on adjoining road networks.
(g) measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network;	CEMP Chapter 3. Construction Works and EMP - 4 Construction Dust Management All excavated spoil will remain on site for future reuse therefore the risk of materials falling from vehicles leaving site is alleviated. All waste skips shall be covered appropriately prior to leaving site.
(h) alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site	There will be no requirement to close any roads for the duration of Kilwex’s works.

Description	Refer to CEMP or Environmental Management Procedures (EMP)
development works;	
(i) provision of parking for existing properties during the construction period;	The nature of this project and its site location means there are no such requirements.
(j) details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;	CEMP Table 9 - Environmental Monitoring Programme
(k) containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater;	EMP 2 - Construction Waste & Resource Procedure Site logistics plan – self bunded fuel tanks. Kilwex will have a dedicated refuelling area a safe distance from any water courses – see Site Logistics Plan in Appendix 1. All fuel storage tanks shall be 110% bunded and fully compliant with all environmental regulations. Similarly, a bunded and covered COSHH (Chemical) store will be provided for the duration of the works.
(l) off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil;	There are no demolitions works in this Project. All excavated spoil is to remain on site and stored in berms – see Site Drainage Plan in Appendix 2 (Under review). Any other wastes will be segregated, stored accordingly and collected by a licenced waste contractor. Waste transfer licences will be available for inspection.
(m) means to ensure that surface water run-off is controlled such that no silt or other pollutants enter watercourses;	Measures such as temporary settlement ponds, silt fencing, etc. shall be implemented on site – refer to Site Drainage Plan in Appendix 2 (Under review).
(n) hours of site development and construction; and	Normal site working hours will be: 7am to 7pm Monday to Friday 7am to 1pm Saturday Due to the nature of the works, it may be necessary for Kilwex to work outside the aforementioned working hours. This will only occur in exceptional circumstances such as large concrete pours, deliveries of transformers, etc. In the event that Kilwex have to work outside of the normal working hours, Laois County Council and local homeowners will be informed accordingly.
(o) provision for the prevention of the invasive spread of plant species.	EMP - 8 Invasive Species Management Procedure. All construction plant and machinery will be cleaned and inspected before first entry to site. All personnel will be made aware of their responsibilities by way of site induction and toolbox talks if required.
A record of daily checks that the works are being undertaken in accordance with the Construction Management Plan shall be kept for inspection by the planning authority.	All checks and inspections will be carried out in accordance with CEMP CHSP, etc. and records of same will be maintained on site. All records will be available for inspection as required.

3 CONSTRUCTION WORKS

3.1 WORKING HOURS

The following table details permitted working hours during the construction phase.

Table 3: Construction Working Hours

Days	Working hours
Mon – Fri (incl.)	7am – 7pm
Saturday	7am – 1pm

In exceptional circumstances work may be required outside of these hours. Additional working hours may be required according to programme demands.

3.2 CONSTRUCTION PERSONNEL

It is envisaged that the development will have approximately 70 no. staff members during the peak construction phase to include site contractor(s), engineers, materials delivery personnel, environmental personnel, health and safety personnel.

3.3 CONSTRUCTION METHODOLOGY

3.3.1 Site Preparation and Pre-construction Activities

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

3.3.1.1 Enabling Works

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

A site exclusion zone will be put in place to protect the springs that support the more concentrated sections of tufa in this location. This area will be cordoned off with no construction activities permitted to take place. Please refer to Appendix 2 Site Drainage Plan (Under review).

3.3.2 Protection of Surface Water and Groundwater

Evidence of Tufa formations within the western and norther boundaries of the site had been recorded during site investigation works. There is a shallow perched aquifer below the site, which is hydrologically isolated from the underlying bedrock aquifer, and this forms the source waters for Tufa formation on the site.

The site is located over a regionally important bedrock aquifer with sandy and gravelly clay and silt with slightly gravelly clay. Therefore, prevention of negative impacts on the groundwater and surface water resources are essential to maintain the water quality of the water features adjoining and beneath the site.

During enabling works, construction works and throughout operation of the development it is imperative that the watercourses and groundwater be protected from any deleterious matter being discharged to them.

The following recommendations were made in a report dated March 2022 by IE Consulting titled *Assessment of Tufa Springs at the Coolnabacky Sub-station site, Timahoe*;

- Suitable measures should be employed to reduce surface water run-off from the site to prevent dilution of the streams upstream of the identified Tufa sites.
- There should be no outfalls of surface water from the site into the drains west and north (as far as the point where the tufa stream joins the main stream 40m from the corner of the field). The outfalls will be to the main stream at the point, indicated by SW03 and SW05 on the Site Drainage Plan (Under review).
- Groundwater monitoring will continue on site to ensure there is no excessive nutrient loading, this will also be carried out on the proposed water supply well every quarter by IE Consulting. Please refer to BH 1-5 on the Drainage Plan (Under review). Please refer to Environmental Monitoring Programme Table 9
- Surface water samples will be taken from each of the side streams and from the main stream and analysed for the same parameters as groundwater samples. Coyle Environmental Ltd, will undertake surface water sampling. Please refer to Environmental Monitoring Programme Table 9

The following recommendations were made in a report dated December 2022 by Denyer Ecology titled Coolnabacky petrifying spring survey 2022;

- Petrifying springs are highly sensitive to changes in water chemistry and water flow. Any works in the vicinity of the streams must protect the streams from run-off to prevent sediment entering the streams. Surface water should not be discharged in locations where it could dilute the water in the tufa forming sections of the streams, as this would change the water chemistry and could affect tufa formation.
- Stream 2, which runs along the inside of the northern boundary of the site, is becoming overgrown with tall vegetation. This is shading the stream and reducing species richness in the tufa forming sections. Clearance of scrub from the ditch edge on the south-west side (Figure 4,1) would reduce the shading. This should only be undertaken with input and supervision from the project ecologist, to ensure that there are no negative impacts on fauna using this area of the site. Once agreed, an ongoing maintenance plan can be created.
- In addition to localised scrub clearance, annual mowing of the grassland in this area (Figure 4.1) would prevent the re-development of long vegetation and scrub. This could be an annual cut of the grassland around mid-August, with the cuttings removed. This would also enhance species diversity in the grassland. Not all of the grassland needs to be cut each year and retaining some areas of long grass would provide refuge for overwintering insects and other fauna. Again, this should only be undertaken with input and supervision from the project ecologist. Once agreed, an ongoing maintenance plan can be created.
- The petrifying springs should be re-surveyed in 2023 to ensure there are no negative impacts from any works on the survey site and to provide further habitat management recommendations as required

The above recommendations have been included with a system of control measure to prevent soil erosion and silt deposition and thereby protect waters. Please refer to the Environmental Monitoring Programme in Table 9 Please also refer to Section 3.3.5 which provides details of the proposed construction drainage system.

3.3.3 Fuel storage and management

Below are some measures which will be implemented onsite with regard to fuel storage and management:

- All plant will be refuelled on site e.g., excavators, dumpers etc., Refuelling will take place at a designated distance away from watercourses (>10m) in accordance with the buffer zone guidelines highlighted in Section 10 of the EIAR (Environmental Impact Assessment Report)
- Fuel will be transported to the site vehicles using a bunded fuel bowser. This bowser will be filled weekly by a fuelling lorry.
- Drip trays will be used while refuelling, and spill kits will be located onsite to be deployed if required.
- Rigid and articulated vehicles will be fuelled off site as would all site vehicles (jeeps, cars and vans).
- Only designated trained operators will be authorised to refuel plant on site;
- 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;
- 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

Please refer to Appendix 1 Logistics plan for location of re-fuelling and fuel storage.

3.3.4 Temporary Site Construction Compound

Kilwex Ltd. shall set up a compound within the site boundary. Prior to mobilisation onsite, a RAMS shall be submitted detailing the procedures involved in setting up this compound. The RAMS shall contain a proposed compound location. Temporary site fencing shall delineate this compound and signage shall be installed as required.

The compound will be used as a secure storage area for construction materials, 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.

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. 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. The compounds will be established installing a layer of geogrid / geotextile and compacted layers of crushed imported stone aggregate spread and lightly compacted to provide a hard area for site offices and storage containers;
- III. 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 hardstanding's 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.

