CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

PROFILE PARK PROJECT

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1.0

CEMP – Original EPC Scope

2023

Construction Environmental Management Plan

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Engineering a Sustainable Future

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Construction Environmental Management Plan

Greener Ideas Limited Profile Park

Document Control Sheet

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1 Introduction

1.1 Background

ORS were commissioned by GAMA Construction Ireland Ltd. to complete a Construction Environmental Management Plan (CEMP) for the construction of a gas fired peaking power plant with capacity to generate up to 100 MW of electricity at a site located at Profile Park, Baldonnell, Dublin 22.

Natural gas, supplied from the Gas Networks Ireland national grid, will be the primary fuel source for the plant.

Electrical power will be exported to the existing Barnakyle 110 kV Station which is operated by Eirgrid or to a new proposed 110 kV substation in Profile Park.

1.2 Objective of Construction Environmental Management Plan

This Construction Environmental Management Plan (CEMP) outlines the proposed approach to ensure that construction activities have the least impact on the surrounding environment. Below is an outline of the objectives:

- Ensure appropriate measures to prevent or mitigate nuisance emissions of noise and dust and uncontrolled discharges to water during construction.
- Ensure that all activities on site are effectively managed to minimise the generation of waste and to maximise opportunities for reuse and recycling of waste materials.
- Ensure that all wastes generated onsite are removed from site by an appropriately permitted waste contractor and that all wastes are disposed of at an appropriate licensed/permitted facility in accordance with the Waste Management Act 1996 as amended, with records of all waste maintained on site.
- Ensure that an adequate system is in place for the management, storage, segregation and recycling of waste.
- Minimise the impact on local traffic conditions resulting from construction activities.
- Outline how the measures proposed above shall be implemented.
- Ensure compliance with the environmental reports submitted as part of planning, the planning conditions and planning compliance documentation that has already been generated / submitted.

This CEMP has been prepared for the Construction and Commissioning Phase of the development to outline the general considerations of the works, from sub-structure and

superstructure construction to gas turbine installation with regards to waste and the environment.

The CEMP, due to its structure and nature, will require constant updating and revision throughout the construction period. Therefore, this is a working document and will be developed further during construction.

1.3 Responsibility

GAMA Construction Ireland Ltd.as the main contractor will be the responsible for maintaining and updating the construction and commissioning stage CEMP throughout the works once they take on the role of Project Supervisor Construction Stage (PSCS). The Enable Work Phase of construction is not covered under GAMA's scope.

2 Site Details

2.1 Proposed Development

The proposed development will consist of the following elements:

- Engine Hall comprising up to 5 no. gas engines and 2 no. exhaust stack clusters.
- Site Entrance.
- Electrical Annex Building.
- Workshop Building.
- Security Hut.
- Radiator Coolers.
- 110 kV Electrical Transformer(s).
- Gas AGI.
- Fire Water Storage Tank.
- Tank Farm comprising:
  - Tank Farm Building.
  - Diesel Oil Storage Tank.
  - Urea Storage Tank.
  - Lube Oil Storage Tank.
  - Lube Oil Maintenance Tank.
  - Effluent Collecting Tank.
- Fencing.
- Car Park.
- Landscape planting around perimeter of site.

2.2 Site Location

The proposed plant will have a footprint of approximately 1.8 hectares and will consist of a single storey engine hall and two storey electrical annex over cable basement, which also includes access roads, car parking, and landscaping. The building will house the processing equipment, storage areas, and offices for staff.

The site is accessed via an existing entrance at the north-western perimeter of the site with another entrance planned on the north-eastern boundary. The entrances will be upgraded to provide safe access for heavy goods vehicles entering and leaving the site.

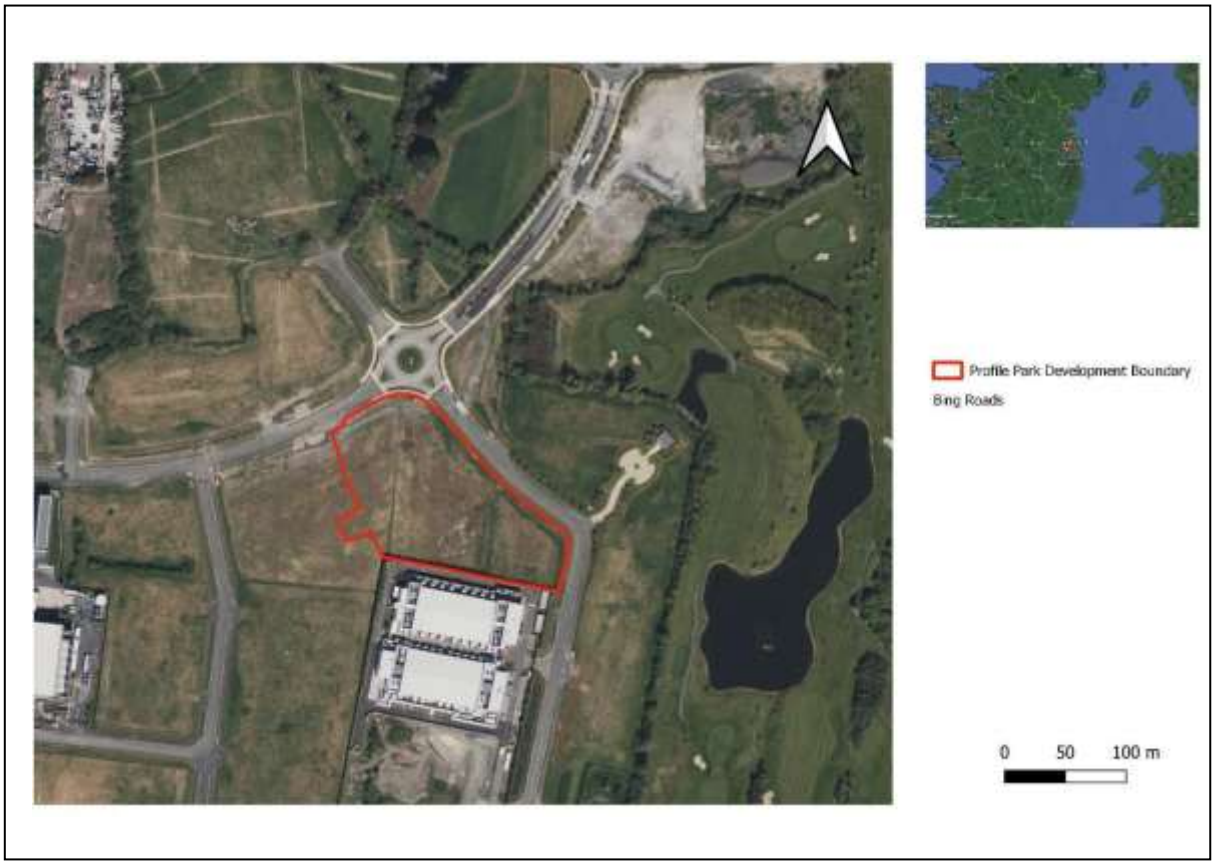


Figure 2.1: Site Location

2.3 Environmental Site Conditions

2.3.1 Topography

The ground level varies from 73 m AOD at the centre of the site to 76m AOD at the eastern boundary with proposed finished floor levels of 74.80m AOD.

2.3.2 Geology & Hydrology

On a regional scale, the site at Profile Park and its environs is located within the Liffey and Dublin Bay Hydrometric Area and Catchment. The site of the proposed power plant is located within the National River Basin District of the 2nd cycle river basin management plan, formerly the Eastern River Basin District (ERBD) within the 1st cycle river basin management plan.

Table 2.1 below outlines the Water Framework Directive (WFD) and ecological status of the subbasin. The sub-basins is located within the Liffey_SC_090 sub-basin, which is situated in hydrometric area 09, Liffey & Dublin Bay.

Table 2.1: Ecological & WFD Status of Sub-basin

	LIFFEY_090
Ecological Potential/ WFD Status	Poor
WFD Risk	At Risk
Sources of Risk	Soil extraction increasing sediment loading

A cross reference with the EPA database states that the underlying groundwater body at the proposed site as Dublin (Code: IE_EA_G_008) and is classed as being of 'Poor' status and is 'High Vulnerability'.

A review of the GSI online map database indicates that the site is noted as Limestone till (Carboniferous) subsoils for the footprint of the site.

According to the Geological Survey of Ireland's map viewer, the underlying lithology is characterised as being massive, unbedded limes-mudstones. They are characterised as dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar. The formation is called the Lucan Formation and is part of the Dinantian Carboniferous series.

The site is underlain by a locally important bedrock aquifers that is moderately productive in local zones. The groundwater vulnerability for the site is 'High'. Given the scale and purpose of the development it is not envisaged that the site will pose a long-term risk to the underlying groundwater.

The main regional surface water features include the Griffeen River (located approximately 1km northwest of the development) and the Liffey River (located approximately 4.5km north of the development). The regional natural surface water drainage pattern, in the environs of the site is presented in Figure 9-1 'Regional Catchment Delineation Overview' of Chapter 9 (Hydrology and Hydrogeology) of the EIAR.

The Baldonnell Stream is located within the site boundary. The EPA maps show the stream to run through the central portion of the proposed development in a north- south orientation. The Baldonnell Stream joins the Griffeen River approximately 1.3km downstream from the

proposed power plant The Griffeen River then joins the Liffey River (IE_EA_09L012350) at Lucan, located 4.8km north of and downstream from the proposed power plant.

The neighbouring data centre site has diverted the upstream section of Baldonnell Stream where it has been culverted under their site before it enters a 'V-Shaped' channel within the proposed development. The diverted stream enters the proposed development at the south-eastern corner, where it continues to flow northwards along the 'V-shaped' channel which has steep grassy banks up to 3m in height. The Baldonnell Stream follows the development site's eastern boundary before it is culverted beneath the existing road through a concrete circular culvert measuring approximately 1m in diameter. The Baldonnell Stream is 0.3 to 0.6m in width with water depths averaging at 0.2m in the winter period, the flow was mostly gentle, and the substrate varied from clayey cobbles to silt.

Minor surface water ponding occurs on the site. The surface water ponding is considered to be seasonal and mainly associated with periods of heavy, prolonged and intense rainfall. The ponding form as a result of acceptance of drainage from the adjacent site and of natural attenuation of rain. The ponding has minor connectivity with the Baldonnell Stream (EPA name, through the small drainage pipe located at the south-eastern corner of the proposed site).

2.3.3 Noise Pollution

The assessment of construction noise and vibration and has been conducted in accordance with best practice guidance contained in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites — Noise and BS 5228-22009+A 1:2014 Code of practice for noise and vibration control on construction and open sites - Vibration. Subject to good working practice as recommended in the EIAR Chapter, it is not expected that there will be any significant noise and vibration effects associated with the construction phase. In the majority of cases, the construction noise impact is Not Significant; in a small number of cases, a Slight impact is anticipated.

Due to the distance of the proposed works from sensitive locations significant vibration effects are not expected. Any complaints arising from noise or vibration will be investigated and if necessary mitigation measures implemented.

2.3.4 Designated Sites

Nine European sites (six SACs and three SPAS) occur within 15km of the proposed development site and are listed in Chapter 12 (Biodiversity) of the associated site EIAR. The European sites: North Dublin Bay SAC, South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA are hydrologically connected to the proposed development site via

the Baldonnell Stream, Griffeen River and River Liffey (hydrological route ca. 25km). North Bull Island SPA occurs 18km from the proposed power plant but is also hydrologically connected to the proposed development site via the Baldonnell Stream, Griffeen River and River Liffey (hydrological route ca 25km).

There are no Natural Heritage Areas (NHAs) located within 15km of the proposed power plant. Sixteen proposed NHAs (pNHAs) occur within 15km of the proposed development site and are listed in Table 124 of Chapter 12 (Biodiversity) of the associated EIAR. Three pNHAs; North Dublin Bay pNHA. South Dublin Bay pNHA and Dolphin Docks pNHA are all hydrologically connected to the development site via the Baldonnell Stream, Griffeen River and River Liffey (hydrological route ca. 25km).

Other sites of natura conservation within 15km of the proposed power plant site are a wildfowl Sanctuary; Brittas Bay (WFS-18), which is located ca. 8km to the south.

2.3.5 Habitats

The Baldonnell Stream which occurs along the northern and north-eastern boundary of the site is a depositing/lowland watercourse (FW2). The watercourse flows in a north-westerly direction before discharging into the Griffeen River located approximately 2km downstream of the proposed development site.

The stream has been heavily modified and is culverted to the south of the site for a small section underneath the adjacent development, Digital Reality Profile Park, and is also culverted underneath the road located immediately north of the proposed development site and again underneath Profile park Road located approximately 165m north of the proposed development site. The stream substrates consist of fine sediment (70%) with sorne small pebbles (30%) present in areas. The stream is heavily vegetated with mats of watercress (Nasturtium officinale) and brooklime (Veronica beccabunga). The flow of the stream is slow.

The proposed power plant site currently comprises wet grassland (CS4). Species present within the grassland includes abundant soft rush (Juncus effusus), ribwort plantain (Plantago lanceolata), white clover (Trifolium repens), silverweed (Potentilla anserina), meadowsweet (Filipendula ulmaria), with occasional self-heal (prunella vulgaris), cuckoo flower (Cardamine pratensis), horsetail (Equisetum spp.) and immature willow trees (Salix spp.). Carpets of Sphagnum magellanicum are present in areas within the grassland. Despite the number of species recorded, the grassland is considered to have a relatively low species diversity. The wet grassland has an uneven surface which suggests the habitat has previously been disturbed. In lower areas of the habitat, small pools of standing water are present.

Neutral grassland (CSI) occurs to the south-western boundary of the proposed development site. Species recorded included common bent (Argrostis capillaris), Yorkshire fog (Holcus lanatus), ribwort plantain (Plantago lanceolata), white clover, Lady's bedstraw (Calium verum) with occasional selfheal (Prunella vulgaris), bramble (Rubus fructicosus), and gorse (Ulex europaeus). There is evidence that the grassland is grazed lightly by horses.

A hedgerow comprising hawthorn (Crataegus monogyna) occurs along the southern outer boundary of the proposed development site. A treeline of ornamental copper beech trees (Fagus sylvatica) occurs approximately 20m north-east of the proposed development site. All trees within the treeline were assessed as having 'Negligible' bat roost potential as per Collins (2016) due to the lack of any suitable features present.

A comprehensive description of the existing habitats encountered at the site is provided in Section 123.2.1 of Chapter 12 (Biodiversity) of the associated submission EIAR.

3 Development Description

3.1 Phasing of the Development

This Construction Environmental Management Plan (CEMP) will outline the sequence of works. A construction program of approximately 20 months is anticipated for the project, with the plant expected to be fully operational in late 2024. A layout plan of the development is detailed in **Figure 3.1** below.

Figure 3.1: Site Layout Plan (Drawing No. 11069-2003)

The project is to be completed in a number of phases as detailed below:

Pre-Construction

Pre-construction activities have already been completed by the Enabling Works Contractor which include preparatory works (i.e. post planning surveys and reporting) and consultation with statutory bodies and the public. Prior to the commencement of construction activities, the area for development should be fenced off.

Following this process, the preparation of the construction working area and topsoil stripping was undertaken. The footprint of the proposed power plant required clearing and leveling to approximately 74.8 AOD FFL. Preliminary volume calculations provide an approximate estimation of stone fill required for all of the hardstanding foundations of 8.500m^3. All vegetation clearance that was required during construction works was commenced outside the breeding birds' season, which runs from the 1st of March to the 31st of August. In the event that clearance of vegetation is required within the bird nesting season, vegetation will be first surveyed by an experienced ecologist to identify the presence of active nests. The survey will specifically target ground nesting birds including lapwing and only vegetation confirmed to be nest free may be cleared. In the event that a nest is confirmed as present, the nest will either be removed under license obtained from NPWS or the nest will be cordoned off until the chicks have fledged or until nesting has failed.

A method statement for soils and soil stripping was included in the Enable Works Contactor CEMP and set out:

- The intended soil stripping depth;
- Options for separating and keeping different soils apart;
- Methods for handling soil;
- The location and height of soil storage mounds and how long they will present; and
- Proposals for reinstating or disposing of soils.

Mobilisation will include the putting in place of staff, temporary facilities, plant and equipment, materials. and systems for construction.