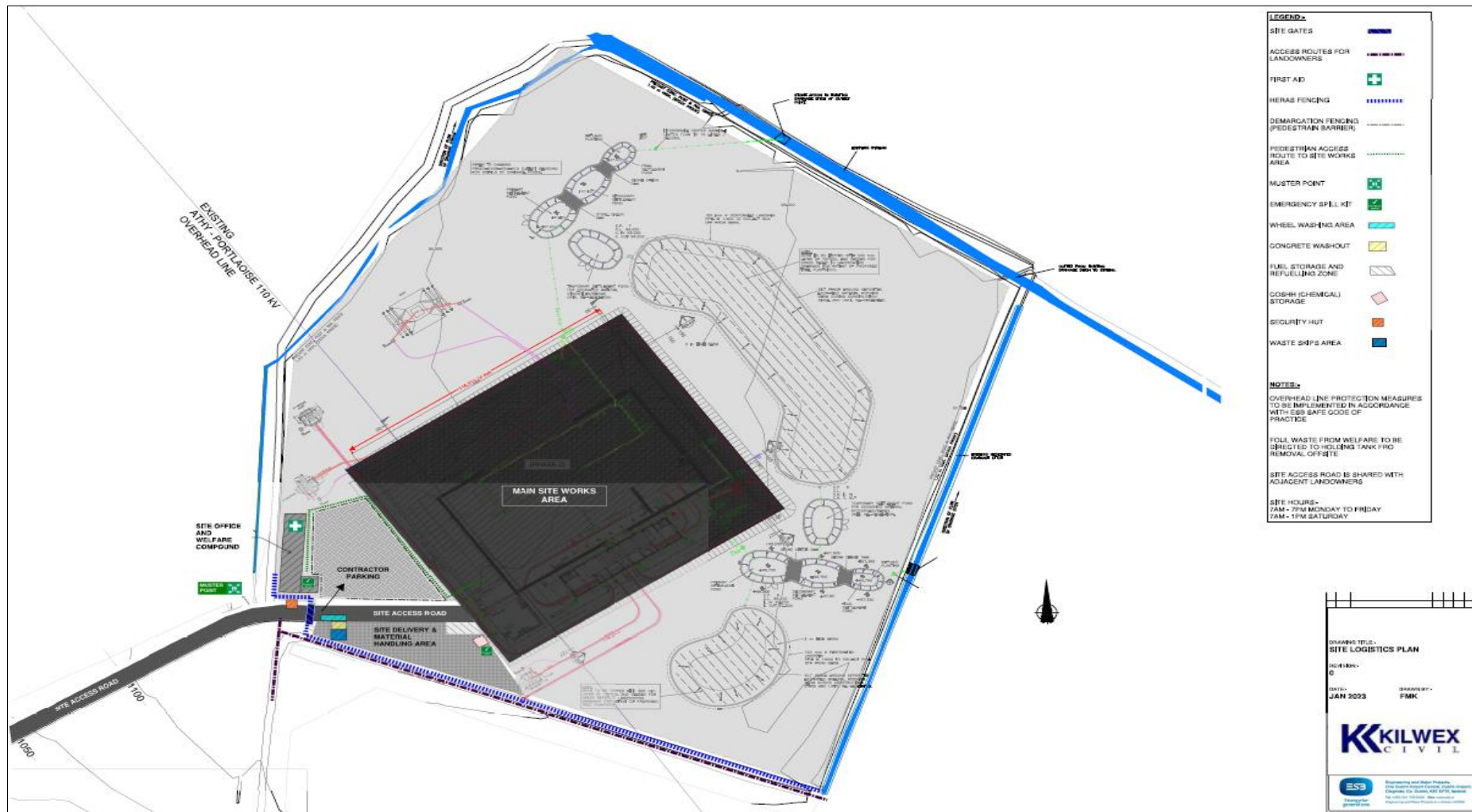


Figure 2: Site Logistics Plan.

Please refer to Appendix 1 for a scaled drawing



Figure 3: Typical temporary site construction compound

3.3.5 Construction Traffic and Haul Routes

The access to the construction site will be via a modification to the existing road (that currently serves a farmstead with a dwelling house) in the townlands of Esker and Coolnabacky. The access road will be approximately 1.2km from the R426 (public road) to the substation compound gates.

All vehicle movements within the site shall be under the control of a traffic marshal. The Contractor shall maintain all public roads and site access roads and clear site dirt and debris to the satisfaction of the local authority and EMP.

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 materials
- HGVs delivering plant/cranes and fuel
- Traffic associated with on-site construction personnel

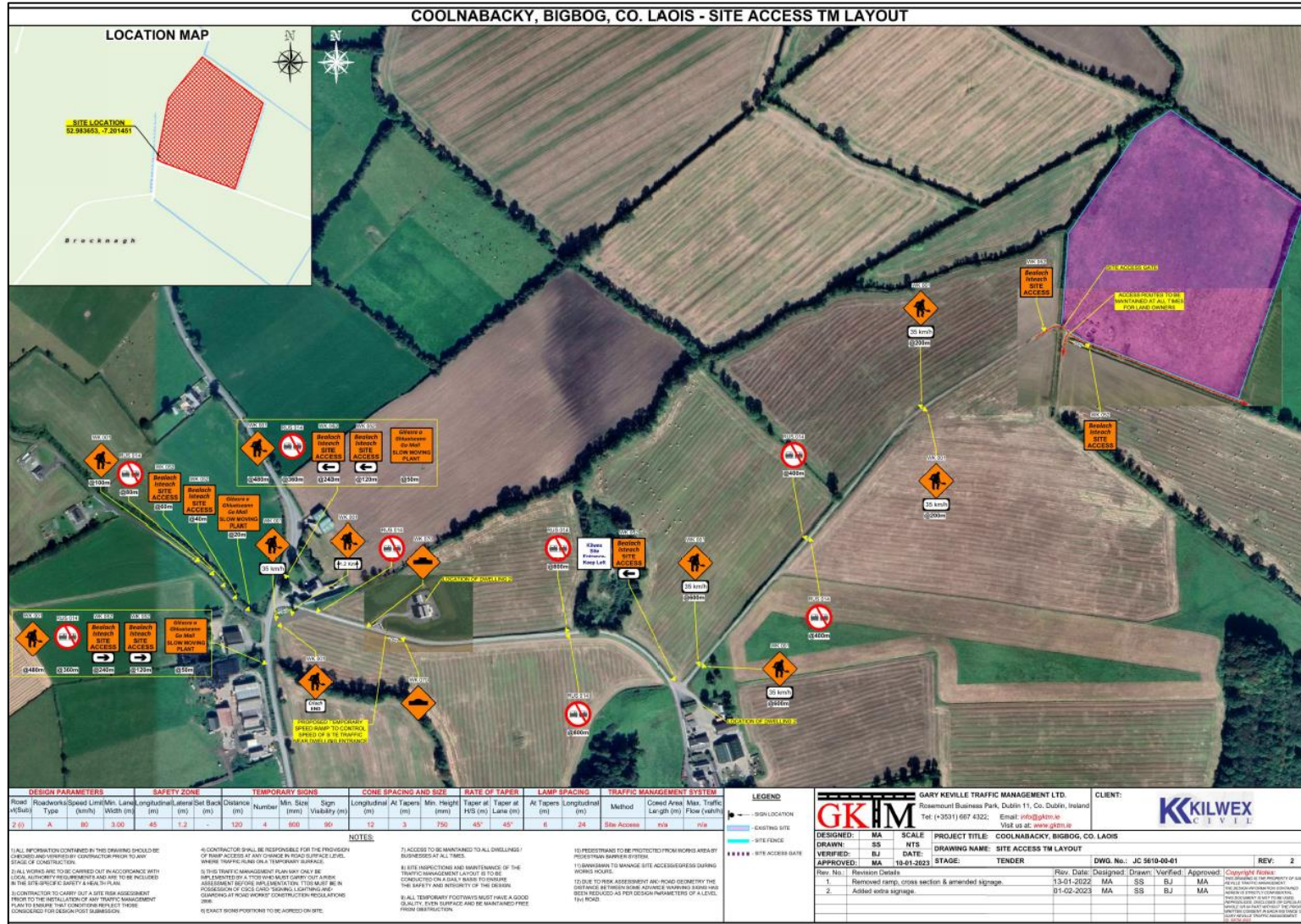


Figure 4: Site Access via R426

The risk of construction debris, soil and other material on the local road network (especially during wet weather) and dust arisings during dry weather is an area of identified concern. A road sweeper will operate on the R426 local Road 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 R426 Local Road on approach to the site entrance. Please refer Appendix 4 for Traffic Signage Plan

3.3.6 Site Construction Drainage System

The control of site runoff will be critical to minimising the potential for impact from this site on the surrounding environs.