A temporary contractor's compound will be erected on site for the duration of the construction works and will include temporary site offices (portacabins), staff welfare facilities, car parking, and equipment laydown areas.

Training in health and safety will be provided for all staff during the mobilisation period, and all staff will be required to hold a SAFEPASS and Manual Handling Training along with completing a Site Induction.

Phase 1 – Civil and Plant Construction Works

Concrete pouring and filling will be fully controlled to ensure that cement bound materials do not present any pollution risk. All concrete pouring and filing will be supervised and monitored. Trucks, mixers, and concrete pumps that have contained concrete will be washed out in a designated impermeable area to prevent pollution. Where possible, washout water will be stored and re-used.

A Construction Traffic Management Plan (CTMP) has been prepared and agreed with South Dublin County Council as part of the Enable Works Phase CEMP. An updated version

reflecting changes in the project phases of the development will be developed in order to ensure safe movements and interactions between vehicles and pedestrians both on and adjacent to the site. The CTMP will cover all expected work activities, delivery and storage areas, and shall be and / or amended to cover new or altered activities as they arise. The main components of the CTMP will be:

- Description and scope;
- Staging of the works;
- Traffic control during construction;
- Trucks movements to the site;
- Road signs for full and partial road closure;
- Parking for workers and subcontractors;
- Pedestrian safety; and
- Abnormal load (i.e. for transformers/engines) and associated permit applications applied for and secured from/by South Dublin County Council in advance of abnormal load delivery to site

The proposed general construction hours are 07:00 to 19:00hrs, Monday to Friday and 09:00 to 13:00hrs on Saturdays. Occasional weekday evening works may also be required; however evening activities will be significantly reduced in order to manage any associated noise impacts in an appropriate manner and more stringent construction noise criteria will be applicable during any evening works that may be required. As a result. noise emissions from evening activities are expected to be significantly lower than for other general daytime activities. Out of hours working to be agreed & limited to essential works pertaining to health and safety and key elements of production planning, all such works shall only be completed when agreed with project stakeholders and applicable authorities.

It is anticipated that approximately 150 persons will be directly employed during peak construction activities.

Decommissioning Phase –

The power plant is expected to be operational for at least 25 years. On cessation of activities, the plant will either be redeveloped as a power related facility, or the site will be redeveloped in an alternative form.

In the event that the facility is decommissioned, the following programme will be implemented:

- All plant equipment and machinery will be emptied, dismantled, and stored under appropriate conditions until it can be sold. If a buyer cannot be found, the material will be recycled or disposed of through licensed waste contractors and hauliers. If plant and machinery is required to be cleaned on site prior to removal, all necessary measures will be implemented to prevent the release of contaminants.
- All waste will be removed from the facility; and

- The site and all associated buildings will be secured.
- Waste will be recycled wherever possible. All waste movement, recycling, and disposal operations will be controlled by licensed waste contractors.

Details of provisions to decommission and render safe or remove all materials, waste, ground, plant, or equipment contained on or in the site that may result in environmental pollution will be agreed with the Environmental Protection Agency as part of the Industrial Emissions Licensing process.

3.2 Pre-Construction Activities

As mentioned above the enable works contractor established a site setup, appropriate signing, security fencing and welfare facilities which will be utilised during the construction phase.

3.3 Site Set-Up and Fencing

As part of the Enable Works Palisade site perimeter fencing (min 2.4m) has been constructed along the perimeter of the proposed power plant site. This will provide a barrier against unauthorised access from the public areas. Controlled access points to the site, in the form of gates or doors, will be kept locked during any time that these areas are not monitored (e.g., outside working hours).

The fencing will consist of temporary hoarding and will be well-maintained throughout the life span of the project. Any fencing may not contain graphics portraying project information. The site fencing will not be branded using the appointed contractor's logos etc. Marketing images or information boards may not also be placed on the fencing. Access to site will be controlled and monitored outside of site working hours. GAMA is to install temporary perimeter fencing and access gates for all areas of the GAMA's compounds and work areas.

All personnel working on site must have a valid Safe Pass card and the relevant CSCS cards. Training in health and safety will be provided for all staff during the mobilisation period.

A suitably secure site compound will be established. This will facilitate the efficient delivery of materials, personnel to the site, temporary site offices (portacabins), staff welfare facilities and car parking. The location of the site compound is indicated on the Environmental Incident Response Plan site drawing.

A method statement for soils and soil stripping was included in the Enable Works CEMP and set out methods relating to run offs and drainage:

- The intended soil stripping depth.
- Options for separating and keeping different soils apart.
- Methods for handling soil.

- The location and height of soil storage mounds and how long they will be present; and
- Proposals for reinstating or disposing of soils.

Mobilisation will include the putting in place of staff, temporary facilities, plant and equipment, materials, and systems for construction.

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

- An emergency plan for the construction phase of the proposed development to deal with accidental spillages will be drawn up, which all site personnel must adhere to and receive training in.
- Spill-kits and hydrocarbon absorbent packs are situated in yellow wheel bins throughout the site.
- All machinery will be regularly maintained and checked for leaks. Any refueling of construction machinery/vehicles will not be undertaken within 50m of any surface water feature. If it is not possible to bring machinery to the refueling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refueling operations to contain any accidental spillages that may occur. No refueling will be carried out within 50m of the Baldonnel Stream, except in exceptional circumstances.
- The temporary welfare facilities will not have any discharge to ground or surface waters and will be located a minimum of 50m from the Baldonnel Stream. All wastewater will be collected in a large tank, and will be emptied as required by a licenced waste collector according to the manufacturer's guidelines.
- A combination of bottled water, tankered water supply and rainwater harvesting will be used to supply water for the welfare facilities in the compound during the construction works. Rainwater harvesting will be utilised to supplement the water supply for non-potable uses.
- Wastewater generated at the welfare facilities in the construction compound will be managed by means of a temporary sealed storage tank, with all wastewater being tankered off-site by a permitted waste collector to a wastewater treatment plant. The proposed temporary wastewater storage tanks will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying.
- Waste will be removed from the site and disposed of by an approved waste contractor in accordance with prevailing waste management regulations.
- No on-site batching will be permitted at the proposed development area. All concrete will be transported to the site by truck.
- Concrete washout areas and lined skips are to be specified in RAMS.
- Wash-down of concrete contaminated equipment will be avoided on site where possible. If it cannot be avoided, then equipment will be washed down into plastic lined skips where

it will be stored before disposal to a registered facility. All concrete waste will be managed in accordance with waste legislation which is covered in the Construction and Waste Management Plan

- All washdown of vehicles/equipment will be undertaken, where possible, at least 50m from any surface water feature.
- No water will be abstracted from the Baldonnel Stream. Any water requirements will be obtained from the existing water network.
- All structures located in the construction compound and welfare facility will be set back a minimum of 50m from any water feature; and on completion of the construction phase of the proposed development, all apparatus, plant, tools, offices, sheds, surplus materials, rubbish and temporary erections or works of any kind will be removed from the site.
- All new precast surface water manholes shall have a minimum thickness surround of 150mm Concrete Class B.
- All machinery and equipment used during the construction works will be inspected and will be completely dry prior to works commencing to prevent the risk of pathogen translocation.
- All machinery and equipment used during the construction works will be inspected and be completely dry prior to entering Site, to prevent the risk of pathogen translocation. A 'Check, Clean, Dry' protocol will be undertaken with all equipment, machinery and vehicles intended to be exclusively located on site for an extended duration.
- A wheel wash will be located near the entrance to site and all vehicles entering and exiting the Site are required to use, if necessary, to prevent the risk of pathogen translocation.
- Evidence that all machinery and equipment has been cleaned will be required to be on file for review by the statutory authorities and the appointed Environmental Clerk of Works (ECoW).
- To reduce disturbance all temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with the appointed ECoW and H&S Officer. This will ensure that illumination beyond the works area is controlled.
- Lighting will be cowled and directional to reduce significant light splay. No lighting will be directed towards the Baldonnel Stream or nearby hedgerows.
- All temporary and permanent lighting fixtures will conform with International Standard IS EN 13201-2:2015 (Road Lighting) and standards outlined in the South Dublin County Development Plan.
- All construction lighting with be limited to access lighting and task specific task lighting only. LUX ratings will periodically be measured as part of ongoing works to negate any hazards.
- Staff will be informed of lighting standards and objects of the Site in toolbox talks. Likewise, staff will be asked to inform management immediately if they note any increase in brightness, flickering or malfunctioning of lights.

3.4 Site Working Hours

Working hours on site are subject to the South Dublin County Council planning permission and conditions. Stating operating times of 07:00 hours on weekdays and 09:00 on Saturdays nor after 19:00 hours on weekdays and 13:00 hours on Saturdays, nor at any time on Sundays, Bank Holidays or Public Holidays. Any work outside of these hours shall only be permitted following a written request to the Planning Authority and subsequent receipt of the written consent of the Planning Authority, having regard to the reasonable justification and circumstances and a commitment to minimise as far as practicable any unwanted noise outside the hours stated above.

Likewise, deliveries will be confined to these work hours also. There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. Extensions to the working hours for a specified period of time may be permeated upon written agreement with South Dublin Planning Authority. Occasional weekday evening works may also be required; however, evening activities will be significantly reduced in order to manage any associated noise impacts in an appropriate manner and more stringent construction noise criteria will be applicable during any evening works that may be required. As a result, noise emissions from evening activities are expected to be significantly lower than for other general daytime activities.

3.5 Site Access, Deliveries and Traffic Management

The site will be accessed via the local Profile Park road network. The site parking is to be situated in the site compound within the construction site boundary.

An outline Traffic Management Plan (TMP) has been developed with this report and can be seen in **Section 6** of this report.

3.6 Construction Sequence of New Structures

3.6.1 Overview

The exact construction specifications of the proposed works are yet to be finalised. This section of the CEMP will be updated by the main contractor and a definitive construction program will be established, in advance of the commencement of the project.

A summary of operations for the construction phase is listed in **Table 3.2** below.

Table 3.2: Summary of operations expected for the proposed public realm enhancement.

External envelope will require the following operations:	Internal work will require the following operations:
• Blockwork/Brickwork • Shuttering • Composite cladding • Piling	• Carpentry fit out • Electrical fit out • Pipefitting • Fire safety systems • Gas turbine installation • Grid connection equipment
Above ground external operations:	
• Fencing • Asphalt • Landscaping • Signs & road markings • Construction of footpaths • Electric Vehicle charging points	

3.6.2 Engine Hall and Electrical Annex Buildings

The Engine Hall and Electrical Annex Buildings - The primary engine hall building will include up to 5 no. dual fuel gas engines and supporting generating equipment. The engine is rigidly mounted on a steel frame, acting as the lubricating oil service tank, which is resiliently seated on a simple concrete foundation by spring isolators. The alternator is connected to the engine by a flexible coupling rigidly mounted and grouted onto a separate and elevated concrete foundation. The engines will each have an exhaust flue which will connect into two separate stack clusters located directly adjacent to the engine hall. The stack will be a steel structure with high quality cladding and will have a height (flue tip height) of 28m. The electrical annex building will be located adjacent to the main powerhouse. the electrical annex will contain the compressor room, cable rooms, switch rooms, station transformers, Control Room and messing facilities.

3.6.3 Workshop Building and Security Hut

The Workshop Building and Security Hut - The Workshop building will include a fire equipment room, fuel pump and pilot oil treatment room. A security hut will also be provided.

3.6.4 Radiator Coolers

Radiator Coolers - The engines are cooled with a closed-loop, radiator cooling water system. The system consists of a high temperature circuit and a low temperature circuit. Air is drawn through the radiator coolers by fans driven with variable speed electrical motors.

3.6.5 110kV Electrical Transformer(s)

110kV Electrical/ Transformer(s) – Installation by the Contestable Work Contractor for the electrical generator associated with the gas engines will connect to the main transformers where the voltage will be increased to 110 kV. Electrical power will be exported from the power plant's main transformers to the existing Barnakyle 110 kV Station which is operated by EirGrid.

3.6.6 Above Ground Gas Installation

On Above Ground Gas Installation - On site there will be a dedicated Above Ground Installation (AGI) gas compound where the incoming gas supply pressure will be reduced prior to its use in the gas engines. Natural gas will be delivered to the power plant via a new below ground pipeline from the existing gas network. It is envisaged following on from consultations with Gas Networks Ireland that this connection will be via a new spur from the existing national gas transmission network which has an existing AGI compound close to the Nangor Road approximately 1km to the north of the proposed power plant..

3.6.7 Tank Farm

Tank Farm - In order to comply with CRU requirements, low sulphur diesel oil will be stored as a backup fuel. The tanks will be bunded in accordance with the requirements set out in the EPA publication, ‘Storage and Transfer of Materials for Scheduled Activities' (2004), which states bunds are to contain 110% of the volume of the tank in the event of a tank rupture. The height of the bund wall will be 1.8m.

The bulk tank will be fitted with a high-level alarm to prevent overfilling. There will be a dedicated tanker unloading area surrounded by a drainage channel which will drain to a petrol interceptor. This separator will provide for full retention of any material in the event of a rupture and spillage of a tanker compartment. A shut-off device incorporated into the separator will close the outlet in the event of its capacity being exceeded.

A tank will be installed for urea storage. Urea solution will be used for the purpose of emission control. The Tank will have a volume approximately 75 m^3. In addition, a tank (fresh lube oil storage tank) of approximately 29 m^3 is required on site to contain sufficient oil to refill an

engine after an oil change. A lubricating oil run-down tank (maintenance oil tank) will be used to hold the engine oil while maintenance work on engine is being carried out. Capacity of the tank is approximately 29 m^3. A tank (used lube oil tank) with a volume 29 m3 will be installed for dirty lube oils. An effluent tank with 26m^3 will be used for storage purposes.

3.6.8 Utilities and Services

Water Usage

Water Usage - Water usage requirements for the proposed power plant will be required for potable water used for domestic purposes (drinking water, toilets etc.) and for fire-fighting purposes. Water supply for the proposed power plant will be taken from the public water mains which is located immediately adjacent to the site. Water for fire-fighting purposes will be stored in a tank with a volume of 842m^3 tank with a working volume of 757 m^3.

Wastewater infrastructure required will involve connection to existing foul wastewater infrastructure adjacent to the site.

Surface Water Drainage

Surface Water Drainage - Surface water runoff will be generated from all surfaces within the facility that are exposed to rainwater or to which water is applied in order to clean. This includes all hardstanding surfaces, roofs, and other impermeable surfaces. All surface water will be discharged to the Baldonnel steam adjacent to the site.

As part of the surface water drainage design strategy, the following items have been included in order to effectively manage surface water at the site:

- Surface Water Pumps in Duty/Standby Arrangement - A standard duty/standby arrangement including high level alarms, float switches, and associated telemetry will be provided;
- Petrol Interceptor (Installation details to be confirmed) - Full retention petrol interceptors have been included in the surface water collection system on a precautionary basis. The full retention petrol interceptors will be fitted with visual and audible alarms to ensure containment facilities are adequately maintained. In addition, this alarm will be linked to telemetry facilities such that relevant staff will be alerted if oil is detected at trigger levels; and
- Down Pipes/Gullies — It is proposed that surface water will be collected from roofed buildings via standard rainwater down pipes white runoff from un-roofed structures will drain to the access roads where it will enter the drainage network via road gullies. It is also proposed that gullies and drain entry points will incorporate silt traps to remove any grit or silt which may be washed into the drainage system.
- Flow Control Device - It is proposed to limit the surface water runoff from the site to be similar to the Greenfield runoff as per the requirements of the Great Dublin Strategic

Drainage Study. It is proposed to install a Hydrobrake downstream of an attenuation tank to limit the flow from the site of approximately 4.11/s.

- Attenuation Tank (Installation details to be confirmed) - it is proposed to attenuate all storm water accumulated on site within an underground attenuation tank, which will be discharged to the Baldonnell stream via a Hydrobrake.
- A number of ephemeral drainage features (i.e. drains) are also present on site. These appear dry except during wet weather. Culverting of these will only take place during dry weather periods. Culverts will be designed to be of a size adequate to carry expected peak flows. Culverts will be installed to conform, wherever possible to natural slope and alignment of the drain line. Where required, culverts will be buried and appropriate depth below the channel bed and the original bed material placed at the bottom of the culvert. The sizing of any new internal drainage crossings will maintain existing depth of flow and channel characteristics.
- Silt fencing will be erected at the location of stream crossings along the grid connection route. Silt curtains and floating booms will also be used where deemed to be appropriate and this will be assessed separately at each individual location.
- Excavated material will not be stockpiled or side-cast within 10m of a watercourse. Appropriate steps will be taken to prevent soil or dirt generated during the grid connection route works from being transported on the public road. Road sweeping vehicles will be used to ensure that the public road network remains free of soil or dirt from the location of the grid connection when required. This will reduce the potential for sedimentation of surface water courses locally.
- Permeable Paving - It is proposed to install permeable paving within the car parking areas of the site. The water once permeated into the pavement will be directed towards the surface water drainage infrastructure via a perforated pipe and above ground falls. The permeable paving will also slow the surface water at source, increase the quality of water which is intercepted by the systern through infiltration, biodegradation and pollutant settlement.
- Infiltration Basin — It is to install an infiltration basin within the site to allow for surface water collected from the southern end of the site to infiltrate into the ground water. The infiltration basin will also be provided with a perforated overflow pipe to direct the excess surface water to the attenuation tank during heavier rainfall events.

Foul Wastewater Drainage

Domestic type wastewater effluent will be generated on site. It is estimated that at any one time, there will be no more than 12 personnel on site during production with a peak of 150 personnel envisaged during construction, i.e., the maximum number of people on site at any given time for testing, maintenance, site meetings etc. An approximate volume of 0.1157 l/sec of domestic type wastewater was identified as the maximum domestic wastewater flow which may be generated on site. Wastewater will be pumped to the existing foul sewer in Profile Park which is directly adjacent to the site. Irish Water has confirmed via its 'Pre-connections Enquiry' process that the above water wastewater volume can be facilitated through the existing network (IW reference: CDS21002228).

Firewater Drainage

In the instance a fire occurs on site triggering the sprinkler system or an AFFF discharge on site all firewater will drain to the surface water network. In the event of a fire the penstock on the surface water network will be closed preventing the discharge of contaminated waters to the Baldonnell Stream.

Process Wastewaters

There will be no process wastewater generated from the power plant. A Discharge License has been obtained for the release of liquids from the settlement pond constructed on site for the construction phase.

Lighting

Emergency lighting will be provided throughout the building in accordance with BS 5266-1 Emergency lighting. Code of practice for the emergency lighting of premises.

The escape lighting will be sited to provide an appropriate luminance near each door exit door and where it is necessary to emphasise potential danger or safety equipment. The following bullet points indicate:

- At each exit door intended to be used in an emergency.
- Near stairs so that each flight of stairs receives direct light.
- Near any other change in level.
- Mandatory emergency exits and safety signs.
- At each change of direction.
- At each intersection of corridors.
- Outside and near to each final exit.
- Near each first aid post.
- Near each piece of firefighting equipment and call point; and
- Within all stair cores.

It should also be noted that a Lighting Plan will be undertaken during the detailed design of the power plant to ensure there are no vertical spill or glare issues on residential or commercial properties. This lighting plan will be designed in accordance with the International Standard IS EN 13201-2:2015 (Road Lighting).

3.6.9 Security Fencing

Palisade site perimeter fencing (min 2.4m) will be constructed along the perimeter of the proposed power plant site.

An additional concrete retaining wall will also be constructed on east side of the Site Boundary, only.

3.6.10 Internal Underground Cabling & Grid Connection

The electrical generator associated with the gas engines will connect to the main transformers where the voltage will be increased to 110 kV. Electrical power will then be exported via an underground cable from the plants main transformers to an offsite electrical substation. Electrical power will be exported from the power plant's main transformers to the existing Barnakyle 110 kV which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park.

4 Construction & Demolition Waste Management Plan

4.1 Introduction

The Greener Ideas Limited (GIL) have received planning permission to develop a ca. 102 MW dual fuel gas fired power plant at a site located in Profile Park, Dublin 22. Profile Park is a 100 acre (40.5 hectare (Ha)) fully enclosed, private business park. The immediate area is predominantly commercial / industrial in nature. No existing environmental (waste or industrial emissions) licence has been or is currently held for this site. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary. The site was previously in agricultural use within the last c. 15 years.

This report presents a Construction & Demolition (C&D) Waste Management Plan (C&DWMP) for the proposed development which will address the following:

- Analysis of the waste arisings/material surpluses;
- Waste management objectives for the project;
- Methods proposed for prevention, reuse and recycling of wastes;
- Material handling procedures; and
- Proposals for training and auditing.

This C&DWMP has been prepared in accordance with the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*[1], published by the EPA in November 2021. These guidelines replace the 2006 guidelines previously published by the former Department of the Environmental, Heritage and Local Government (DOEHLG) and the National Construction and Demolition Waste Council (NCDWC).

The main objective of these guidelines is to provide a practical and informed approach informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project (including consideration of deconstruction). The guidelines provide those involved in a project, including clients, developers, designers, practitioners, contractors, sub-contractors and competent authorities, with a common approach when preparing Resource and Waste Management Plans (RWMPs) for C&D projects.

The updated document sets out practical guidelines informed by best practice approaches in the management and prevention of C&D waste from initial design stages onwards, including:

- "Prior to Construction – including the stages of design, planning and procurement in advance of works on site (in the 2006 guidelines this was referred to as an outline or preliminary plan)";and
- "During Construction – relating to the effective management of resources and wastes during construction or demolition operations (in the 2006 guidelines this was referred to as the detailed plan)".

The proposed development is located in the administrative area of South Dublin County Council (SDCC).

4.2 Waste Management Context

The primary legislative instrument that governs waste management in Ireland is the *Waste Management Act (WMA) 1996*, as amended. The WMA is a key instrument which, among other legislation, implements the EU *Waste Framework Directive* (2008/98/EC) in Ireland. The WMA provides for a general duty on everyone not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution. The WMA also sets out the provisions for the collection of waste and for its recovery/disposal.

Any person or contractor engaged in the collection of waste on a commercial basis is required to hold a Waste Collection Permit in accordance with the requirements of the *Waste Management (Collection Permit) Regulations 2007*, as amended. A Waste Collection Permit is issued to appropriate contractors by the National Waste Collection Permit Office (NWCPO).

Waste materials collected by a suitably permitted waste contractor must only be transported to appropriately permitted or licensed waste facilities. Authorisation for receiving waste materials are provided in accordance with the *Waste Management (Facility Permit & Registration) Regulations 2007*, as amended, for waste permits and certificates of registration (COR) granted by the relevant Local Authority. Waste management authorisations granted by the Environmental Protection Agency (EPA) are issued in accordance with the *Waste Management (Licensing) Regulations 2004*, as amended, and the *Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013*, as amended.

1 EPA Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects (November 2021) - https://www.epa.ie/publications/circular- economy/resources/CDWasteGuidelines.pdf (26 August 2022)

4.3 Relevant Policy

4.3.1 EU Policy

The EU *Waste Framework Directive (2008/98/EC)* lays down the basic principles and concepts related to waste management. It requires that waste be managed

- Without endangering human health and harming the environment;
- Without risk to water, air, soil, plants or animals;
- Without causing a nuisance through noise or odours; and
- Without adversely affecting the countryside or places of special interest[2].

The Directive also sets out key definitions including for waste, recycling and recovery, while also defining when waste ceases to be waste and becomes a secondary raw material (end-of- waste criteria) and how to distinguish between waste and by-product. The Directive also introduces the *"polluter pays principle"* and the *"extended producer responsibility"*.

The basis of EU waste management is the 5-step "*waste hierarchy*", established in the Directive. It confirms the order of preference for managing and disposing of waste and requires EU Member States to carry out the following:

- Apply the waste hierarchy in their waste management legislation and policy;
- Take measures to promote the reuse of products and preparing-for reuse activities;
- Establish waste management plans;
- Encourage high-quality recycling of waste materials as part of the aim to make the EU a 'recycling society'; and
- Ensure that the preparation for reuse, recycling and other material recovery of non-hazardous C&D waste (excluding naturally occurring material defined in List of Waste category 17 05 04) is a minimum of 70% by weight by 2020. The Directive states that this target should be achieved by preparing for reuse, recycling and other material recovery, such as backfilling operations making use of waste to substitute other material.

In Ireland, the Directive is legislated under the European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020)[3].

The EU are currently working on a targeted revision of the Waste Framework Directive (expected in 2023). Despite current legislation, there has been an increase in municipal waste generation over the last decade, partly due to inefficient waste-collection systems, low recycling rates, lower quality recyclates, and lack of proper implementation of the "polluter pays principle". Revision of the Directive aims to improve the overall environmental outcome

of waste management in line with the waste hierarchy, and will focus on the policy areas of prevention, separate collection, waste oils and textiles.

In March 2020, as part of the European Green Deal, the EU adopted the new Circular Economy Action Plan (CEAP). The new action plan includes initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented, and the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures.[4]

2 EU, Waste Framework Directive - https://environment.ec.europa.eu/topics/waste-and-recycling/waste- framework-directive_en (accessed 26 August 2022)

3 Amends the Waste Management Act 1996 and the EU Waste Directive Regulations 2011 (S.I. No. 126 of 2011)

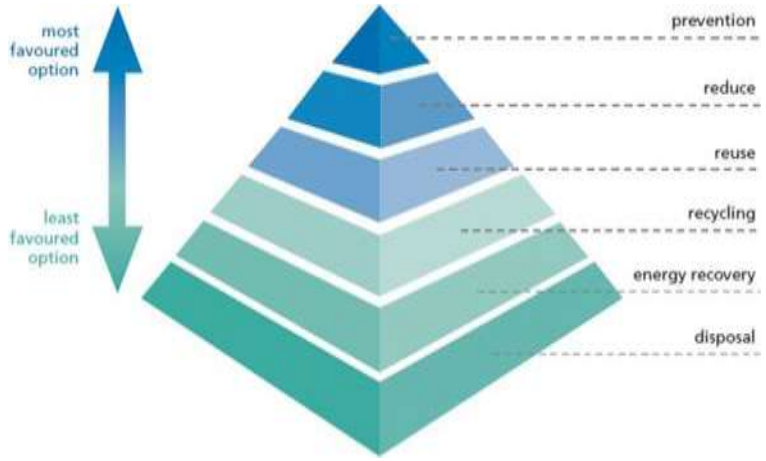
https://www.irishstatutebook.ie/eli/2020/si/323/made/en/print (accessed 26 August 2022)

4 EU, Circular Economy Action Plan (2020) - https://environment.ec.europa.eu/strategy/circular-economy-action- plan_en (accessed 26 August 2022)

Measures under the plan are aimed at ensuring less waste while making circularity work for people, regions and cities and puts focus on sectors that use most resources and where there is a high potential for circularity such as; packaging, plastics, food, textiles, construction and buildings, batteries and vehicles, electronics and ICT, and water and nutrients.

4.3.2 National Policy

Ireland's waste management policy is based on the EU waste hierarchy and establishes a priority order for waste handling and treatment as set out in.



Waste Management Hierarchy (Source: EPA)

The current government policy document on waste, which covers the period from 2020 – 2025, is entitled *A Waste Action Plan for a Circular Economy* (WAPCE) and was published in June 2020[5]. This document is Ireland's new roadmap for waste planning and management and aims to embed climate action in all strands of public policy. The Plan shifts focus away from waste disposal and looks instead to how the country can preserve resources by creating a circular economy.

The Plan outlines the contribution of the sector to the achievement of a number of other national plans and policies including the Climate Action Plan. It also matches the level of ambition being shown across the European Union through the European Green Deal which encompasses a range of actions supporting circularity and sustainability.

The key targets under the WAPCE in relation to C&D waste are:

- Streamlining by-product notification and end-of-waste decision making process;
- Revision of the 2006 best practice guidelines for C&D waste; and
- Working group to develop national end-of-waste applications for priority streams.

Most notably in respect of the proposed development works, the new WAPCE states that:

- C&D waste management plan guidelines will be updated, and we will ensure that there is a consistent application of planning requirements;
- We will develop reuse and recovery targets for plastic from the construction and demolition sector; and
- We will examine methods to encourage source segregation of waste materials on site which could include moving away from the use of mixed skips or incentivised pricing or other financial instruments to support segregation.

In 2021 the Department of the Environment, Climate and Communications (DECC) launched the "*Whole of Government Circular Economy Strategy*"[6], Ireland's first national circular economy strategy. The Strategy was a specific commitment in the WAPCE and is a key addition to Government's drive to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and to get on a path to reach net-zero emissions by no later than 2050, as per commitments in the Programme for Government and the Climate Act 2021.

In July 2022, as part of the Strategy, the *Circular Economy Act* (2022)[7] was signed in to law, and for the first time defines the Circular Economy in Irish Law. In terms of C&D waste, the Act ensures that a fit-for-purpose regulatory system will be in place to allow hundreds of thousands of tonnes of material be safely and sustainably re-used as secondary raw materials. The Act will help streamline the process for decision making by the EPA on end-of waste and by-product applications. This is particularly important in the construction sector, where there is considerable potential to reduce the need for aggregate extraction (e.g. crushed rock, sand and gravel used in concrete) by reusing material that may otherwise be treated as demolition waste. The end-of-waste process allows for safeguards so that this reuse can be done in a way that is safe in terms of the environment and human health.

4.3.3 Regional Waste Management Plans

For the purposes of waste planning, Ireland has been divided into three waste regions, namely the Eastern-Midlands Waste Region, the Southern Waste Region and the Connacht-Ulster Waste Region. The project is situated within the Eastern-Midlands Waste Region (EMWR), which comprises 12 no. local authority areas which are:

Eastern-Midlands Waste Region	
Dublin City Council	Laois County Council
DúnLaoghaire-RathdownCounty Council	Longford County Council
Fingal County Council	Meath County Council
South Dublin County Council	Offaly County Council
Kildare County Council	Westmeath County Council
Louth County Council	Wicklow County Council

5 DECC, A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 (June 2020)

6 DECC, Whole of Government Circular Economy Strategy 2022 – 2023 'Living More, Using Less' (2021) - https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more- using-less/ (accessed 26 August 2022)

7 DECC, Landmark Circular Economy Act signed into law (2022) - https://www.gov.ie/en/press-release/4546a- landmark-circular-economy-act-signed-into-law/ (accessed 26 August 2022)

Each of the three waste management regions has developed a Regional Waste Management Plan to provide a framework for the prevention and management of wastes in a safe and sustainable manner. The current waste plan for the EMWR is the *Eastern-Midlands Region Waste Management Plan 2015 – 2021*.

The strategic vision of the regional waste plan is to rethink Ireland's approach to managing wastes, by viewing waste streams as valuable material resources that can lead to a healthier environment and sustainable commercial opportunities for the economy.

Specifically, in relation to C&D waste, the regional plan identifies Irelands mandatory target under the Waste Framework Directive to achieve 70% reuse, recycling and materials recovery of non-soil and stone construction and demolition waste to be achieved by 2020. The latest EPA waste statistics (2019)[8] identify that Ireland's current rate achieved is 84%. The regional plan also states that *"there is significant potential for recycling of the C&D waste stream given the nature of its characteristics"*.

The WAPCE states that the three existing regional waste management plans will be replaced by a new single *National Waste Management Plan for a Circular Economy* (NWMP), which will contain targets for reuse, repair, resource consumption, and reducing contamination levels.

The process of developing the new NWMP is underway and is subject to a Strategic Environmental Assessment and an Appropriate Assessment; the pre-draft consultation has been undertaken[9] and a draft of the NWMP is expected to be published for consultation in late 2022. The NWMP will be in respect of the Local Authority administrative areas, with the lead authority for the Eastern-Midlands Region being Dublin City Council.

4.3.4 County Development Plan

The current development plan applicable to the proposed development is the South Dublin County Development Plan 2022-2028 (SDCC, 2022)[10] which sets out the local authority's commitments to provide and deliver infrastructural services which will enhance the quality of the South County Dublin environment and facilitate sustainable economic development and housing. The development plan sets out a number of policies, objectives, standards and criteria with regard to waste management, with those specifically in relation to C&D waste outlined below.