The main surface water drainage feature in the area is the Timahoe River which flows 500m east of the site, which later becomes the Bauteogue River. The un-named stream that borders the site to the north eventually joins the Timahoe River, these streams were also found to support tufa formations which varied (stream crust, paludal tufa, oncoids, ooids, and cascade tufa). The cover of tufa ranged from absent to covering 90% of the stream bed. For more details on the existing streams/ waterways around the site, please refer to the “*Assessment of Tufa springs*” document. The site drainage works, and settlement ponds proposed will be developed prior to commencement of construction activity and all surface water will be directed to the settlement ponds, this will provide a buffer/ interceptor between the works area and the watercourse where Tufa formation is located.

Please refer to Appendix 2 for to scale drawings showing Drainage plan - (Under review).

See below details of proposed site drainage:

- Drainage channels will collect runoff from the construction and development areas
- These drainage channels will discharge to 2 no. dedicated settlement ponds constructed on site
- Pond 1 located to the North of the substation will have a capacity to treat approx. the first 20mm of rainfall on the 400kV substation building and the stone area of the site
- Pond 2 will have the capacity to treat the first 33mm of rainfall generated from the transformer bund and the 110kV substation building
- The settlement ponds will be comprised of a system of check dams which will further divide the ponds in primary, secondary and tertiary ponds
- The settlement ponds will be lined with a geotextile material on a bed of 200mm of single sized clean stone
- The settlement ponds will have a permanent water depth of 300mm and a combined treatment volume of 180m³
- The ponds will provide suitable attenuation for the 100-year rainfall return period
- The permanent water depth and treatment volume can be increased during the construction phase in line with increasing silt generation
- Temporary drainage from the site berms will be provided via French drains until the berms are vegetated. The berms will be surrounded by silt fences until vegetated and stabilised.

Figure 5: Overall site drainage.

DRAINAGE DRAWING IS UNDER REVIEW

Refer to Appendix 2 For scaled drawing. **Appendix 2 (Drainage drawing) is Under review - updated version to be submitted**

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, spoil, 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. The removal of spoil is not anticipated, however, should this occur, prior to removing spoil Waste Acceptance Criteria testing (WAC) will be completed to determine the classification of the material. Where possible, leftover material such as shuttering material, plastic pipes etc. will be reused within the site compound for aesthetic uses such as plant pots, insect hotels etc. 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.

In the event that soil is required to be removed from site it will be done so by a licenced contractor and disposed of to a fully permitted facility.

3.3.6.1 Other elements of the Construction Phase

3.3.6.1.1 Stockpiles

It is proposed to store excavated material on site in the form of permanent berms. The berms volume will be approximately 8500m³ over a plan area of 5,000m².

Kilwex Ltd. shall make provisions for the discharge or disposal from the works and temporary works of all waste products or spoil and the method of disposal shall be to the satisfaction of the Engineer.

3.3.6.1.2 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 forecast to assist in planning concrete pours and avoiding large pours where prolonged periods of inclement weather conditions are forecast or persist
- Ensure that excavations are sufficiently dewatered before concrete works commence
- Ensure that covers are available for freshly placed concrete to avoid runoff to proximal receptors during inclement weather conditions.
- There will be no large-scale batching of concrete on the site. All concrete will come from a licensed supplier with environmental certification. No washing out of concrete supply trucks will be allowed on the site. No cementitious material will be allowed enter the water or groundwater on the site. Monitoring and emergency response measures for any escape of cementitious material will be put in place by the contractor.

3.3.6.1.3 Concrete washout

- Kilwex will place a 12-yard skip on a suitable area of hardstanding
- A layer of sand will be placed
- on the bottom of the skip
- The skip will then be lined with a layer of heavy-duty polythene
- Concrete delivery vehicles will then be permitted to reverse up to skip and wash out their chute (only) into the washout skip
- Water levels in the skip will be monitored daily
- Skip will be covered as required during periods of heavy rainfall
- As skip reaches capacity the “Washout water” from will be pumped into an empty concrete delivery vehicle to be returned to the concrete supplier, where this water will be reused in the batching process.

3.3.6.1.4 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. Water will be supplied on an as needs basis and will be transported to site and stored in IBC's.

4 CONSTRUCTION & ENVIRONMENTAL MANAGEMENT

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 titles of the assigned personnel with the appropriate responsibility and reporting structure reflected. Please refer to Appendix 3 for Kilwex Organogram

The Contractor will select the Project Team for the construction of the 400kV GIS Substation – a detailed organogram is provided in Figure 6.

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 Site Manager will have overall responsibility for the construction site personnel carrying out the works and the Site Manager will report to the Project Manager.

A competent Environmental Manager (from Coyle Environmental) will be appointed for the duration of the works and will report to the Project Manager. The Site 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, prior to works commencing on site.

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 Site 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 Environmental Manager - ensures that the CEMP is developed, implemented and maintained. The Environmental Manager's tasks at the 400kV GIS Substation 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 any measures required.
- Health and Safety - The Health and Safety personnel for the construction project is appointed by the Contractor in line with the Construction Regulations:

Other roles include:

- Project Archaeologist (report to the Environmental Manager)
- Geotechnical Engineer (as required by Design Engineer)