8 EPA, *Progress to EU Waste Targets* (June 2022) - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/progress-to-eu-targets/ (accessed 26 August 2022)

9 My Waste, National Waste Management Plan for a Circular Economy – pre-draft consultation process - https://www.mywaste.ie/pre-draft-consultation/ (accessed 26 August 2022)

10 SDCC, *South Dublin County Development Plan 2022-2028* - https://www.sdcc.ie/en/devplan2022/ (accessed 25

Policy within Chapter 5 - *Quality Design and Healthy Placemaking* - sets out the following objective in terms of C&D waste:

- QDP11 Objective 3: "To promote the reuse and recycling of materials to promote the circular economy and reduce construction and demolition waste"

Chapter 11 - *Infrastructure and Environmental Services* - sets out the following objective in relation to waste management and C&D:

- IE7 Objective 2: "To support the implementation of the Eastern Midlands Region Waste Management Plan 2015-2021 or as amended by adhering to overarching performance targets, policies and policy actions";
- IE7 Objective 8: "To adhere to the recommendations of the National Hazardous Waste Management Plan 2014-2020 and any subsequent plan, and to co-operate with other agencies including the EPA in the planning, organisation and supervision of the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects".

Chapter 12 - *Implementation and Monitoring of the CDP* - sets out the development standards and criteria that arise out of the policies and objectives of the CDP, and includes the following in relation to C&D waste:

(iv) Construction and Demolition Waste

Construction and Demolition Waste Management Plans should be submitted as part of development proposals for projects in excess of any of the following thresholds:

- New residential development of 10 units or more;
- New developments other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,000 square metres;
- Demolition / renovation / refurbishment projects generating in excess of 100 cubic metres in volume, of Construction and Demolition (C&D) waste;
- Civil engineering projects in excess of 500 cubic metres of waste materials used for development works on the site.

The Construction and Demolition Waste Management Plan, as a minimum, should include provision for the management of all construction and demolition waste arising on site, and make provision for the reuse of said material and / or the recovery or disposal of this waste to authorised facilities by authorised collectors. Where appropriate, excavated material from development sites is to be reused on the subject site.

4.3.5 South Dublin County Waste Bye Laws

New Waste Bye-Laws[11] for the functional area SDCC entered into force on 03 December 2018. These are referred to as the South Dublin County Council Household & Commercial Waste Bye-Laws 2018[12]. The provisions of the Waste Bye-Laws do not apply to C&D waste.

4.4 National Waste Statistics

The EPA reports on national waste generation statistics on a regular basis13. The latest reference year available in terms of C&D waste statistics is 2019[14] released in November 2021. This data indicates the following key trends in the sector:

- C&D waste generated increased to 8.8 million tonnes in 2019, up from 2.6 million tonnes in 2018 and relates to the significant increase in construction activity nationally in 2019.
- The data indicates the increase was driven mainly by an additional 2.7 million tonnes of soil and stones, which totalled 7.5 million tonnes in 2019;
- In 2019, soil, stones and dredging spoil made up the largest fraction of C&D waste collected at 85%, up from 77% in 2018. The next largest waste types in 2019 were concrete, bricks, tiles and gypsum (7%) and mixed C&D (4.5%); and
- Most of the C&D waste generated in 2019 (82%) was backfilled while 10% went for disposal, and only 7% of all C&D waste was recycled;
- Recycling was the main treatment operation for metals (100%) and waste bituminous mixtures (64%);
- Only 39% of C&D related segregated wood, glass and plastic waste was recycled in 2019 while 54% went for energy recovery.

Under the Waste Framework Directive (2008/98/EC), EU Member States must achieve a rate of 70% material recovery of non-hazardous, non-soil and stone C&D waste by 2020. In 2019, Ireland achieved 84% material recovery of such waste, surpassing the 2020 target; an improvement on the recovery rate of 71% achieved in 2016 and 77% achieved in 2018.

In terms of C&D waste statistics, the EPA states that “Prevention and improved recycling of C&D waste could be achieved by employing best practice circular construction activities, such as designing out waste, enhanced segregation of C&D materials into individual material streams and by maximising the use of resources, in line with the EPA’s revised Best Practice Guidelines for the Preparation of Resource [& Waste] Management Plans for Construction & Demolition Projects”.

As previously mentioned, development of this C&DWMP has been informed by these guidelines, and prevention and management of C&D waste generated on-site will follow best practice.

The EPA provides a release calendar for their waste statistics, which currently states that the planned release for 2020 C&D data is September 2022[15].

4.5 WASTE MANAGEMENT OBJECTIVES

The following waste management objectives are identified for the proposed development:

- Maximise the on-site segregation of C&D wastes;
- Consideration of all reuse opportunities for material surpluses within the site;
- Avoid oversupply of incoming construction materials which have the potential to become waste; and
- Engage appropriately licensed waste contractors that can provide maximum off-site reuse, recovery and recycling of waste materials in preference of disposal.

The national target for preparing for reuse, recovery and recycling of C&D waste (excluding soil and stone) is 70% and the waste industry in Ireland is currently achieving 84% (2019).

The target set for C&D waste management for the Profile Park Power Plant project is to exceed the national target of preparing for reuse, recovery and recycling of 70% of C&D waste (excluding soil and stone).

The main contractor will be made aware of this project target and will be required to engage suitably permitted/licenced waste contractors that will be able to provide a commitment to achieving, or exceeding, this target.

11 SDCC, *Environmental Bye-Laws* - https://www.sdcc.ie/en/services/environment/environment-bye-laws/ (accessed 25 August 2022)
12 SDCC, *South Dublin County Council Household & Commercial Waste Bye-Laws 2018* - https://www.sdcc.ie/en/download-it/publications/waste-management-bye-laws-2018-v-1.pdf (accessed 25
13 EPA, National Waste Statistics for Ireland - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/ (accessed 25 August 2022)
14 Construction & Demolition Waste Statistics for Ireland - https://www.epa.ie/our-services/monitoring-- assessment/waste/national-waste-statistics/construction--demolition/ (accessed 25 August 2022)
15 EPA planned releases for 2022 (last updated July 2022) - https://www.epa.ie/our-services/monitoring-- assessment/waste/national-waste-statistics/release-calendar/ (accessed 26 August 2022)

4.6 Project Description

The site of the proposed power plant is located in Profile Park, Dublin 22 which is situated ca.3.15 km west of Clondalkin town centre. Profile Park is a 100 acre (40.5 Ha) fully enclosed, private business park. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary. The site was previously in agricultural use within the last c. 15 years.

The site comprises an area of flat disturbed ground which appears to have been subject to topsoil disturbance in recent years during the construction of roadways to the north and east– as per review of aerial photography evidence. The topography of the proposed power plant site can be described as ostensibly flat, or slightly sloping, with elevations from c.73 mAOD to mAOD, resulting in the lands being at a marginally lower elevation to the surrounding Profile Park road and footpath infrastructure.

No existing environmental (waste or industrial emissions) licence has been or is currently held for this site.

The proposed development is a c. 102 MW dual fuel gas fired power plant, comprising associated plant, equipment and buildings including the following elements:

- 1 no. Engine Hall building with a height of 16.9m, (comprising 5 no. gas engines and ancillary infrastructure);
- 1 no. Electrical Annex Building (height of 18.7m);
- 1 no. Workshop Building with a height of 5.1m;
- 1 no. Tank Farm building with a height of 5.68m;
- 1 no. Security Hut with a height of 3.27m;
- Tanks including 2 x Diesel Oil Storage Tanks, a SCR Urea Tank, a Lubricant Oil Storage Tank, a Lubricant Oil Maintenance Tank, a Pilot Oil Tank, a Fire Water Storage Tank, an Effluent Collecting Tank; and an Underground Surface Water Attenuation Tank.
- 2 no. exhaust stacks (each 28m in height)
- 1 no. Gas AGI including a kiosk (height of 3.3m);
- Radiator Coolers (height of 8.46m);
- 2 no. electrical transformers (height of 4.98m);
- 2 no. new access onto the existing private road network within Profile Park;
- 12 no. number parking spaces, footpaths, landscaping; and
- Fencing and all other associated site development plant and equipment and other works including surface water and foul wastewater drainage.

The development will also include landscaping, site services and all associated infrastructure

works necessary to facilitate the development.

4.7 Waste Arisings

C&D waste statistics from 2019 published by the EPA 16 identify the main waste types generated in the construction industry in Ireland as set out in Table 4-1.

Table 4-1 – EPA C&D waste statistics – Composition of C&D Waste for 2019

Waste Type	% of total (by weight)	List of Waste Codes*
Soil, stones and dredging spoil	84.8%	17 05 03 to 17 05 08
Concrete, brick, tile and gypsum	6.9%	17 01 01 to 17 01 07
Mixed C&D waste	4.5%	17 09 03, 17 09 04
Metal	2.2%	17 04 01 to 17 04 11
Bituminous Mixtures	1.3%	17 01 03 to 17 03 03
Segregated wood, glass and plastic	0.3%	17 02 01 to 17 02 03

* Waste types may be non-hazardous or hazardous

As above, soil and stones waste typically make up a significant proportion of C&D waste generated in Ireland.

The Power Plant development will require pre-construction activity and ground excavations to enable works as the existing site is greenfield with no previous or existing development present. "The building structures will require excavations for foundations which will be determined as part of the detailed design phase. Excavations will also be required for underground utilities and surface water drainage infrastructure."

Arisings from piling and excavation works will be reused on site wherever possible for site profiling and landscaping works.

There have been no intrusive site investigation (SI) works carried out at the site to date and, as such, there is no site-specific soil / ground quality data available at this time. Site investigations will be carried out as part of the detailed design of infrastructure for the power plant in the coming months and these intrusive investigations will include the collection, monitoring, analysis and reporting of environmental quality records for the current site conditions. Any SI works carried out will include environmental soil analysis to identify the potential for encountering contaminated soils during ground works.

Any contaminated material identified will be excavated in a controlled environment and handled appropriately as hazardous waste.

During Enabling Works asbestos material was located on site and was disposed of appropriately. As such it is recommended, if not already conducted, that an asbestos

survey is undertaken of the site and that specific handling procedures in terms of ACMs (asbestos containing materials) is required.

During construction works, waste material will be generated mainly from excavations, material off-cuts and packaging. Oversupply of materials can also lead to waste generation. The typical waste materials generated again will be concrete rubble, metals, wood and plastics.

Other waste types generated in smaller quantities on construction sites may include materials such as waste oils, resins, paints and adhesives, as well as waste generated from office and welfare facilities on site, such as paper, packaging, food and canteen waste, and waste water and effluent. Some of these materials may be hazardous and will require specific handling procedures. It is expected that waste quantities of these materials will be small.

4.8 Demolition Waste

No demolition works are proposed for this site. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary.

4.9 Excavation Waste

The site is currently greenfield, as such the key source of waste material during the construction of the development will be from the excavation of ground material to allow for the laying of foundations and construction of the building structures. Material from piling and excavation works will be reused on site wherever possible, such as for site profiling and landscaping works.

This will require removal of topsoil and subsoil to a competent founding layer and upfilling with structural fill and/or concrete (concrete only proposed for the tank farm, oil supply and storage, engine hall, electrical annex building, transformers, workshop, parking and plant associated structures) to the required finished floor level. Up to 8,500m3 (c. 14,875 tonnes) is required as part of the cut and fill balance.

A review of the EPA website for both existing and historic licensed and illegal waste activities was carried out to identify any potential contamination sources present in the area and to identify any potential contaminating activities near the proposed power plant. The desk study indicated that no waste facilities or illegal waste activities were recorded with a 2km radius of the site proposed facility. No visual or olfactory evidence of contamination was identified during site walkovers carried out in February and May 2021.

SI works carried out during the detailed design stage of the project will include visual inspection and testing to confirm the environmental quality of the excavated ground materials.

4.10 Construction Waste

The Power Plant will be characterised by pre-construction gradually phasing out to a number of main civil engineering works to provide the necessary infrastructure for completion.

The pre-construction phase will include preparatory works (i.e. post planning surveys and reporting) and consultation with statutory bodies and the public. Following this process, site clearance activities will commence, the construction phase comprise civil and plant construction works, including:

- Construction of access and hardstands (temporary contractor's compound, temporary site offices, welfare facilities, car parking and equipment laydown areas);
- Topsoil stripping of the construction working area (and localised at certain locations along the cable/ gas pipeline route), the removal of ditches, trees, and other vegetation from the site;
- Processing of materials and reinstatement;
- Construction of infrastructure foundations (power plant infrastructure foundations, parking, site entrance);
- Excavation for cable ducts, gas pipeline, tank farm, infrastructure foundations;
- Management of excavated materials; and
- Construction of surface water drainage system along the new access to site.

The Power Plant will be constructed using standard construction and building materials and methodologies. Materials will be required for construction of the elements of the design including building structures, concrete floors, and metal decking. Therefore the majority of construction waste material will be streams including mixed C&D waste, metal, wood, plasterboard, glass and waste electronic and electrical equipment (WEEE) as would typically be generated from the building of a similar industrial style facility. Materials required for the construction works will be sourced locally, where feasible. Material importation to site will be required such as ready mixed concrete, road surface, etc.

Construction waste quantities have been estimated based on the gross area of new infrastructure proposed. The breakdown of anticipated waste types are based on a study on construction waste generation carried out by GMIT and the EPA in 2015. Table 4-3 below presents the estimated construction waste quantities for the main waste types.

Table 4-2 – Estimated construction waste quantities

Waste Type	Tonnes
Mixed C&D waste	108
Timber	92
Plasterboard/Gypsum	0
Metals	26
Concrete	20
Other waste (cabling/wiring, ducting, insulation, packaging and plastics)	49
TOTAL	**294**

The estimates above are based on construction of commercial developments but can be applied as an estimate for the proposed development. Waste type breakdown will vary depending on final selection of material types and the extent of on or off-site construction employed.

4.11 Waste Handling

4.11.1 On-Site Waste Management

To ensure that waste management is given adequate consideration throughout the construction phases, the main contractor will appoint a Waste Manager who will have overall responsibility for implementing this C&DWMP, ensuring that the project remains in compliance with waste legislation and striving to achieve, and exceed, the waste management targets as set out in Section 2.

As a primary measure, waste generation will be avoided, where possible, by ensuring that an excess supply of building materials is not delivered to the site and that only the minimum materials required to meet the construction schedule are available on-site. This will reduce the potential for damage and re-ordering materials which will save on project costs. The 'Just-in- time' delivery concept will be applied, where possible, to minimise waste creation. Off-site construction of key equipment, machinery and other infrastructure will be explored, where possible, to minimise waste generation at the project site. Off-site manufacturing techniques are typically optimised to reduce wastage.

There are stockpiles of spoil from a third-party development in the north and western areas of the site. This material comprises layers of gravels and concrete blocks with some top-soil. There is no evidence that there are contaminated materials within the stockpiles, however the site engineer/environmental representative will monitor the handling of the materials and obtain samples for environmental analysis. It is intended to retain this material on site for use in site profiling and landscaping, subject to the suitability of the material which will be determined when site preparation works commence.

The Waste Manager will liaise with procurement teams to ensure that minimal and unnecessary packaging is not brought on-site or is removed from site by delivery vehicles. In particular, timber pallets will be returned with deliveries where possible.

Maximum segregation of waste materials on-site will be carried out to increase the off-site potential for reuse and recycling of materials. Skips of varying sizes will be provided strategically at the site to promote source segregation and avoid rubbish build-up and potential for off-site littering. A waste compound will be set up such that skips are located close together which helps promote source segregation and aids collection of skips by the waste contractor. As required, skips/tipper skips will be temporarily positioned adjacent to works areas to help waste segregation and reduce handling of wastes.

All skips will be maintained in good condition and clearly labelled so that there is no confusion as to what materials are to be placed in which skip. The main contractor will appoint an employee(s) to keep the area around the skips clean and to ensure skips are not overflowing with waste. Waste materials such as gypsum, WEEE and batteries may require covered skips or containers to prevent contaminated run-off in the event of getting wet.
Hazardous waste will have the same dedicated containment but will be stored at a separate area on site. Dedicated bunded storage areas will be provided for storage of liquid wastes such as resins, oils, paints etc.

Appropriate handling, storage and reuse of excavated materials are of importance during the construction phase of the proposed power plant. Excavation and piling works will be monitored, and environmental sampling carried out to classify the material for off-site recovery or disposal, if required. Clean uncontaminated material will be kept separate from contaminated (or potentially contaminated) materials so as to avoid cross contamination and reduce the quantity of contaminated material requiring off-site treatment.