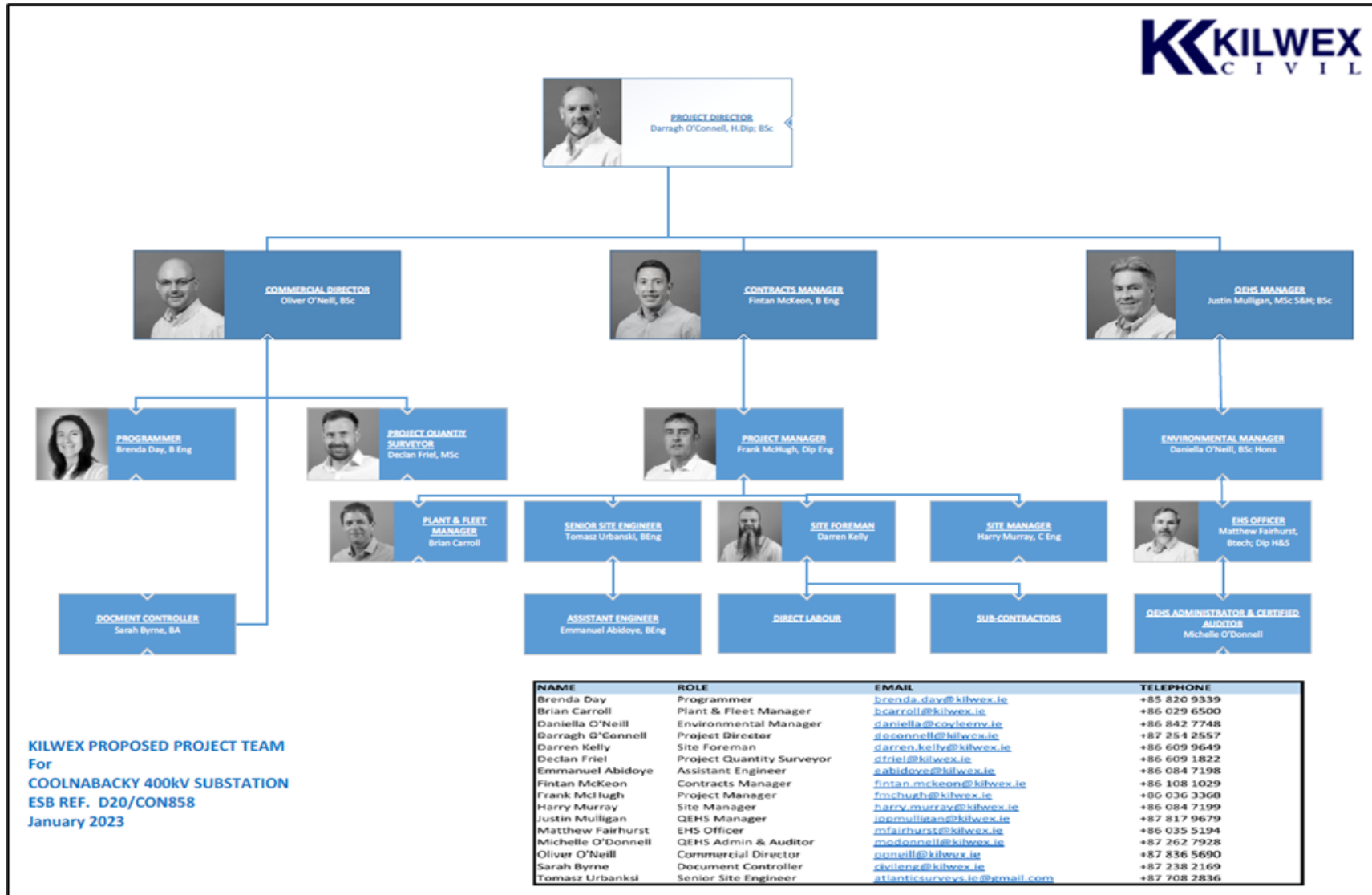


Figure 6: Kilwex Organogram for the Coolnabacky 400kV Substation

Please refer to Appendix 3

4.2.1 Project Manager

Name: Frank McHugh

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 Site Manager

Name: Harry Murray

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

Role of Site Manager

- Ensure all operatives/personnel are inducted prior to commencing works on site. The induction process will include requirements of CEMP
- Ensure all works are carried out by operatives with relevant competency
- Ensure all RAMS cover requirements of CEMP
- Ensure all actions/requirements of CEMP are put in place
- Supervise/Monitor works to ensure compliance with CEMP
- Ensure all plant checks are carried out as required
- Give/arrange TBTs & training as required
- Ensure all monitoring is carried out as specified in CEMP

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 Duties

- Awareness of all project Environmental Commitments and Requirements
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from the Project Manager to the Environmental Manager in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required;
- Programming and planning of excavation works and communicating this schedule to the Environmental Manager;
- Ensuring that adequate resources are provided to design and install any environmental interventions;
- Liaising with the Design Engineer and providing information on environmental management to the Design Engineer during the course of the construction phase;
- Liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the Contractor's project staff; and
- Ensuring that the Environmental Manager performs regular and frequent environmental site inspections.

4.2.3 Environmental Manager

Name: Daniella O'Neill, Coyle Environmental Limited

The Environmental Manager is responsible for:

4.2.3.1 General Duties

- 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;
- 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 Site 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
- Liaising with Ecological Clerk of works in relation to ecological issues
- Auditing the construction works from an environmental viewpoint
- Operating and maintaining the surface water management system which will include daily inspections (See Table 9 Environmental Monitoring Programme)
- Operating and maintaining the project waste management system
- Installation of monitoring equipment and maintenance and management of same

4.2.3.2 Site-Specific Method Statements

- Liaising with the Site 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 Site 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 Site Manager where third party agreement is required in relation to site-specific Method Statements, Environmental Control Measures and/or Environmental Control Measure Sheet.

4.2.3.3 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 Site Manager in updating relevant site-specific Method Statements, and
- Where required, liaising with the Site Manager in agreeing site-specific Method Statements with third parties.

4.2.3.4 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 National Parks & Wildlife for the acquisition of pertinent licencing for the potential disturbance and/or removal of protected habitats or species forming part of the '*Wildlife Acts 1976-2012 as amended*', if required e.g., Badger Sett, Otter Holt, Amphibians etc.

4.2.3.5 Legislation

- Keeping up to date with changes in environmental legislation that may affect environmental management during the construction phase;
- Advising the Site Manager of all relevant 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.

4.2.3.6 Specialist Environmental Contractors

- The environmental manager to effectively resource the project with appropriate specialists, as required e.g., Acoustic Consultants, Environmental Field Technicians, Ecological Clerk of Works etc.
- 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.

4.2.3.7 Environmental Training

4.2.3.7.1 Site Induction Training

It will be the Environmental Manager's responsibility to ensure that all personnel receive adequate induction training incorporating environmental awareness and to include but not limited to;

- An introduction to the CEMP particulars to ensure compliance with any mitigation measures that are in place
- An undertaking to carry out works in an environmentally responsible manner.
- Familiarisation with the Emergency Response Plan and what to do in case of an environmental emergency.
- Who to report any concerns to in relation to potential / existing environmental non-compliance.

4.2.3.7.2 Toolbox Talks

Provision of toolbox talks on Environmental Control Measures associated with Site-specific Method Statements to those who will undertake the work and to include

- Emergency Response procedures and execution of same;
- Environmental awareness relating to the sensitivity of the watercourses adjoining the development site;
- Waste management protocol e.g., waste segregation, housekeeping etc
- Nuisance emissions and associated controls e.g., dust suppression methods, site speed limits etc
- Environmental Mitigation and methods of improvement
- Ecological Exclusion zone

4.2.3.8 Environmental Incidents/Spillages

- Prepare to implement particulars of the Emergency Response Plan promptly, when required.
- 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 Site Manager and to the ESB Environmental support.

Please refer to Appendix 5 Emergency Response Plan (Under Review – Document to follow)

4.2.3.9 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 Site Manager to organise any repairs or maintenance required following the daily inspection of the site.

Please refer to Table 9 Environmental Monitoring Programme

4.2.4 Other Roles

4.2.4.1 Health and Safety Personnel

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

- PSDP
 - Identify hazards arising from the design of the technical, organisational, planning or time related aspects of the project
 - Where possible, eliminate the hazards or reduce the risk through design elements and taking into account the general principles of prevention
 - Communicate necessary control measures, design assumptions, or remaining risks to the PSCS so they can be dealt with in the Safety and Health plan
 - Ensure that the work of designers is co-ordinated to ensure safety
 - Organise co-operation between designers (architects, engineers)
 - Prepare a written preliminary safety and health plan for any project where construction will take more than 500 person days or 30 working days, or there is a particular risk and deliver it to the client prior to tender
 - Review health and safety competency of contractors submitting tenders
 - Prepare a safety file for the completed structure and give it to the client
 - Notify the Health & Safety Authority and client of noncompliance with any written directions issued
 - Issue directions to designers, contractors or others on the project to ensure all work is carried out in a safe manner
- PSCS
 - Develop and update the Construction Stage Safety and Health Plan.
 - Coordinate the implementation of the Construction Regulations.
 - Organise cooperation between contractors.
 - Notify the HSA before work commences, if applicable.
 - Coordinate the checking of safe work procedures and monitor compliance.
 - Coordinate arrangements to ensure workers have Safe Pass and relevant CSCS cards.
 - Coordinate measures to restrict entry to site.
 - Coordinate the reporting of accidents to the HSA.
 - Coordinate the appointment of a Safety Representative, when there is 20+ people on site.
 - Appoint a Safety Advisor when there is 100+ people on site.
 - Provide required safety file information to the PSDP.

4.2.4.2 Ecological Clerk of Works

The Project Ecologist, Cian O’Ceallaigh is responsible for:

- Effective implementation of ecological mitigation measures as detailed in the EIAR & NIS
- Undertaking pre-construction walkover surveys
- Liaising with National Parks & Wildlife and local authority on applicable wildlife licensing procedures, if required.

4.2.4.3 Project Archaeologist

- The Archaeologist, Martin Byrne has been appointed by the Contractor and is responsible for: Ensuring implementation of archaeological mitigation measures
- Monitoring of groundworks associated with the development
- Liaison with the Environmental Manager / Site Manager
- Liaison with the Project Manager / Client / Developer
- In order to comply with the remaining elements of the condition 10 of the Grant of Planning from An Bord Pleanála (Reg. Ref: 11.VA0015;
- all topsoil stripping/ground reduction works onto the surface of the underlying geological-derived subsoils will be monitored by a suitably qualified and experienced archaeologist.
- The topsoil will be removed by mechanical excavators fitted with wide, toothless grading buckets.

- In the event that subsurface remains of archaeological interest/potential are uncovered during the course of topsoil stripping, then works in the immediate area will cease, pending investigations by the appointed archaeologist and consultation with the National Monuments Service, Department of Housing, Local Government and Heritage – if required.
- A report describing the results of the programme of Archaeological Monitoring, and any other

archaeological interventions that might be required, will be prepared and submitted to the Planning Authority in further compliance with Condition 10 of the Grant of Planning

4.2.4.4 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 and including but not limited to;
- Adhering to the Health and Safety Plan, CEMP, Resource Waste Management plan and the Emergency Response Plan
- Reporting immediately to the Environmental Manager and Site 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

Table 4: Main Contractor Contacts

Position Title:	Name:	Phone:	Email:
Main Contractor	Kilwex	045 889 479	civileng@kilwex.ie
Project Manager	Frank McHugh	086 036 3368	fmchugh@kilwex.ie
Site Manager*	Harry Murray	086 084 7199	harry.murray@kilwex.ie
Environmental Manager	Daniella O’Neill	086 842 7748	daniella@coyleenv.ie
Safety (PSCS)*	Frank McHugh	086 036 3368	fmchugh@kilwex.ie
Safety Officers*	Matthew Fairhurst	086 035 5194	mfairhurst@kilwex.ie
Site Emergency Number*	Frank McHugh	086 036 3368	fmchugh@kilwex.ie
Project Archaeologist	Martin Byrne	087 262 4954	martinbyrne1063@gmail.com
Overall Project PSDP	Patrick Graham	087 418 5317	patrick.graham@esb.ie

*24-hour contact details required

All relevant specialists will be detailed within the CEMP upon appointment, this CEMP shall be updated in due course.

4.3.2 Employer Contacts

Table 5: ESB Contacts

Position:	Name:	Phone:	Email:
ESB EMP Project Manager	Aoife Hennigan	0879822952	aoife.heneghan@esb.ie
ESB EMP Environmental Specialist	Lorna Conway	0879202428	lorna.conway@esb.ie

4.3.3 Third Party Contacts

Table 6: 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	Laois County Council	Laois County Council Headquarters	(057) 866 4000	corpaffairs@laoiscoco.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	Stradbally Garda	(057) 8625222	-
Emergency Services	Ambulance and Fire Service	Ambulance and Fire Service	999 or 112	-

5 ENVIRONMENTAL CONTROL MEASURES

Introduction to the Register of Environmental Impacts:

“Within the defined scope of the environmental management system, the organization shall determine the environmental aspects of its activities, products and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective.

When determining environmental aspects, the organization shall take into account:

- change, including planned or new developments, and new or modified activities, products and services;
- abnormal conditions and reasonably foreseeable emergency situations. The organization shall determine those aspects that have or can have a significant environmental impact, i.e., significant environmental aspects, by using established criteria.” (Clause 6.1.2 of the ISO 14001 Specification, 2015).

An environmental aspect is defined in the ISO 14001 standard as an “element of an organisation’s activities, products or services that can interact with the environment” (Section 3.2.2 of the standard).

An environmental impact is defined in the ISO 14001 standard as “any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s environmental aspects” (Section 3.2.4 of the

standard).

Baseline surveys, sampling and monitoring will be undertaken before construction commences. These will include;

- Noise at the two nearest sensitive receptors - NSR1 & NSR 2 (Appendix 6)
- Vibration at the two nearest sensitive receptors - - NSR1 & NSR 2 (Appendix 6)
- Dust at the two nearest sensitive receptors - - NSR1 & NSR 2 (Appendix 6)
- Water quality
 - Surface waters at five locations
 - Groundwaters at four bored wells
- Ecological pre-construction site walkover

5.1 Environmental Aspects & Impacts

The environmental impacts of activities are assessed based on the categories listed in the register of environmental impacts detailed in Table 7

Table 7: Site-Specific Register of Impacts and Aspects

Activity	Aspects	Impact	Receptor
All	Physical presence	Effects resulting from presence such as noise and vibration to surrounding natural and built environment	Landscape and environment
	Waste generation	Failure to segregate and dispose of waste appropriately	Waste management contractor & Client, Reputation and expense, landscape and environment.
		Hazardous waste stored incorrectly, causing contamination of land or water	
		Negative impact by inappropriately stored material i.e., mixing of waste types	
		Litter on and around working areas	
		Resource depletion	
	Dust generated during construction	Nuisance to human beings.	Air Emissions
		Negative impact on plant photosynthesis	
	Vehicle emissions	NO _x , SO ₂ , PM ₁₀ , VOC, CO	Visual
	Visual impact of the Works	Community well-being,	
Disturbance to wildlife.			
Earthworks	Work in areas used by wildlife and avian population	Territories/Home-ranges disturbed or divided.	Habitat/Wildlife
		Feeding and shelter areas lost.	
		Disturbance to breeding/nesting birds.	
		Irreparable damage to habitats.	
	Increased runoff from the works	Change in local hydrological regime; erosion.	Surface Water
	Increased suspended solids load	Impact on the ecology of receiving waters, Deoxygenation of rivers and streams.	
Soil erosion as a result of vegetation removal	Increased suspended solids in surface water – impact on receiving water.	Surface water and soils	

5.2 Noise Control

Noise nuisance can potentially arise through the use of mechanical tools, general construction activities, and from the movement of vehicles servicing the site. However, due to the temporary and transient nature of construction phase works, the existing noise environment associated with the development site and the surrounding area and distance to the nearest sensitive receptors, the impact is not considered to be significant.

The following general mitigation measures are considered appropriate for the proposed development during the construction phase:

- Plant will be used in an appropriate manner with respect to minimising noise emissions;
- All plant will be used will be modern, well maintained and working properly;
- Engines will be switched off when not in use; &
- Inherently quiet plant will be selected where appropriate;

Noise and vibration monitoring will be undertaken on an ongoing basis at the two nearest sensitive receptors. The two locations are identified on the aerial image in Appendix 6 Noise and vibration results will be reported as part of the Monthly Environmental Monitoring Report. When reviewing noise levels, weather conditions are also used as high wind speeds can negatively impact noise levels. Weather data will be obtained from the met Eireann station situated at Oak Park, Co, Carlow. Daily conditions are also noted as well as any weather warning in place.

5.3 Air Pollution

In periods of extended dry weather, dust suppression may be necessary within the site compound and internal access road to minimise the nuisance risk. If necessary, water will be abstracted from settlement ponds in the site construction drainage system and 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 in order to avoid the excessive usage of water which may exceed the requirement.

Dust monitoring will be set up at the nearest two residencies and monitored on a continuous basis. Dust levels will be measured against current EPA Licence threshold limits (350 mg/m²/day) using the Bergerhoff Method. Dust results are reported in the Monthly Environmental Monitoring Report. Please refer to Appendix 6.

Table 8: Dust Monitoring Locations

Dust Monitor No:	Location
D1	R32 Y67P
D2	R32 V9F6

* Exact coordinates to be confirmed

5.4 Water Quality

Tufa formations within the western and norther boundaries of the site have been recorded during site investigation works. There is a shallow perched aquifer below the site, which is hydrologically isolated from the underlying bedrock aquifer, and this forms the source waters for Tufa formation on the site.

The site is located over a regionally important bedrock aquifer with sandy and gravelly clay and silt with slightly gravelly clay. Therefore, prevention of negative impacts on the groundwater and surface water resources are essential to maintain the water quality of the water features adjoining and beneath the site.

Enabling works and construction works have the potential to negatively impact on surface water and groundwater quality. It is imperative that the watercourses and groundwater be protected from any deleterious matter being discharged to them.

Routine surface water and groundwater monitoring (visual, in-situ & laboratory sampling) will take place across the site during construction works.

All recommendations contained within the IE Consulting and Denyer Ecology reports will be implemented. These recommendations are presented in Section 3.3.2. Please also refer to Table 9 Environmental Monitoring Programme.

5.5 Waste Management

A Resource Waste Management Plan has been developed for the Project. This plan details projected Project waste arisings and avenues for disposal. All Project waste is recorded in the Waste manifest which will form part of the Monthly Environmental Monitoring Report. This document will be made available for all personnel and will be located in the site compound office.