Stockpiles will be located away from the Baldonnell Stream. Opportunities to reuse suitable excavated material within the site will be maximised where appropriate. Topsoil and subsoils will be stored separately and used for landscaping and in the reinstatement of the site areas. Topsoil/subsoil will be stockpiled no higher than 2.5m and follow the recommendations set out in the NRA Guidelines for the Management of Waste from National Road Construction Projects (NRA, 2014).

There is potential for a negative effect on water as a result of the erosion of soil and the inappropriate storage of excavated materials. However, any risk from the stockpiling of excavated materials can be managed through good site practice. The presence of watercourses within the site requires a robust sediment and erosion plan to effectively reduce the risk of sediment release to surface waters.

For works along the grid and gas connections, and site entrance works, the excavated material will be cast to the side to be reused as backfilling material where appropriate. This

material will not be stored in the vicinity of any watercourses. It will be cast on the upgradient side of the trench, so if any runoff did occur it would run into the downgradient trench.

Excess material will be transported to a local appropriately licensed/permitted waste recovery facility (see Section 5.2 Off-Site Waste Management).

4.11.2 Off-Site Waste Management

During construction, excess material will need to be transported offsite as waste for appropriate management. The main contractor will appoint a suitably permitted waste contractor(s) to collect waste from the site and transfer to appropriately permitted or licensed waste facilities. It is not possible at this stage to identify who the waste contractor(s) will be or to provide their waste collection permit number(s). However, these details will be retained on site following appointment as described in Section 6.

The appointed waste contractor(s) will typically determine the facilities where C&D waste will be taken to. Upon appointment of a waste contractor, details of the waste collection permit(s) and chosen waste facilities (including waste licence details) will be collated and retained on site. Written confirmation of the acceptance of the material at the chosen facilities can be obtained and provided to SDCC if required.

There are numerous waste transfer stations, treatment facilities, and recovery facilities in the Greater Dublin Region (including Dublin, Meath, Kildare, and Wicklow) that can accept C&D waste for reuse, recycling and recovery. Examples of these facilities include Roadstone Belgard Quarry, Roadstone Huntstown and Calary Quarries and Sorundon Ltd, Dublin 12.

Excavated soil and stone material will be tested to provide a classification for off-site recovery or disposal in accordance with the EPA requirements set out in the Waste Classification publication18. Alternatively, the EPA approved HazWasteOnline application can be used to classify the excavated material as hazardous or non-hazardous. Waste facilities permitted for acceptance of waste materials for landfilling will also require the classification of waste in accordance with the Waste Acceptance Criteria (WAC) set out in EC Council Decision 2003/33/EC 19, and in terms of soil recovery, in accordance with the EPA (2020) “Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities”20. It is anticipated that excavated soil and stone will be transferred off-site in rigid trucks and will be covered to prevent dust deposition off-site.

Uncontaminated soil and stones that is not reused on-site can be recovered as engineering fill in landfill facilities or used for ground improvement in soil recovery facilities. As a last resort, excavated materials can be disposed of to landfill.

Where appropriate, some materials, such as uncontaminated soil and stones, may be classified as a by-product (and not as a waste) in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011, as amended subject to meeting specific requirements as set out in the Regulations and guidance issued by the EPA21. A by-product classification on the excavated materials would permit the use of the material in non-waste licenced or permitted sites. Where contaminants are found (or where bitumen-based materials are present) the material will treated as waste and removed from site and disposed at an appropriately licenced/permitted facility.

The main construction waste materials such as concrete rubble (including ceramics and bricks), metals, plastics, plasterboard, glass and wood are widely recyclable and will be segregated on site into separate skips insofar as is possible with the space available on-site. These materials will be transferred off-site using dedicated skip lorries to appropriate facilities.

Any WEEE generated will be stored separately (under cover if required) and transferred to suitable facilities for processing and onward recycling of components. Similarly, where possible, cardboard packaging will be segregated to maximise recycling potential off-site.

A mixed C&D waste skip will be required for non-recyclable wastes or where site constraints do not permit segregation into all of the above waste types. The appointed Waste Manager will monitor site segregation to ensure recyclable materials are placed in dedicated skips, where provided, and not placed in the mixed C&D waste skip. This material will be transferred off- site for processing and further removal of recoverable materials.

Off-site facilities for processing of C&D waste typically generate a ‘fines’ material which can be recovered as an engineering material in landfill facilities. The Waste Manager will liaise with the waste contractors to ensure maximum diversion of waste from disposal to landfill as per the target set out in Section 2.

Hazardous waste will only be removed from site by waste contractors permitted to handle hazardous waste. Waste oils, resins and paints may be suitable for off-site recovery, and this will be explored with waste contractors.

4.12 Record Keeping

Once a waste contractor(s) has been appointed, the Waste Manager will request copies of their waste collection permits which will be held on file at the site office. The waste collection permits must include an up-to-date list of approved vehicle registrations associated with the permit which can be spot checked by the Waste Manager.

The waste contractor will also be requested to identify where waste materials will be taken to, and copies of waste licences/permits for each facility will be requested to hold on file in

the site office. The Waste Manager will confirm that the waste collection permits, and facility licences/permits are appropriate for the waste types proposed.

A waste log will be set up by the Waste Manager to record all outgoing waste movements from the site. The waste collection vehicle driver will be required to supply an individual signed waste docket (waster transfer form for hazardous waste) for each waste movement off-site which must specify the waste collection permit number, waste type, list the EWC code, waste treatment, source of the waste and waste destination. The docket provided by the driver may also include the weight of waste where the collection vehicle is equipped with a load cell, or the weight of waste is known. Alternatively, the weight of the waste may be determined from a weighbridge at the receiving facility and the weight of waste provided to the Waste Manager as soon as possible after receipt at the off-site facility. Regardless, the waste contractor must be able to provide an accurate measurement of the waste tonnage to the Waste Manager. The waste contractor will also be required to provide feedback on waste collected identifying the percentage of waste recovered and disposed of.

The waste log will be used to identify the main waste types being generated and can be linked to delivery records to identify the percentage of waste from incoming building materials. The Waste Manager will be able to analyse these records to improve efficiency and seek to reduce wastage. The Waste Manager can also use the information to determine the success of the project against the targets set out in Section 2.

4.13 Training, Responsibilities & Auditing

The main contractor will include the waste management objectives outlined in Section 2 as part of the site induction for all new employees on the site. The importance of source segregation and maintaining a clean site will be highlighted and the locations of skips on the site will be provided.

The appointed Waste Manager will be trained in setting up the waste log and checking waste dockets as described in the previous section. The Waste Manager will also be given responsibility for providing toolbox talks on waste management, organising specific training where required and educating workers throughout the project. The Waste Manager will also liaise with SDCC to provide details on the waste facilities to be used and provide waste data as required. It is also beneficial for the Waste Manger to provide feedback on waste statistics to the project team on a regular basis to acknowledge good performance or identify areas for improvement.

The Waste Manager will be familiar with the content of this document and will ensure compliance with the measures set out herein for the duration of the project. Where appropriate, the Waste Manager may delegate responsibility to others for management of

waste in particular areas of the site or may seek appointment of Waste Mangers for specific sub-contracts.

The Waste Manager will also establish an audit checklist to inspect skips and waste containers across the site and identify contamination of skips or other waste related issues which may arise. A review of waste records held for each movement of waste off-site will also be carried out. The waste log will be cross-checked with hard copy dockets and any missing details filled in. Depending on the nature of the wastes generated, the Waste Manager may also want to carry out an audit of the receiving waste facilities to confirm that the waste sent from the site is being treated as described on the waste dockets.

The costs associated with waste management should also be reviewed during the project and highlighted to the Project/Site Manager as to where savings can be made, if any. Typically, maximum on-site segregation of waste and reuse of material where appropriate reduces the costs associated with mixed C&D waste collection which is required to be processed off-site.

4.14 Interactions With Other Bodies

The Waste Manager will ensure coordination with relevant bodies throughout the project. This will include compliance with any construction traffic management requirements identified by the project team or imposed by SDCC.

The Waste Manager will provide details to SDCC on the destinations of waste materials from the site and will provide waste records to SDCC as required. The Site Manager contact details will also be provided to SDCC.

5 Environmental Management Plan

5.1 Background

A preliminary risk assessment was carried out for the proposed site location in accordance with the Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition, produced by the London Authorities Noise Action Forum, July 2016. This assessment took into account factors relating to the proximity of the site to sensitive receptors and rated the level of nuisance anticipated with scheduled work practices.

Following the completion of this risk assessment, available in **Appendix B**, the proposed development was determined to be a low to moderate-risk site. This section outlines suitable measures to minimise nuisance noise and dust emissions in order to minimise any impact of the proposed developments on surrounding receptors.

5.2 Environmental Risk Assessment

As a best practice and mitigation measure all site activities will be required to have an Environmental Risk Assessment undertaken prior to commencement of Works. A draft template of a completed assessment and an blank copy of such an assessment is attached in **Appendix C**.

5.3 Noise

The Contractor will be required to restrict noise levels to the following levels:

Noise due to the normal operation of the proposed development, expressed as Laeq over 15 minutes at the façade of a noise sensitive location, shall not exceed the daytime background level by more than 10 dB(A) and shall not exceed the background level for evening and night time. Clearly audible and impulsive tones at noise sensitive locations during evening and night shall be avoided irrespective of the noise level.

As per Grant of Planning an Acoustic Verification report to the Environmental Health Department of South Dublin County Council has been carried out and submitted.

To minimise noise from construction operations, no heavy construction equipment/ machinery (to include pneumatic drills, construction vehicles, generators, etc) shall be operated on or adjacent to the construction site before 07:00 or after 19:00, Monday to Friday, and before 09:00 or after 13:00 on Saturdays. No activities shall take place on site on Sundays or Bank Holidays. No activity, which would reasonably be expected to cause annoyance to residents in the vicinity, shall take place on site between the hours of 19:00 and 07:00am.

The proposed development will be obliged to comply with BS 5228 "*Noise Control on Construction and open sites Part 1*". GAMA Construction Ireland Ltd. shall implement the following measures to eliminate or reduce noise levels where possible:

- All site staff shall be briefed on noise mitigation measures and the application of best practicable means to be employed to control noise.
- All staff should be briefed on the complaint's procedure, the mitigation requirement and their responsibilities to register and escalate complaints received.
- Local acoustic screens will be installed, where appropriate, if required.
- Contact details of the contractor and site manager shall be displayed to the public, together with the permitted operating hours.
- Material and plant loading and unloading shall only take place during normal working hours.
- Ensure that each item of plant and equipment complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC.
- Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer.
- Use all plant and equipment only for the tasks for which it has been designed.
- Locate movable plant away from noise sensitive receptors.
- Avoid the transfer of noise and vibration from demolition activities to adjoining occupied buildings through cutting any vibration transmission path or by structural separation of buildings.
- Ensure a written notice is received from the South Dublin County Council Planning Department when applying for extensions to normal working hours.
- Duration of works which create high levels of noise or vibration, such as piling, will be limited and staggered to prevent constant annoyance.
- Communication channels will be established between the Contractor and residents to inform of upcoming works which may generate higher than normal construction noise or vibration and provide a means for local residents to register complaints with regard to noise and vibration.
- The contractor will inform the local authority of any communication channels.
- Periodic monitoring of construction noise and vibration during critical periods will be carried out at sensitive receptor locations; and
- Internal access roads will be maintained in good condition to minimise noise and vibration generation from heavy goods vehicles. External access roads from site will also be maintained in good condition to reduce risk of third party events, manage dust/mud and speeding vehicles.
- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use.
- Plant and vehicles will be sequentially started up rather than all together.

- Use of effective exhaust silence systems or acoustic engine covers as appropriate.
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise- sensitive areas. Where possible, loading and unloading will also be carried out away from such areas.
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturers specifications; Screening e.g., noise barriers and bunds, will be used as appropriate.
- Procedures for handling noise and vibration complaints
- The SHEQ Officer, or equivalent, will address complaints relating to noise and vibration.
- Equipment with a low inherent potential for generation of noise and/or vibration will be chosen in lieu of noisier alternatives and place noisy/high vibration equipment as far away from sensitive receptors as permitted by site constraints.

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

5.4 Dust and Air Quality

Dust prevention measures will be put in place for any particulate pollution. The extent of dust generation under construction activities being carried out is dependent on environmental factors such as rainfall, wind speed and wind direction. The most likely sources of dust generation at this site include soil stripping and demolition of structures for the renovation works and the sawing of concrete throughout the duration of the project. A serious of control measures listed below will be undertaken to ensure dust emission does are minimised at the site.

Maximum utilisation of on-site excavation will reduce the need to import excavated materials to the site and where excavated material, concrete and building materials are required to be brought to site, local quarries (such as Belgard Quarry located 2.15 km southeast of the proposed development) and suppliers will be preferred to minimize the carbon footprint of

construction material deliveries.

Contractors will be informed of the following Control Measures to minimise impacts:

- Materials will be ordered and delivered on an ‘’as needed’’ basis to avoid storage of materials on site.
- The contractor will spray water on the surface of all roads in the vicinity of the site if required in order to minimise dust generation from the construction activities.
- Appropriate dust suppression will be employed to prevent fugitive emissions affecting those occupying neighbouring properties or pathways.
- Restrict vehicle speeds to 10 kmph as high vehicle speeds cause dust to rise.
- Stockpiles are to be run parallel with the prevailing wind to minimise airborne erosion.
- Covers are to be provided over soil stockpiles when high wind and dry weather are encountered if required.
- All consignments containing material with the potential to cause air pollution being transported by skips, lorries, trucks or tippers shall be covered during transit on and off site.
- Street and footpath cleaning shall be undertaken during the demolition and ground works phase to minimise dust emissions.
- No materials shall be burned on-site.
- Only wet cut concrete saws are to be used on site to minimise silica dust.
- To maximise the efficiency of the construction phase, minimise the duration of this phase and the restriction to public access to areas of open space within the town centre the construction phase will be undertaken following a sequential “strip and cover” approach that will expose soils and sub surface only when the replacement capping layer is ready and in-situ to be placed immediately over the exposed soils and sub-surface. This will provide for the replacement of ground cover on an ongoing basis and thereby reducing areas restricted to public access as the construction phase proceeds.
- Minimise dust generating activities;/ minimize extent of working areas
- Locate activities and rock / earth stockpiles away from sensitive receptors.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Keep stockpiles for the shortest possible time. Designed and laid out to minimise exposure to wind.
- Ensuring all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted.
- Plan site layout – machinery and dust causing activities (e.g. access roads, stockpiles) should be located away from the site boundary and sensitive receptors where practicable;
- No site runoff of water or mud.
- Minimise movement of construction traffic around site.

- Contractor to implement the revised Construction Traffic Management Plan (CTMP) as part of the CEMP.
- Stack height of 28m (classified as appropriate) will be utilised in the design in order to promote good dispersion of pollutants and ensure that ground level concentrations are kept to a minimum.
- Locate generators away from sensitive receptors.
- Minimise movement of construction traffic around site.
- Ensuring that the engines of all vehicles and plant on site are not left running unnecessarily.
- Regular maintenance of plant and equipment will be carried out to ensure that the equipment is operated efficiently and generating minimal air emissions; and
- Plant or equipment will not be left running unnecessarily and low emission fuels will be used.
- Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level.
- Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found.
- Site inspections to monitor compliance with the Dust Management Plan as outlined in section 5.4.1, record inspection results and make an inspection log available to the local authority, when requested.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce those are being carried out and during prolonged dry or windy conditions.
- Erect solid screens or barriers around dusty activities or the construction site boundary that are at least as high as any stockpiles.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Remove materials that have a high potential to produce dust from site as soon as possible unless being reused on site, if they are being reused on site cover.
- Cover seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary no idling vehicles onsite.
- Avoid use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum speed limit of 15 mph on surface and 10 mph on unpaved surface haul roads and work areas.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- Ensure an adequate water supply on the site for effective dust or particulate matter

suppression or mitigation using non potable water where possible and appropriate.