Kilwex Ltd. shall ensure that all such waste arising from their own or their subcontractors' activities is promptly disposed of into segregated containers and no extraneous material is discarded on site. All waste products shall be removed off site by a waste contractor with suitable licences and permits to the approval of the Engineer and the relevant local authority. Permit details shall also be supplied by the appointed waste contractor detailing the destination waste handling facility or landfill.

Recycling shall be implemented across the site and compound with all waste to be segregated onsite into the following categories: timber, metal, general waste, recyclables, canteen, compost and hazardous waste. Separately labelled skips are to be provided for each category of waste and these shall be emptied regularly. Metal containers for inflammable waste shall be provided by the Contractor and arrangements made for regular collection and disposal off the site. Please also refer to Resource Waste Management Plan which is available for review at the Site Office.

5.6 Ecological Works

Following an ecological walkover of the site in March 2022 and December 2022 by ESB ecologists, it was determined that the site is flat and low lying with no notable or rare flora stands identified during the walkover. The site did not appear to support volant / non-volant mammals during those periods.

This was further confirmed by the Coyle Environmental Ecologist, Cian O'Ceallaigh, during a pre-construction site walkover January 30th, 2023.

During the January 2023 site walkover, it was noted that the vegetation along the watercourse was very overgrown and would benefit the Tufa Spring if this were cut back. This was also a recommendation in the Denyer Report dated December 2022. This work should be undertaken outside of the bird nesting season.

No established habitats or protected species of interest were noted during any of the ecological surveys.

5.7 Invasive Species

There were no signs of invasive plant species within the site boundary or along the peripheral areas during any of the ecological surveys and walkovers, the most recent being January 30th, 2023.

Ecological site walkovers will be conducted on a monthly basis and an inspection for invasive species will form part of this survey. If identified, invasive species will be managed as per the Kilwex Environmental Procedures which will be available for review and reference in the compound office on site.

6 ENVIRONMENTAL AUDITING & MONITORING

Environmental control measures are recorded on site via audits, surface water visual inspections, water monitoring through sampling, noise and vibration monitoring, dust monitoring & waste management monitoring.

The Environmental Monitoring Programme presented in Table 9 will include mitigation measures outlined in the EIAR, NIS and all relevant planning conditions outlined in the grant of planning permission.

Environmental non-conformances are defined as actions or outcomes that are not in compliance with environmental limits, standards, permits, licences or legislation.

Table 9: Construction Phase Monitoring Programme

Construction Phase Monitoring Programme									
			Surface Water (SW) Monitoring		Groundwater (GW) Monitoring		Noise	Vibration	Dust
No.	Frequency*	Responsibility	Description of SW Monitoring	Surface Water Locations & Mitigation Measures	Description of GW Monitoring	Groundwater			
1	Daily	Contractor	Daily visual monitoring. <u>Records:</u> - Photographic record. Note any discolouration/ turbidity - Daily inspections. Note any breaches or maintenance issues	SW02, SW03, SW05 & Pond Discharge outlets Surface Water Management Systems (filters, fences, pumps etc.)	N/A	N/A	N/A	N/A	N/A
2	Weekly	Coyle Environmental	In situ measurement using handheld calibrated equipment measuring: -Dissolved oxygen (DO) -pH -EC -Turbidity - Temperature	SW01, SW02, SW03, SW04 & SW05	Groundwater Level Measurement (m) - Borehole well dipping	BH01, BH02, BH03, BH04	N/A	N/A	N/A
3	Monthly	Coyle Environmental	Visual inspection and Surface Water sampling and analyses for: - pH - Conductivity - Chloride - Sodium - Sulphate - Calcium - Magnesium - Potassium - Ammoniacal N-NH4 - Alkalinity - Nitrate - Phosphorus - Total TPH To be sampled and analysed to standard BS EN ISO 5667 for surface water. Analysis will be at an INAB accredited laboratory In situ measurement using handheld calibrated equipment	SW01, SW02, SW03, SW04 & SW05	Groundwater - Sample and Analysis for: - pH - Conductivity - Chloride - Sodium - Sulphate - Calcium - Magnesium - Potassium - Ammoniacal N-NH4 - Alkalinity - Nitrate - Phosphorus - Total TPH To be sampled and analysed to standard BS EN ISO 19458 for groundwater. Analysis will be at an INAB accredited laboratory	BH01, BH02, BH03, BH04	N1 N2	V1 V2	D1 D2

Construction Phase Monitoring Programme

Construction Phase Monitoring Programme									
			Surface Water (SW) Monitoring		Groundwater (GW) Monitoring		Noise	Vibration	Dust
No.	Frequency*	Responsibility	Description of SW Monitoring	Surface Water Locations & Mitigation Measures	Description of GW Monitoring	Groundwater			
			measuring: - Dissolved oxygen (DO) - pH - EC - Turbidity - Temperature						
4	Quarterly Monitoring	IE Consulting	Visual inspection and Surface Water sampling and analyses for: - pH - Conductivity - Chloride - Sodium - Sulphate - Calcium - Magnesium - Potassium - Ammoniacal N-NH4 - Alkalinity - Nitrate - Phosphorus - Total TPH To be sampled and analysed to standard BS EN ISO 5667 for surface water. Analysis will be at an INAB accredited laboratory	SW01, SW02, SW03, SW04 & SW05	Groundwater - Sample and Analysis for: - pH - Conductivity - Chloride - Sodium - Sulphate - Calcium - Magnesium - Potassium - Ammoniacal N-NH4 - Alkalinity - Nitrate - Phosphorus - Total TPH To be sampled and analysed to standard BS EN ISO 19458 for groundwater. Analysis will be at an INAB accredited laboratory	BH01, BH02, BH03, BH04	N/A	N/A	N/A
* Higher frequency if warranted by more intense construction activity or heavy rainfall ** Access outside boundary subject to agreement with landowners.									

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 to the environment.

Environmental performance indicators will consider:

- 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
- 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.

To ensure the process of continuous improvement, achievement of these objectives shall be reviewed on a regular basis throughout the Project by means of the audits, inspections, on-going monitoring and liaison with ESB.

Table 10: Key Performance Indicators

Description	Target
"Moderate" to "significant" environmental incidents during the Project	Zero
Prosecutions or warnings during the Project	Zero
ISO14001:2004 Certification	Maintain
Surface and groundwater readings outside agreed limits	Zero
Dust monitoring readings outside allowable agreed limits	Zero
Noise monitoring readings outside allowable contract limits	Zero



CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN
APPENDICES

Laois Kilkenny electricity Reinforcement Project –
Unit 1: A new 400kV/110kV Substation at Coolnabacky townland, Co. Laois.

Main Works Job No 286.