- Use enclosed shoots and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever available.
- Access routes and entrance sites with the potential to give rise to dust will be regularly watered as appropriate. All stocked piled material will be covered with tarpaulin when not in use. Water misting or bowsers will operate on site as required to reduce dust in dry weather conditions. The transport of sediment or other materials with the potential to generate dust would be undertaken in tarpaulin covered vehicles.
- Implementation of a dust management plan.
- Regularly cleaning and maintenance of site access roads.
- Restricting site traffic along unsurfaced roads.
- Regularly watering unsurfaced roads that have the potential to give dust, sweeping hard surface roads.
- Reduced speed for vehicles using site access roads to reduce dust accumulation.
- Vehicles existing the site make use of wheel wash facilities before entering public roads.
- Daily inspection of public roads surrounding the site to ensure there is no debris on surrounding public roads.
- On-site haul routes shall be inspected for integrity and necessary repairs to the surface instigated as soon as reasonably practicable. Records shall be kept of all inspections of the haul routes and any subsequent action(s) in a site logbook.
- Procedures to be strictly monitored and reviewed regularly.
- To minimise climate impacts associated with delivery of construction materials to the site, the Contractor will source quarry materials as close to the site location as possible and use local builder's providers where possible.

5.4.1 Dust Management Plan

A Dust Management Plan (DMP) has been prepared which sets out the measures that will be implemented by the Contractor to minimise and control dust emissions.

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and any impacts from dust deposition will typically be within 200m of the construction area. The site is located within an industrial estate.

In order to ensure mitigation of the effects of dust nuisance, a series of measures will be

implemented. Site access roads shall be regularly cleaned and maintained as appropriate; dry sweeping of large areas shall be avoided. Hard surface access roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced access roads shall be restricted to essential site traffic only. Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions. To this end, the Project Manager (PM) will conduct on-going visual assessments and will arrange a water bowser as required.

Vehicles using site access shall have their speeds restricted where there is a potential for dust generation. Vehicles delivering material with dust potential to an off-site location shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust.

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

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

This DMP shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practices and procedures. As per Section 4.8, the name and contact details of a person to contact regarding air quality and dust issues shall be displayed on a notice board at the site entrance. All dust and air quality complaints shall be recorded, and causes identified, along with the measures taken to reduce emissions. Daily on and off-site inspections shall occur for nuisance dust and compliance with this DMP. This shall include

regular dust soiling checks of surfaces within 100m of the construction works. Cleaning shall be provided if necessary.

5.4.2 Climate

There is the potential for a number of embodied greenhouse gases (GHGs) and GHG emissions during the construction phase of the development. Construction vehicles, generators etc. may give rise to CO2 and N2O emissions as well as the large quantities of material such as stone, concrete and steel that will be required for the proposed development. The Institute of Air Quality Management (IAQM) document Guidance on the Assessment of Dust from Demolition and Construction (2014) states that site traffic and plant is unlikely to make a significant impact on climate.

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

5.5 Surface Water Protection

The Contractor will employ the best practice measures outlined in CIRIA C532 publication Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors. The surface water drainage design concept is set in Section 3.5.3 (Utilities and Services) of the EIAR and is designed to capture surface water run-off from the proposed power plant site, infrastructure and other adjacent hardstanding areas. It is proposed to install a swale to collect runoff from the adjacent Northeast Road. The water once permeated into the swale will be directed towards the surface water drainage infrastructure via a perforated pipe and above ground falls. The swale will also slow the surface water at source, increase the quality of water which is intercepted by the system through infiltration, biodegradation and pollutant settlement.

It is proposed to attenuate all storm water accumulated on site within an underground attenuation tank (Installation details to be confirmed), which will be discharged to the Baldonnel stream via a Hydro brake. The surface water drainage system will be designed to include Surface Water Pumps in Duty/Standby Arrangement, Petrol Interceptors (Installation details to be confirmed), Down Pipes/Gullies, a Flow Control Device, Permeable Paving and an Infiltration Basin.

The main pollutants with the potential to impact water receptors are silt, fuel/oil, concrete and

chemicals. There are steps outlined below to eliminate contamination of site surface water runoff.

- Harmful materials such as fuels, oils, greases, paints and hydraulic fluids must be stored in bunded compounds well away from storm water drains and gullies.
- Refuelling of machinery will be conducted in a designated refuelling area that will be a safe distance from watercourses. For large or immoveable machinery the use of drip trays will be used contain any spillage.
- Runoff from machine service and concrete mixing areas must not enter storm water drains and gullies leading off-site.
- Stockpiles of sands and gravel are to be avoid, where possible, and if necessary should be kept to minimum size, well away from storm water drains and gullies leading off-site.
- Open excavations to be backfilled immediately following installation of services/ foundations etc.
- Spill kits and hydrocarbon absorbent pads will be located throughout the site and beside the designated refuelling bunds.
- To maximise the efficiency of the construction phase, minimise the duration of this phase and the restriction to public access to areas of open space within the town centre the construction phase will be undertaken following a sequential “strip and cover” approach that will expose soils and sub surface only when the replacement capping layer is ready and in-situ to be placed immediately over the exposed soils and sub-surface. This will provide for the replacement of ground cover on an ongoing basis and thereby reducing areas restricted to public access as the construction phase proceed.
- Materials will be ordered and delivered on an ‘’as needed’’ basis to avoid storage of materials on site.
- As a standard best practice construction measure silt fencing and geofabric may be used within the footprint of the project.
- A discharge license has been obtained for the release of waters from the constructed sediment pond

Surface water runoff will be generated from all surfaces within the facility that are exposed to rainwater or to which water is applied in order to clean. This includes all hardstanding surfaces, roofs, and other impermeable surfaces. All surface water will be discharged to the Baldonnel Stream which is located immediately adjacent to the site.

The permanent surface water management infrastructure will be constructed early in the project by the Enabling Works Contractor along with the construction of impermeable surfaces so that surface water run-off during construction works will be controlled and managed to prevent discharge of sediment laden water to the existing surface water network and local

streams.

In addition, temporary settlement ponds (or alternatively a tank) will be established during construction works in areas of high construction activity and groundworks. The locations of temporary settlement ponds will be adjacent to significant earthworks, as close as possible to the source of sediment while maintaining a minimum 50m buffer distance from existing watercourses. These additional temporary ponds will be decommissioned and reinstated on completion of the construction works.

It is recommended that local surface water features in the immediate vicinity of the site boundary are monitored preconstruction and during construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed development. Monitoring of Baldonnel Stream for water quality and turbidity will be undertaken preconstruction and during the construction. A program of inspection and maintenance will be designed and dedicated construction personnel assigned to manage this program. A checklist of the inspection and maintenance control measures will be developed and records kept.

During the construction phase, field testing and laboratory analysis of a range of parameters will be undertaken at adjacent water courses specifically following heavy rainfall events IE weekly, monthly and event based as appropriate.

The design of surface water for the proposed power plant will provide the necessary attenuation to limit the rate of outflow at or below greenfield run-off rates and are classified as sustainable drainage system (SuDS) measures.

The settlement ponds/tanks will also provide containment capacity in the event of a spill or leak on the installed infrastructure and the outflow can be closed off to contain any potential pollutants within the settlement ponds.

In the event of contaminated run-off being contained in a settlement pond/tank, the incident will be reported and samples taken of the contaminated liquid for classification, as required, and the liquid pumped out of the pond using a suitable vacuum truck and disposed of at a licensed waste facility off-site.

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

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

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

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

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

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

Pre-Emptive Site Drainage Management

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

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

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates.
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next two days.
- Less useful than general forecasts as only available on a provincial scale.
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does

not account for possible heavy localised events.

- Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and
- Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.
- Prolonged rainfall will necessitate the cessation of External Works.
- Works will be suspended during the groundworks phase if forecasting suggests the following is likely to occur:
  > 10 mm/hr (i.e. high intensity local rainfall events);
  > 25 mm in a 24-hour period (heavy lasting Of the day);
  > half monthly average rainfall in any 7 days.
- Prior to works being suspended the following control measures will be completed:
- Secure all open excavations.
- Provide temporary or emergency drainage to prevent back-up of surface runoff.
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded; and
- For forecasted significant weather events employee sediment control measures on susceptible stockpiles to minimise run-off. This may include silt fencing, silt logs, earthen bunds or covering of stockpiles.

No instream works are proposed with the exception of surface water drainage discharge pipe to the Baldonnel Stream. During the ground clearance of the proposed development, the Contractor will implement water control measures to limit the impact on water quality using standard measures. All temporary and permanent drainage from the site shall be designed to have as a minimum three stages of treatment, as defined in the SuDS Manual. Management of run-off will include the following:

- Filtration of water through filter media (sand / stone check dam, silt fence).
- Detention / settlement in settlement ponds or behind check dam in swales; and
- Conveyance of shallow depths of water in vegetated swale.
- The small volume of water that will be generated from washing of the concrete trucks chute will be directed into a temporary lined impermeable containment area, or a concrete wash unit. This type of unit catches the solid concrete and filters and holds wash liquid for pH

adjustment and further solids separation. The residual liquids and solids can be disposed of off-site as waste material. Where temporary lined impermeable containment areas are used, such containment areas will be excavated and lined with an impermeable membrane.

- Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.
- Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete
- No significant concrete pours are to be conducted during heavy rainfall events.
- Ensuring that covers/mesh are available for freshly placed concrete to avoid the surface washing away in heavy rain.
- Disposal of surplus concrete after completion of a pour off-site; and
- Discussing arrangements for concrete deliveries with the suppliers before works commence to ensure they are aware of on-site wash-out restrictions.
- Where groundwater is encountered in excavations and dewatering is required, the pumped water will be released back into the existing surface water drainage network via the settlement ponds, silt bags or dedicated settlement tank to minimise the level of sediments entering the existing watercourses.
- All concrete browsers will be washed down at a dedicated concrete washout onsite located within the construction compound or off site. Concrete washings will not be disposed of onsite to any surface or ground water feature. All washings will be removed offsite and treated at a licensed facility.
- In the event that a Flora Protection Order (FPO) or Red Listed plant species is identified within the footprint of the works area, appropriate mitigation such as translocation will be implemented. In the event that an invasive plant species, listed in Part 1 of the Third Schedule of S.I No. 477/2011 – European Communities (Birds and Natural Habitats) Regulations 2011 are recorded a site-specific Invasive Species Management Plan will be prepared. Further details on invasive species are outlined in Section 5.6.6.
- No clearance of vegetation will be undertaken outside of the demarcated areas within the proposed development site. All disturbed ground will be fully reinstated following the completion of the works.
- Inland Fisheries Ireland (IFI) will be consulted prior to the construction phase of the proposed development commencing and a detailed Method Statement outlining the works for the construction phase of the proposed development and their timing will be agreed.
- As a best practice measure silt fences will be erected along the western and southwestern extents of the site boundary between the site and the Baldonnell Stream. The fencing will use a permeable filter fabric (Hy-Tex Terrastop Premium silt fence, or similar) and not a mesh. The silt fences will be positioned to allow an appropriate working area, but should

not occur within areas prone to flood, or below the high-water mark. The silt fencing must be installed as per the manufacturer's guidelines. Silt fences will be inspected by the ECoW following installation and should be maintained until all ground disturbance has ceased. Once installed, the silt fence should be inspected regularly during construction and more frequently during heavy rainfall events.

- Prior to the commencement of excavations, an area for stockpiling excavated material will be clearly demarked and identified >50m away from any watercourse. This area will be located where surface water percolates freely into groundwater. The amount of excavated material is expected to be small but stockpiling of large volumes of loose soil material onsite will be avoided, and surplus material removed from the site as soon as work is completed.
- Excavation works will not be carried out during or following heavy rainfall (i.e., if there is a yellow weather warning in place or 5mm in a 1-hour period).
- Dewatering of excavations will be avoided. If required, the process will consist of pumping excess water to settlement tanks or filtration systems located at the proposed development site, separated by the nearest watercourse by a minimum of 50m. Silt de-watering bags will be used when water is being discharged.
- All works must align with the guidance set out in the guidance documents entitled: "Control of Water Pollution from Construction Sites. Guidance for consultants and contractors (C532)" (CIRIA, 2001) and NRA (2008b) 'Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes'. National Roads Authority.

5.5.1 Concrete Handling

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

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

5.5.2 Fuels and Oils Management

Construction vehicles will be refuelled off-site, wherever possible. This will primarily be the case for road vehicles such as vans and trucks. However, for construction machinery that will be based on-site continuously, a limited amount of fuel will have to be stored on site. On-site refuelling of machinery will mainly be carried out using a mobile double skinned fuel bowser. Refuelling will be carried out at least 50m from any watercourse. The fuel bowser, typically a double axel custom-built refuelling trailer, will be refilled off-site, where possible, or at either of the two construction compounds. For certain vehicles which are less mobile, refuelling may need to occur elsewhere on site. A spill kit will be stored with the bowser and the person operating the bowser will be trained in their use. When not in use this will be stored in the designated area of the construction compounds. The fuel bowser will be parked on a level impermeable area in either of the construction compounds when not in use.

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

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

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

5.5.3 Spill Control and Response

Emergency spill kits with oil boom and absorbent materials will be kept on-site in the event of an accidental spill. Spill kits will be located in the yellow wheel bins located throughout the site

and with the mobile fuel bowser. All construction personnel will be notified of where the spill kits are located as part of the site induction and will be trained on the site procedures for dealing with spills. The locations of such spill kits are indicated in the Environmental Incident Response Plan drawing.

In the event of a leak or a spill in the field, the spill kits will be used to contain and absorb the pollutant and prevent any further potential contamination. The absorbed pollutants and contaminated materials will be placed into leak proof containers and transferred to a suitable waste container for hazardous materials in the construction compounds. Where a leak has occurred from machinery, the equipment will not be permitted to be used further until the issue has been resolved.

The SHEQ Officer will be notified of any spills on-site and will determine the requirement to notify the authorities.

5.6 Groundwater

It is not anticipated that significant quantities of groundwater will be encountered in excavations. However, groundwater ingress will need to be managed should it occur. Groundwater levels will vary seasonally and with recent weather conditions. The Contractor will give due regard to groundwater levels at the time of construction and optimise excavation works to minimise groundwater ingress.

Where groundwater is encountered in excavations and dewatering is required, the pumped water will be released back into the existing surface water drainage network via the settlement ponds, silt bags or dedicated settlement tank to minimise the level of sediments entering the existing watercourses.

All concrete browsers will be washed down at a dedicated concrete washout onsite located within the construction compound or off site. Concrete washings will not be disposed of onsite to any surface or ground water feature. All washings will be removed offsite and treated at a licensed facility.

Existing road drainage shall not be impaired by the proposed development and all roadside works shall be designed and shaped or otherwise treated to ensure the uninterrupted flow of road surface water run-off, this is in order to prevent damage to the public road in the interests of traffic safety.

All surface water run-off shall be collected and disposed of within the site area. In particular, no such water run-off shall be allowed to flow onto the public road or adjoining properties in the interests of public health and orderly development.

Existing road drainage shall not be impaired by the development of the access arrangements and all roadside works shall be designed and shaped or otherwise treated to ensure the uninterrupted flow of surface water run-off.

5.7 Land, Soils & Geology

The disturbance of soil, subsoil and bedrock is an unavoidable effect in the development of the proposed power plant. Utilising material and soil from on-site excavation will increase the impact on local geology, however there will be less demand for off-site aggregate materials resulting in less traffic movements to and from the site as well as shorter travel distances.

The management of excavated materials is an important component of controlling dust as well as sediment and erosion control. Excavated topsoil, subsoils where encountered, will only be moved short distances from the point of extraction and will be used locally for landscaping and benching/battering, where possible. Excavated material will not be stored in excessive mounds on the site. Excess soils/subsoils will be stockpiled temporarily pending backfill. Placed soils will be sealed and levelled using the back of an excavator bucket to prevent erosion.

Excavation may be susceptible to collapsing depending on material encountered and depth of the excavation. Where battering back of excavations to a safe angle is not feasible, a physical barrier will be applied between the excavations and the potentially unstable material in the form of a granular berm or sheet piles. Excavations for the proposed power plant infrastructure will be backfilled to ground level following foundation installation. Temporary works designs will be carried out by a competent engineer during detailed design to account for the existing ground conditions.

Vehicular movements will be restricted to the footprint of the proposed development site. This means that machinery will not move onto areas that are not permitted for development. This will prevent disturbance of existing soils and vegetation.

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

Surface water management measures as set out in Section 5.4 will be put in place from start of construction works and installed to ensure that surface water run-off is controlled and does not cause erosion of exposed surfaces or generate sediment laden discharge.