286-ESB-CEMP_01_APP

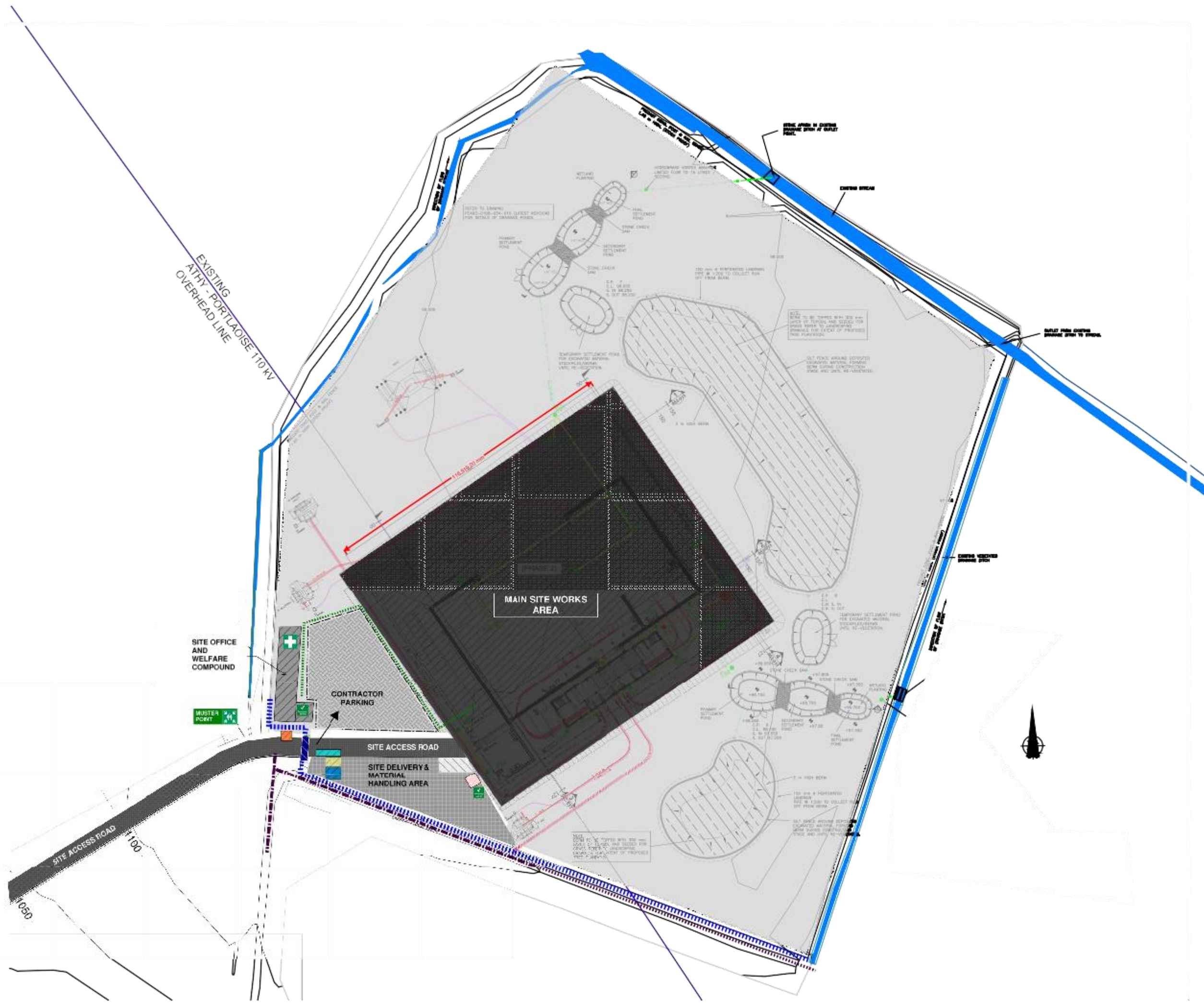
Prepared by: Daniella O’Neill **Signed:**

Date: 07/02/2023

9 APPENDICES

Appendix Number	Description
1	Site Logistics Plan / Compound Layout
2	Overall Site Drainage Plan (under review updated version to be submitted)
3	Kilwex Organogram
4	Traffic Signage Plan
5	Emergency Response Plan (under review updated version to be submitted)
6	Nearest Sensitive Receptors

Appendix 1 – Site Logistics Plan



LEGEND:-

SITE GATES	
ACCESS ROUTES FOR LANDOWNERS	
FIRST AID	
HERAS FENCING	
DEMARICATION FENCING (PEDESTRAIN BARRIER)	
PEDESTRIAN ACCESS ROUTE TO SITE WORKS AREA	
MUSTER POINT	
EMERGENCY SPILL KIT	
WHEEL WASHING AREA	
CONCRETE WASHOUT	
FUEL STORAGE AND REFUELLING ZONE	
COSHH (CHEMICAL) STORAGE	
SECURITY HUT	
WASTE SKIPS AREA	

NOTES:-

OVERHEAD LINE PROTECTION MEASURES TO BE IMPLEMENTED IN ACCORDANCE WITH ESB SAFE CODE OF PRACTICE

FOUL WASTE FROM WELFARE TO BE DIRECTED TO HOLDING TANK FRO REMOVAL OFFSITE

SITE ACCESS ROAD IS SHARED WITH ADJACENT LANDOWNERS

SITE HOURS:-
7AM - 7PM MONDAY TO FRIDAY
7AM - 1PM SATURDAY

DRAWING TITLE:-
SITE LOGISTICS PLAN

REVISION:
0

DATE:
JAN 2023

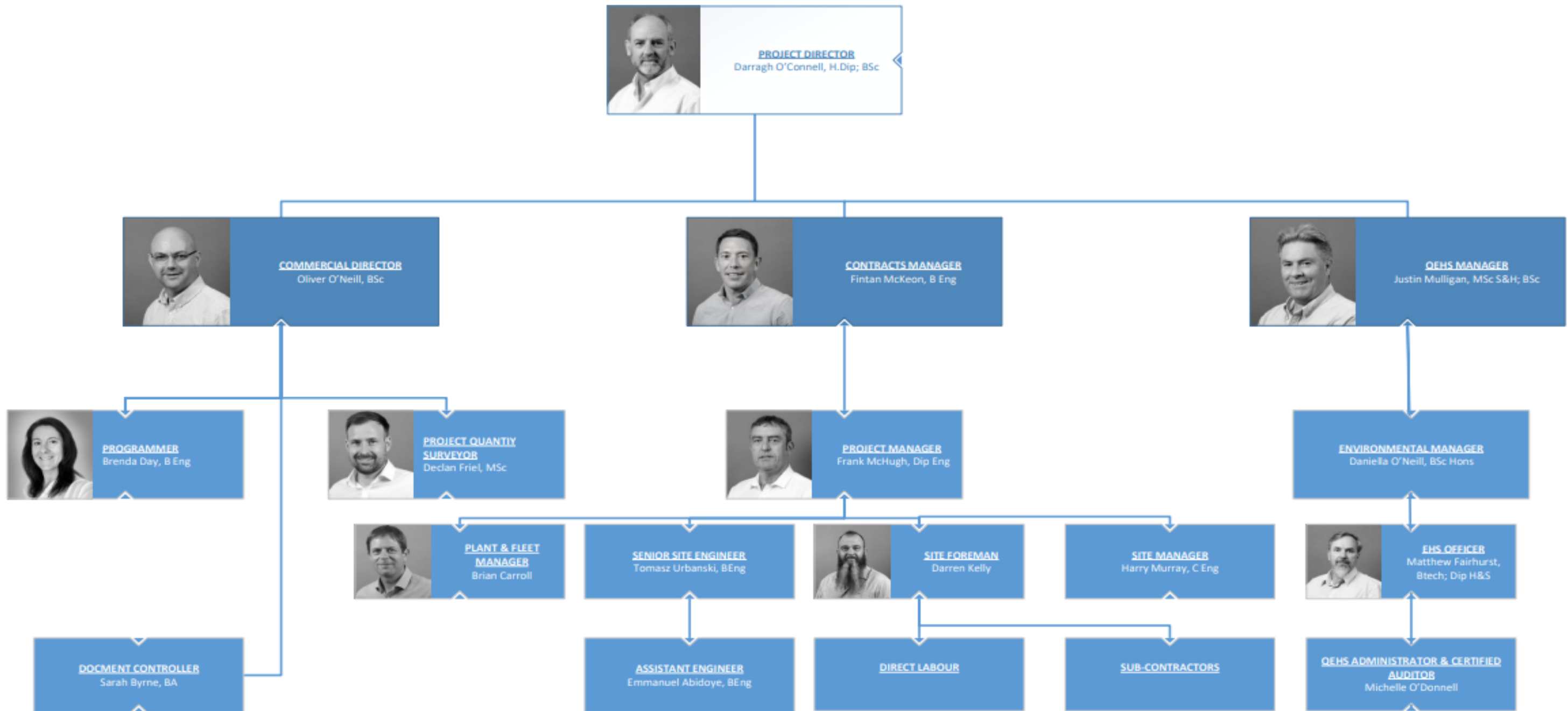
DRAWN BY:
FMK



Appendix 2 - Overall Site Drainage Plan

Under review - updated version to be submitted

Appendix 3 - Kilwex Organogram



NAME	ROLE	EMAIL	TELEPHONE
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KILWEX PROPOSED PROJECT TEAM
For
COOLNABACKY 400kV SUBSTATION
ESB REF. D20/CON858
January 2023