5.8 Protection of Ecological Receptors

5.8.1 Appointment of Environmental / Ecological Clerk of Works

ORS has been assigned as the suitably qualified Environmental Clerk of Works (ECoW) for the project. ORS as the ECoW will ensure that all mitigation measures outlined within this report are implemented during the proposed construction works. All vegetation clearance will be carried out outside of birds nesting season (1st March to 31st August inclusive) to ensure there is no impact on protected breeding birds.

In the event that clearance of vegetation is required within the bird nesting season, vegetation will be first surveyed by an experienced ecologist to identify the presence of active nests. These will specifically target nesting birds including lapwing and snipe. Only vegetation confirmed to nest free may be cleared. In the event that a nest is confirmed as present, the nest will either removed under license obtained from NPWS or the nest will be cordoned off until the chicks have fledged or until nesting has failed. The construction work areas will be demarcated prior to the works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas. Disturbed areas of ground will be fully flowing completion of the works.

Good site practice as per the CIRIA C741 Environmental Good Practice On Site Guide (fourth edition) will be implemented on site at all times.

Invasive species biosecurity measures, such as wheel washes and the inspection of vehicles, will be implemented on site to ensure the translocation of invasive species into the proposed power plant site does not occur. Where top soil or similar material is required to be brought onto site, the contractor will ensure the material is not contaminated with Japanese knotweed (Fallopia japonica) or other invasive species.

5.8.2 Pre-construction Botanical Survey

A pre-construction botanical survey will be carried out within the optimal survey period (April – September) prior to the construction works commencing. The survey will be required to determine the presence of any protected or invasive flora which may have been missed during the initial botanical survey which was undertaken outside the optimal survey period. In the event that a Flora Protection Order (FPO) or Red Listed plant species is identified within the footprint of the works area, appropriate mitigation such as translocation will be implemented.

In the event that an invasive plant species, listed in Part 1 of the Third Schedule of S.I No. 477/2011 – European Communities (Birds and Natural Habitats) Regulations 2011 are recorded a site-specific Invasive Species Management Plan will be prepared. Further details on invasive species are outlined in Section 5.6.6.

No plant species listed under the Flora Protection Order or habitats protected under the Habitat Directive were recorded within the footprint of the proposed development site during the surveys.

In addition, no invasive plant species listed in the Third Schedule of S.I No. 477 of 2011, European Communities (Bird and Natural Habitats) Regulations 2011 were identified within the proposed development site during the surveys.

5.8.3 Vegetation Clearance

The construction work areas will be demarcated prior to the construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas within the proposed development site. All disturbed ground will be fully reinstated following the completion of the works. Vegetation clearance to be completed by the Enabling Work Contractor.

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

5.8.4 Protection of Aquatic Habitats – Sediment Control

The following mitigation measures will be implemented to ensure the protection of the Baldonnel Stream.

As part of good site practice and to avoid/reduce the release of suspended solids into the surface water run-off, the following procedures will be employed:

- Silt fences will be installed along the entire inside boundary of the Baldonnell Stream. Silt fences will also be installed around large stockpiles of material. Silt fences will be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium, silt fence or similar). Silt fencing will be installed as per the manufacturers guidelines and shall be maintained until vegetation on the disturbed ground has been re-established. Once

installed, the silt fence shall be inspected regularly during construction and more during heavy rainfall.

- Prior to the commencement of excavations, an area for stockpiling excavated material will be clearly demarked and identified >50m away from any watercourse. This area will be located where surface water percolates freely into groundwater. The amount of excavated material is expected to be small, but stockpiling of large volumes of loose soil material onsite will be avoided, and surplus material removed from the site as soon as work is completed.
- Excavation works will not be carried out during or following heavy rainfall.
- Dewatering of excavations will be avoided. If required, the process will consist of pumping excess water to settlement tanks or filtration systems located at the proposed development site, separated by the nearest watercourse by a minimum of 50m. Silt de-watering bags will be used when water is being discharged.

5.8.5 Protection of Aquatic Habitats – Pollution Control

The following mitigation measures are prescribed to ensure the prevention of water quality degradation due to the runoff of construction pollution during the construction works:

- All works must align with the guidance set out in the guidance documents entitled: “Control of Water Pollution from Construction Sites. Guidance for consultants and contractors
- (C532)” (CIRIA, 2001) and NRA (2008b) ‘Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes’. National Roads Authority.
- An emergency plan for the construction phase of the proposed development to deal with accidental spillages will be drawn up, which all site personnel must adhere to and receive training in.
- Spill-kits and hydrocarbon absorbent packs will be situated throughout the site in yellow wheel bins. A spill kit will be in the refuelling bowser and all machine operators and site staff will be fully trained in the use of this equipment.
- All machinery will be regularly maintained and checked for leaks. Any refuelling of construction machinery/vehicles will not be undertaken within 50m of any surface water feature. If it is not possible to bring machinery to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations to contain any accidental spillages that may occur. No refuelling will be carried out within 50m of the Baldonnell Stream.
- The temporary welfare facilities will not have any discharge to ground or surface waters and will be located a minimum of 50m from the Baldonnell Stream. All wastewater will be collected in a large tank and will be emptied as required by a licenced waste collector according to the manufacturer’s guidelines.

- Waste will be removed from the site and disposed of by an approved waste contractor in accordance with prevailing waste management regulations.
- No on-site batching will be permitted at the proposed development area. All concrete will be transported to the site by truck.
- The installation of the new outfall will be undertaken by the enabling work contractor from the riverbank and will be isolated from the watercourse and constructed in the dry. A pre-cast head will be brought to site to reduce the amount of pouring and mixing of concrete undertaken.
- Wash-down of concrete contaminated equipment will be avoided on site where possible. If it cannot be avoided, then equipment will be washed down into plastic lined skips where it will be stored before disposal to a registered facility. All concrete waste will be managed in accordance with waste legislation which is covered in the Construction and Waste Management Plan
- No water will be abstracted from the Baldonnell Stream. Any water requirements will be obtained from the existing water network.
- The construction compound and welfare facility will be set back a minimum of 50m from any water feature; and
- On completion of the construction phase of the proposed development, all apparatus, plant, tools, offices, sheds, surplus materials, rubbish and temporary erections or works of any kind will be removed from the site.

5.8.6 Management of Invasive Species and Pathogens

In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to ensure the introduction and translocation of invasive species is prevented.

The following mitigation measures are prescribed to control the translocation or spread of invasive species and / or pathogens:

- Biosecurity measures will be employed during the construction works associated with the instream works. The biosecurity measures will have regard to IFI Biosecurity Protocols including: 'IFI Biosecurity Protocol for Field Survey Work (December 2010)'.
- All machinery and equipment used during the construction works will be inspected and will be completely dry prior to entering site and works commencing to prevent the risk of pathogen translocation. A 'Check, Clean, Dry' protocol will be undertaken with all equipment, machinery and vehicles entering and leaving the proposed development site. All equipment/machinery used within the drainage ditch will be checked for living plants and animals.

- Evidence that all machinery and equipment has been cleaned will be required to be on file for review by the statutory authorities and the appointed ECoW.
- A wheel wash will be located near the entrance to site and all vehicles entering and exiting the Site are required to use, if necessary, to prevent the risk of pathogen translocation.

As noted, a pre-construction botanical survey will be undertaken at the proposed development site prior to the construction works commencing. In the event that invasive plant species are identified within the footprint of the proposed works a site-specific Invasive Species Management Plan (ISMP) will be prepared by the appointed ecologist. The ISMP will outline appropriate treatment and eradication measures to control and remove the invasive species prior to the works commencing.

5.8.7 Bats

No bat roost features were recorded within the proposed development site. There are no trees, hedgerows or structures present within the proposed development site. A number of beech trees were recorded along the outer boundary of the site. All trees were assessed as having 'Negligible' bat roost potential due to the lack of any suitable features.

A manual, dusk, activity survey was undertaken at the proposed development site on the 13th of April 2021. A total of three species of bat were detected during transect surveys — Common pipistrelle, Lesser noctule and Soprano pipistrelle. Records of bat activity within the proposed development site were considered relatively low.

Only seven bat activity events were recorded during the survey. The low levels of activity are likely due to the existing illumination within the site and Iimited linear features. Further details of the survey results are provided in the EIAR.

All temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with a suitably qualified ecologist. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No lighting will be directed towards hedgerows and treelines located around the outer boundary of the proposed development site. Only low-pressure sodium, high pressure sodium or LED luminaires will be used on site to ensure that there are no significant negative impacts on bats. In addition, the column height of temporary lights will be carefully considered to minimise light spill.

5.8.8 Protection of Nesting Birds

Breeding bird habitats (e.g., scrub and wet grassland) should not be removed, cleared or trimmed between the 1st of March and 31st August, to avoid impacts on nesting birds which

are protected under the Irish Wildlife Acts. Where the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a qualified ecologist for the presence of breeding birds prior to commencement of construction works. Where any nests are found, the appointed ECoW will provide recommendations as to whether a licence is required for vegetation removal and will detail the process for obtaining such derogation from the NPWS.

5.8.9 Birds

The proposed development site and the surrounding habitat supports a variety of wintering and breeding bird species at a local level.

A single winter bird survey was undertaken on 25th of January 2021 and a breeding bird survey was undertaken on the 13th April 2021. A total of 10 bird species were recorded during the surveys and detailed in Table 12-8 of Chapter 12 (Biodiversity) of the EIAR.

The majority of species recorded during the survey are common species typically found within agricultural grasslands and are listed as having Green Conservation Status (Low Conservation Concern). Snipe and lapwing are currently listed as having Red Conservation Status (High Conservation Concern).

The snipe were recorded foraging in the small standing pools during both the winter and summer survey. It's likely that the snipe are also roosting within the site as the species was heard calling during the dusk bat surveys.

The pair of lapwing were confirmed to be breeding within the site due to the recording of a nest.

The nest was located just outside the north-western boundary of the proposed development site.

A wood pigeon's (Columba palumbus) nest was recorded within the hedgerow during the survey.

Construction-phase mitigation measures to protect retained habitats to protect watercourses are described in Section 5.6.5 and Section 5.3.

- The following additional specific measures will be implemented to mitigate impacts to bird populations.
- Where possible, scrub clearance will not be carried out during the bird breeding season (1st March - 31M of August)

Based on the results, of the pre-construction/construction breeding bird surveys, construction work will be timed to avoid work in proximity to any breeding Snipe locations within the proposed power plant site during the Snipe breeding season.

In the event that any lapwing or snipe nests are identified Within the Zol during the nest survey appropriate mitigation measures in consultation with Bird Watch Ireland will be implemented.

Hoarding will be erected between the nest and development site to limit both noise and visual disturbance.

5.8.10 Aquatic Species

The Baldonnell Stream was assessed as having no suitable habitat to support protected fish species, white-clawed crayfish or lamprey species. The stream at this location was assessed as having low fisheries value due to the heavily modified nature of the watercourse, the presence of culverts and the high levels of sedimentation present.

Further downstream however, within the Grifeen River, the fish species; three-spined stickleback, brown trout, roach and eel are known to occur.

A total of four fish species were recorded in the 'Grifeen Avenue' site which included three-spined stickleback (Gasterosteus aculeatus), brown trout (Salmo trutta), roach (Rutilus rutilus) and eel (Anguilla Anguilla). Only one fish species, three-spined stickleback, was recorded at the 'Grange Castle' site.

5.8.11 Fauna & Protection at Excavations

No evidence of badger, including their setts, were recorded within the proposed development site boundary, or within 150m of the development site. There are no hedgerows, treelines or embankments present within the proposed development site which are the favoured habitat for the establishment of setts by badgers (Smal, 1995 & Byrne et al., 2012).

A small patch of woodland was recorded to the south of the existing AGI Gas Station, approximately 10m south of the proposed gas line route. No evidence of badger activity was recorded within the woodland. Despite the lack of evidence recorded, there is potential that badger may forage within the area due the avail ability of suitable forage habitat.

An otter survey was undertaken along the Baldonnell Stream, 150m upstream and downstream of the proposed development site. No evidence of otter or their resting or breeding sites were recorded during the survey. Otters are unlikely to commute and forage along the section of the Baldonnell Stream located adjacent to the site due to the highly modified nature of the watercourse and the large sections of culverts present both upstream and downstream of the proposed development site.

There is potential however that otter may occur further downstream. The desktop assessment indicated that historic records of otter have previously been recorded further downstream within the Baldonnell Stream, Grifeen River and in proximity to the Grand Canal. In addition,Scott Cawley in 2020 recorded an otter swimming in the Baldonnell Stream at a location approximately 600m north-west of the proposed development site. There is potential that the proposed development site may support smaller protected mammal species such as hedgehog, pygmy shrew, Irish stoat and Irish hare. No evidence Of the above listed species, or any other protected mammal species were recorded during the field surveys.

However, the grassland habitats within the proposed development site provides suitable foraging habitat for these species. Evidence of fox, which included tracks and scat, were recorded within the proposed development site on a number of occasions. Fox are not currently protected under National law, however there is an obligation to protect biodiversity within Ireland under the Convention on Biological Diversity.

Although no frogs or their spawn were recorded during the surveys, both the Baldonnell Stream and the large pools of standing water present within the wet grassland habitat are likely to provide suitable habitat for the protected amphibian species.

No suitable habitat to support common lizard or smooth newt was recorded within the proposed development site. The small ponds of standing water were deemed too shallow to support smooth newts, as the species generally utilises ponds with a depth of 0.5-1m.

At any construction site, mammals and other fauna, such as frogs, are at risk of falling into open excavations. Silt ponds pose no risk as their sides are sufficiently sloped to permit escape. During construction, open excavations must incorporate facilities for animals to escape, by means of:

- gently sloping or stone inclines to be left at the end of each day's operation - at each end of open trenches;
- for long excavations, timber escape planks to be left at *ca.* 50m intervals along the trench at the end of each day's operations; these will usually be placed at right-angles to the trench;
- for long excavations, occasional earth/stone or wooden plank bridges to allow badgers to cross the trench during construction: and
- works will be limited to daylight hours where feasible to to forage at dawn dusk, and at night.

5.8.12 Disturbance /Displacement Measures

Construction noise will be kept to a minimum in accordance with British Standard BS 5228

1:2009 'Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise'. The appointed Contractor will be obliged to take specific noise abatement measures and will comply with the best practice outlined in BS 5228 and the NRA guidelines.

Guideline for the Treatment of Noise during the Planning of National Road Schemes (NRA, 2014). Noise levels will be monitored using standard noise meters.

To reduce disturbance all temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with the appointed ECoW. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No lighting will be directed towards the Baldonnell Stream.

5.9 Cultural Heritage

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

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

5.10 Architectural Heritage

There are no architectural heritage sites (RPS) located within the vicinity of the proposed power plant area. However, an archaeological monitoring methodology will be agreed with South Dublin County Council prior to commencement of development and following planning approval with the archaeological licensing section of the Department of Culture, Heritage and the Gaeltacht and the National Museum of Ireland.

6 Outline Traffic Management Plan

6.1 Background

A Traffic Management Plan (TMP) will be developed by the contractor. This outline Construction TMP is designed to facilitate access to the site by plant, machinery, and work vehicles during collections/deliveries and to minimise traffic impacts of construction to residents in the vicinity of the site.

6.2 Outline Traffic Management Plan

The construction phase TMP has been prepared in accordance with the following best practices publications and demonstrates compliance with the requirements of the Health and Safety Authority:

(1) Chapter 8 of the Traffic Signs Manual and the Safety, Health & Welfare at Work (Construction) Regulations – Department of Transport
(2) Temporary Traffic Management Design Guidance – Department of transport, Tourism and Spot.

The main contractor will be required to implement monitoring measures to confirm the effectiveness of the mitigation measures outlined in the TMP. The TMP shall address the following issues:

- Site Access & Egress
- Traffic Management Signage
- Routing of Construction Traffic / Road Closures
- Timings of Material Deliveries to Site
- Traffic Management Speed Limits
- Road Cleaning
- Road Condition
- Road Closures
- Enforcement of Construction Traffic Management Plan
- Details of Working Hours and Days
- Details of Emergency plan
- Communication
- Construction Methodologies
- Particular Construction Impacts.

6.3 Construction Entrance and Construction Traffic Control

6.3.1 Junction Visibility

An access road visibility assessment has been undertaken with the planning application drawings. The visibility envelope was designed in accordance with the Design Manual for Urban Roads and Streets (DMURS) published by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government in March 2013.