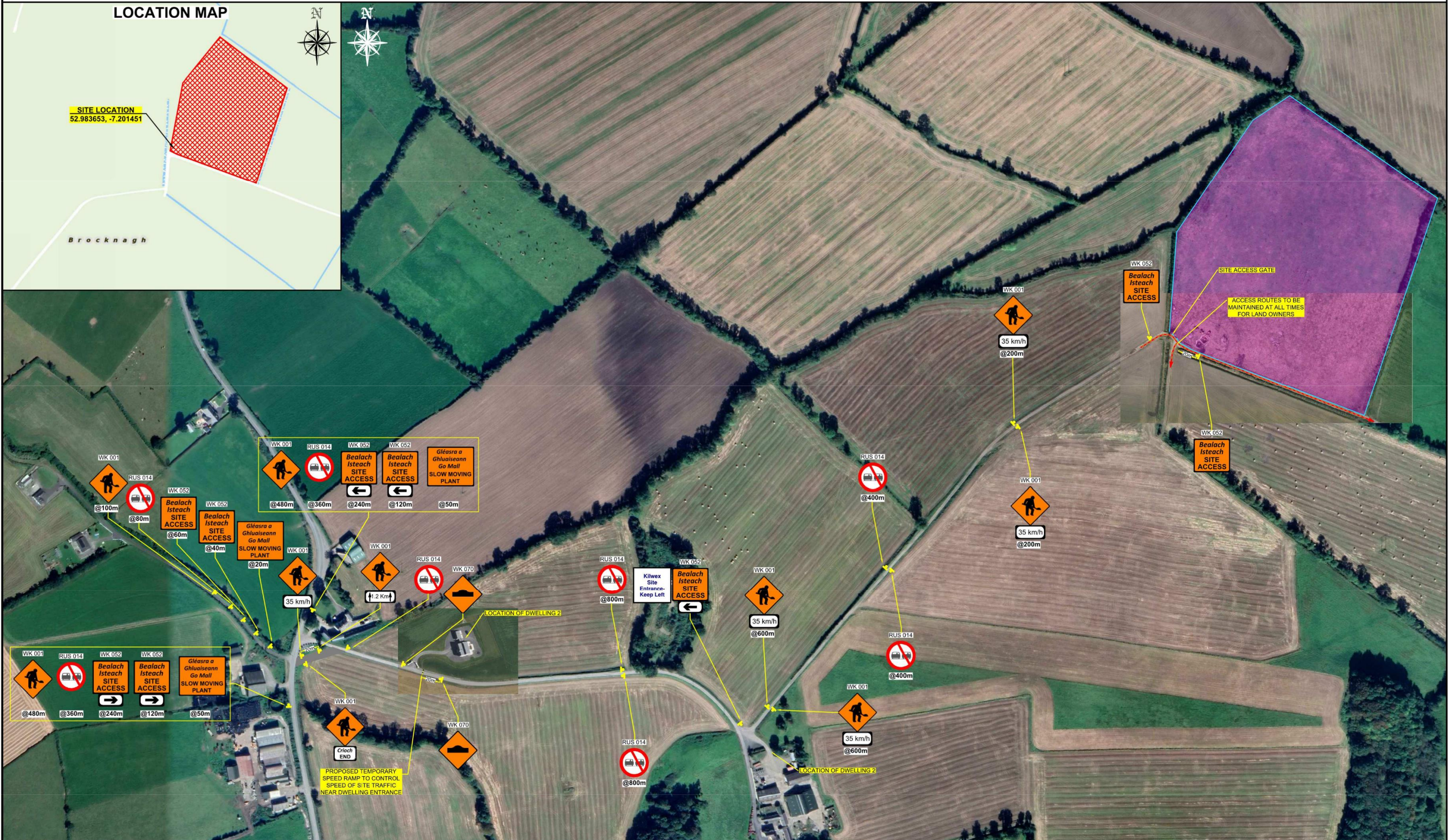
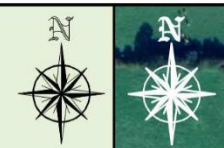
Appendix 4 - Traffic Signage Plan

COOLNABACKY, BIGBOG, CO. LAOIS - SITE ACCESS TM LAYOUT

LOCATION MAP

SITE LOCATION
52.983653, -7.201451

Brocknagh



DESIGN PARAMETERS				SAFETY ZONE			TEMPORARY SIGNS			CONE SPACING AND SIZE			RATE OF TAPER		LAMP SPACING		TRAFFIC MANAGEMENT SYSTEM			
Road Lvl(Sub)	Roadworks Type	Speed Limit (km/h)	Min. Lane Width (m)	Longitudinal (m)	Lateral (m)	Set Back (m)	Distance (m)	Number	Min. Size (mm)	Sign Visibility (m)	Longitudinal (m)	At Tapers (m)	Min. Height (mm)	Taper at H/S (m)	Taper at Lane (mm)	At Tapers (m)	Longitudinal (m)	Method	Coned Area Length (m)	Max. Traffic Flow (veh/h)
2 (i)	A	80	3.00	45	1.2	-	120	4	600	90	12	3	750	45°	45°	6	24	Site Access	n/a	n/a

LEGEND

- SIGN LOCATION
- EXISTING SITE
- SITE FENCE
- SITE ACCESS GATE

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 Visit us at: www.gktm.ie

DESIGNED: MA **SCALE:** NTS
DRAWN: SS **DATE:** 10-01-2023
VERIFIED: BJ
APPROVED: MA

PROJECT TITLE: COOLNABACKY, BIGBOG, CO. LAOIS
DRAWING NAME: SITE ACCESS TM LAYOUT
STAGE: TENDER

Rev. No.: 1, 2
Revision Details: 1. Removed ramp, cross section & amended signage. 2. Added extra signage.
Rev. Date: 13-01-2022, 01-02-2023
Designed: MA, MA
Drawn: SS, SS
Verified: BJ, BJ
Approved: MA, MA

CLIENT: **KILWEX CIVIL**

DWG. No.: JC 5610-00-01 **REV:** 2

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- NOTES:**
- ALL INFORMATION CONTAINED IN THIS DRAWING SHOULD BE CHECKED AND VERIFIED BY CONTRACTOR PRIOR TO ANY STAGE OF CONSTRUCTION.
 - ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS AND ARE TO BE INCLUDED IN THE SITE-SPECIFIC SAFETY & HEALTH PLAN.
 - CONTRACTOR TO CARRY OUT A SITE RISK ASSESSMENT PRIOR TO THE INSTALLATION OF ANY TRAFFIC MANAGEMENT PLAN TO ENSURE THAT CONDITIONS REFLECT THOSE CONSIDERED FOR DESIGN POST SUBMISSION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF RAMP ACCESS AT ANY CHANGE IN ROAD SURFACE LEVEL WHERE TRAFFIC RUNS ON A TEMPORARY SURFACE.
 - THIS TRAFFIC MANAGEMENT PLAN MAY ONLY BE IMPLEMENTED BY A TTOS WHO MUST CARRY OUT A RISK ASSESSMENT BEFORE IMPLEMENTATION. TTOS MUST BE IN POSSESSION OF CSCS CARD "SIGNING, LIGHTNING AND GUARDING AT ROAD WORKS" CONSTRUCTION REGULATIONS 2006.
 - EXACT CONE POSITIONS TO BE AGREED ON SITE.
 - ACCESS TO BE MAINTAINED TO ALL DWELLINGS / BUSINESSES AT ALL TIMES.
 - SITE INSPECTIONS AND MAINTENANCE OF THE TRAFFIC MANAGEMENT LAYOUT IS TO BE CONDUCTED ON A DAILY BASIS TO ENSURE THE SAFETY AND INTEGRITY OF THE DESIGN.
 - ALL TEMPORARY FOOTWAYS MUST HAVE A GOOD QUALITY, EVEN SURFACE AND BE MAINTAINED FREE FROM OBSTRUCTION.
 - PEDESTRIANS TO BE PROTECTED FROM WORKS AREA BY PEDESTRIAN BARRIER SYSTEM.
 - BANKSMAN TO MANAGE SITE ACCESS/EGRESS DURING WORKS HOURS.
 - DUE TO RISK ASSESSMENT AND ROAD GEOMETRY THE DISTANCE BETWEEN SOME ADVANCE WARNING SIGNS HAS BEEN REDUCED AS PER DESIGN PARAMETERS OF A LEVEL 1(v) ROAD.

Appendix 5 - Emergency Response Plan

UNDER REVIEW - Document To Follow

Appendix 6 - Nearest Sensitive Receptors