The principles, approaches and standards set out in this Manual apply to the design of all urban roads and streets (that is streets and roads with a speed limit of 60kph or less), except for motorways and in exceptional circumstances, certain urban roads and streets with the written consent of Sanctioning Authorities. Business Parks and Industrial Estates, such as that in which the proposed power plant will be located, are considered to fall within the context of the DMURS.

Adequate visibility at the site access will mitigate potential increased likelihood for collisions between construction generated traffic and existing road network traffic.

Profile Park has been well developed to cater and future growth and expansion. Each of the proposed sites within the park has a pre-constructed access with a bell mouth width of approx. 20m to cater for all vehicle types. Internally Profile Park has an internal roundabout to separate traffic flows to the various sections with an approximate ICD of 45m. All traffic to profile park originates from the R134 New Nangor Road to the North.

An existing splitter island and central reserve is present on the arm accessing Profile Park providing lanes for East and West turning traffic. Splitter Islands are present on all arms of the internal roundabout also to separate traffic flows. Autotrack assessment have been carried out as part of the overall design for the scheme which demonstrates that large vehicles will be able to access the site comfortably.

Preferred construction access would be from the existing access to site off the internal roundabout within Profile Park. The delivery/haulage vehicles will be routed depending on the destination/origin of the materials being delivered.

The use of any regional road networks within the vicinity will be minimised as much as possible, particularly to avoid / minimise the encountering of narrow road widths, poor visibility and unsuitable bearing capacities. As the site is located on the outskirts of Dublin City and is well serviced by major infrastructural routes, it is envisaged that the majority of delivery vehicles shall be able to access site through the M50 motorway, N4 and N7 National roads and the Regional network immediately surrounding the site (R134, R120 and R136) which will keep them away from built-up urban centres.

The roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required. In addition. the contractor shall, in conjunction with the local authority;

Throughout the course of the construction of the proposed development, ongoing visual inspections and monitoring of the haul roads will be undertaken to ensure any damage caused by construction traffic and that relevant local authority is notified.

6.4 Deliveries to Site / Site Access

The site entrance will be gated with access only permitted for site vehicles and plant movements when necessary.

Deliveries of materials to site will be planned and programmed to ensure that the materials are only delivered when required by adopting a 'just in time', lean construction management approach. There will be periods where multiple vehicle deliveries will be required, e.g., site fill material under roads, houses and landscape areas, pre-cast concrete and large concrete pours. These will be planned well in advance and no queuing of vehicles allowed on the public road at the entrance to the site. Supply chain to be directed as not to travel in convoys greater than three at any time.

All off-loading of material will take place within the site, remote from the public road and access via the agreed access construction point only. Bulk deliveries to take place outside of peak traffic hours within a six-day week as to minimise impact on the existing road network.

Access control: The contractor will carry out a visitor induction briefing for all visitors or other persons who need access to the construction area. All visitors to the site will be required to have current 'Safe Pass' cards.

Sign Management: Signs are to comply with statutory requirements on public roads. Other construction sites may be carrying out construction activity at the same time as the subject site. It is therefore imperative that directions to each site are distinctly identifiable.

6.5 Advised Routing of Construction Traffic

Construction traffic is not solely confined to utilising one route.

Construction traffic will be advised to access the site from all directions via the M50 motorway, N4 and N7 National roads and the regional network immediately surrounding the site (R134, R120 and R136) which will keep site traffic away from built-up urban centres. The advised traffic route is outlined in **Figure 6.1** below.

Figure 6.1 Advised Route for Traffic to and from the Site.

6.6 Traffic Management Speed Limits

Adherence to posted/ legal speed limits will be emphasised to all contractors and sub-contractors during induction training.

Drivers of construction vehicles / HGVs will be advised that vehicular movements in locations, such as local community areas, shall be restricted to 50 km/h. Special speed limits of 30 km/h shall be implemented for construction traffic in sensitive areas such as school locations. Such recommended speed limits will only apply to construction traffic and shall not apply to general traffic.

6.7 Road Cleaning

Road sweeping operations to remove any project related dirt and material deposited on the road network by construction / delivery vehicles will be utilised as required. All material collected will be disposed to a licensed waste facility. Ongoing coordination with a neighboring construction site, which will host upwards of 1000 personnel, on matters of traffic management, road cleaning and monitoring will be undertaken.

The following additional measures will be taken to ensure that the site, public roads and surroundings are kept clean and tidy:

- A regular program of site tidying will be established to ensure a safe and orderly site
- Food waste will be strictly controlled on all parts of the site
- Mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate.
- Wheels, if required, should be cleaned down before exiting site

6.8 Road Condition

The higher volume of heavy vehicle traffic movements and the nature of the payload may create problems to the local road network in terms of:

- Fugitive losses from wheels, trailers or tailgates.
- Localised areas of subgrade and wearing surface failure.

The main contractors shall ensure that:

- 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:
- Waste is to be stored in designated areas in accordance with the site Waste Management Plan.
- Roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required.

6.9 Enforcement of TMP

The traffic management plan will be enforced by both the Construction Project Manager and the Resident Engineer.

All project staff and material suppliers will be informed of the measures proposed by the TMP during site induction and will be required to adhere to the final TMP. As outlined above, the contractor shall agree and implement monitoring measures to confirm the effectiveness of the TMP.

6.10 Working Hours

Deliveries of materials to site will generally be between the hours of 08:00 and 18:00 Monday

to Friday, and 08:00 to 14:00 on Saturdays. No deliveries will be scheduled for Sundays or Bank Holidays.

6.11 Emergency Procedures

The main contractor shall ensure that unobstructed access is provided to all emergency vehicles along all routes and site accesses. The contractor shall provide to the local authorities and emergency services, contact details of the contractor's personnel responsible for construction traffic management. In the case of an emergency the following procedure shall be followed:

- Emergency Services will be contacted immediately by dialling 112.
- Exact details of the emergency / incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner.
- The emergency will then be reported to the Site Team Supervisors and the Safety Officer.
- All construction traffic shall be notified of the incident (where such occurs off site).
- Where required, appointed site first aiders will attend the emergency immediately.
- The Safety Officer will ensure that the emergency services are en route.

6.12 Communication

The main contractor shall ensure that close communication with the South Dublin County Council and the emergency services shall be maintained throughout the construction phase. Such communications shall include:

- Submissions of proposed traffic management measures for comment and approval.
- On-going reporting relating to the condition of the road network and updates to construction programming.
- Notification of the arrival of abnormal loads.
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic in order to implement alternative measures to avoid such conflicts.

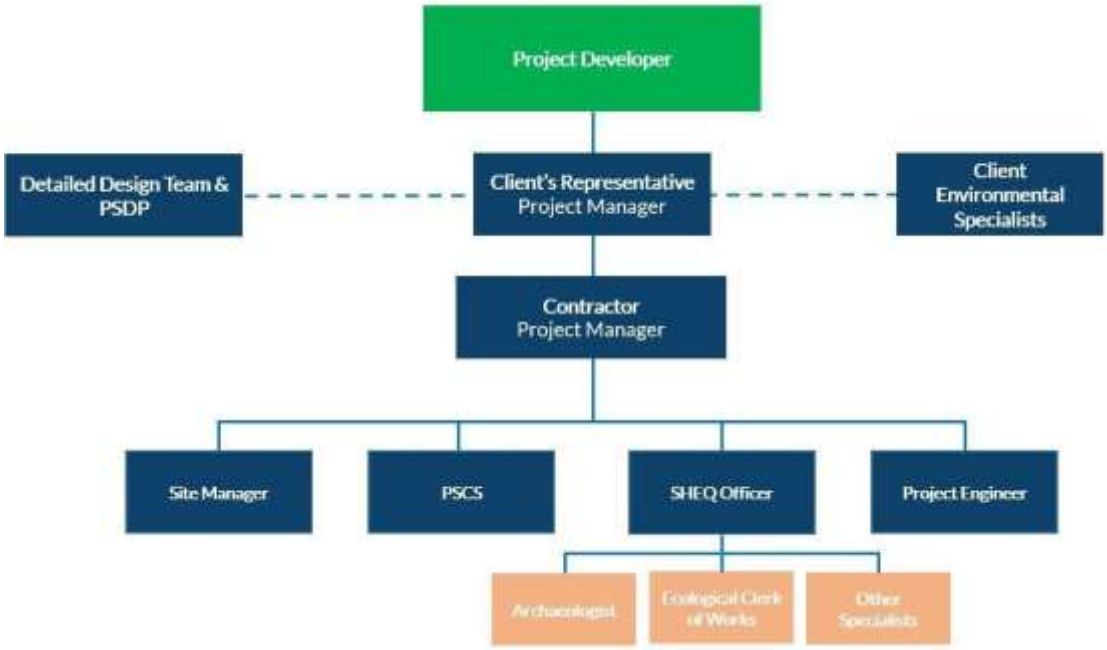
The contractor shall also ensure that the local community is informed of any proposed traffic management measures in advance of their implementation. Such information shall be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas. Such information shall contain contact information for members of the public to obtain additional information and to provide additional knowledge such as local events, sports fixtures etc. which may conflict with proposed traffic management measures.

7 Implementation

7.1 Role and Responsibilities

Due to the nature and scale of this development, the appointment of a full-time environmental manager is deemed surplus to requirements for the duration of the project. The Construction Contractor Project Manager will be responsible for the day-to-day implementation of the measures outlined in the Project CEMP. The Construction Contractor Project Manager will be supported by ORS Environmental Consultants who will be involved in the project on an ad-hoc basis should unforeseen or significant environmental incidents arise. Figure 7.1 outlines the project organisation chart.

Figure 7.1: Project Organisation Chart



7.1.1 Construction Project Manager

The Construction Project Manager have the overall responsibility of ensuring the measures outlined in the Project CEMP are adhered to for the duration of the construction phase. The primary responsibilities of the Construction Project Manager are as follows:

- Promotion of awareness of environmental issues associated with each project phase.
- Ensure adherence with all environmental and traffic management standards listed in the

Project CEMP.

- Facilitate environmental audits and site visits.
- Monitor the impact of construction traffic on local traffic conditions.
- Awareness and implementation of relevant legislation, codes of practice, guidance notes as stated in the CEMP.
- Conduct regular site inspections to facilitate the timely identification of environmental risks or incidents.
- Ensure all construction activities are carried out with minimal risk to the environment.
- Report environmental incidents in a timely manner to the project environmental consultant and the relevant authorities.

7.1.2 Construction Project Manager Contact Details

- Name: Onur Gezmiş
- Telephone: Pending
- Email: onur.gezmis@gama.com.tr

7.1.3 Project Environmental Consultant

As mentioned above the Construction Project Manager will assume the role of Project Environmental Consultant and will be aided by ORS Environmental Consultants on an ad-hoc basis in ensuring compliance with the conditions outlined in the CEMP. Should any issues or impacts arise throughout the project then ORS will be contacted. The primary responsibilities of the Project Environmental Consultant are as follows:

- Quality assurance of the Project CEMP.
- Update of the Project CEMP as required paying particular attention to site-specific environmental hazards or changes in legislation.
- Ensuring compliance of Project CEMP with the conditions of the Planning Permission.
- Provide expertise to the Construction Project Manager on environmental concerns.
- Conduct the various specialist environmental monitoring tasks outlined within the Project CEMP (noise, dust, surface water monitoring etc.).
- Prompt response to environmental issues if they arise.

7.1.4 Resident Engineer

Typically, the Resident Engineer's primary role involves assurance that the construction work of a project is carried out according to the quality, time and cost requirements of the contract. A significant degree of cross-over can usually be anticipated between the roles of a Resident Engineer, a Construction Project Manager and an Environmental Consultant. With respect to the Project CEMP, the Resident Engineer is expected to play a crucial role in the Traffic

Management Plan (TMP) along with the following responsibilities:

- Performing or coordinating site inductions.
- Monitoring the performance of subcontractors.
- Monitoring the performance of the traffic management plan.
- Managing and supervising less experienced site engineers and operatives.
- Ensuring that work activities have been carried out in accordance with the plans, specifications and industry standards.
- Ensuring that tests and inspections are performed.
- Liaising with construction management to remove any hazards associated with work activities.
- Ensuring that delivered materials meet specifications and established quality standards.
- Initiating and maintaining records, back-charge procedures, progress reports etc.

7.2 Awareness and Training

7.2.1 Environmental Induction

The key environmental topics outlined in the Project CEMP will be summarised and integrated into the general site induction. Site-specific concerns and best work practices will be outlined to all contractors and sub-contractors due to carry out work at the site. As a minimum this will include:

- Site inductions, which will be reviewed and updated.
- The roles and responsibilities of the Construction Project Manager the Environmental Consultant and the Resident Engineer along with the responsibilities of contractors/sub-contractors themselves.
- Incident and complaints procedure.
- Outline of the CEMP structure.
- Site specific environmental concerns.
- Best work practices.
- Notify staff that all activities should have an Environmental Risk Assessment undertaken.

7.2.2 Toolbox Talks

White board briefings and daily toolbox talks will be conducted by the Construction Project Manager as standard practice. It is the duty of the Construction Project Manager to liaise with the Project Environmental Consultant and Resident Engineer to assess site operations for environmental concerns particularly as the project advances and new activities commence. Appropriate mitigation and best practice measures will be devised and communicated to the

relevant personnel prior to the commencement of any such activities.

7.3 Environmental Incidents and Complaints Procedure

The Construction Project Manager will maintain a register of environmental incidents which will document the nature, scale and severity of any environmental incident or complaint which arises as a result of site activities. The complaints register will record any complaints regarding but not limited to noise, odour, dust, traffic or any other environmental concerns. In the event of an environmental incident the following steps must be followed:

- The Project Environmental Consultant is notified immediately.
- The Project Environmental Consultant will liaise with the competent authority if necessary.
- The details of the incident will be recorded on an Environmental Incident Form which will record the following details:
    (1) Cause of the incident
    (2) Extent of the Incident
    (3) Immediate actions
    (4) Remedial measures
    (5) Recommendations made to avoid reoccurrence
- If the incident has impacted on an ecologically sensitive receptor (SPA, SAC, NHA) an ecological specialist will be consulted.
- The Project Environmental Consultant and Construction Project Manager will fully cooperate with any investigations conducted by the competent authority.

8 Conclusion

This Construction Environmental Management Plan (CEMP) will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development.

The proposed development shall be constructed and developed to minimise the generation of construction and demolition waste. During the construction phase, construction waste shall be stored and segregated in dedicated waste storage areas which shall optimise the potential for off-site reuse and recycling. All construction waste materials shall be exported off-site by an appropriately permitted waste contractor.

Extensive measures shall be taken to prevent uncontrolled emissions to drains and gullies leading off the site. Noise mitigation measures will be utilised as required. Several measures have been outlined to ensure adequate dust suppression throughout the project. Noise and dust monitoring shall be carried out at various stages throughout the project to ensure compliance with the relevant standards.

Suitably qualified personnel including a Construction Project Manager, Project Environmental Consultant and Resident Engineer will be appointed to implement the procedures and protocols relevant to their profession as outlined in this CEMP.

The Client shall be responsible for ensuring that the contractor manages the construction activities in accordance with this Construction Environmental Management Plan and shall ensure that any conditions of planning are incorporated into the final CEMP prepared by the appointed works contractor.

Appendix A: Record of Suitable Qualified Waste Collectors and Waste Facilities

Appendix A.1: Record of Suitable Qualified Waste Collectors and Waste Facilities

Description of Waste	EWC Code	Waste Collector			Waste Facility	
		Volume	Name	NWCP	Name	WFP/ WL No.
Concrete, Bricks, Tiles and Ceramics	17 01					
Concrete	17 01 01					
Bricks	17 01 02					
Tiles and Ceramics	17 01 03					
Mixture of concrete, bricks tiles & ceramics	17 01 07					
Wood, Glass and Plastic	17 02					
Wood	17 02 01					
Glass	17 02 02					
Plastic	17 02 03					
Bituminous mixtures, coal tar and products	17 03					
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02					
Bituminous Mixtures including Coal Tar and Tarred products	17 03					
Metals (including their alloys)	17 04					

Copper, Bronze, Brass	17 04 01					
Aluminium	17 04 02					
Lead	17 04 03					
Zinc	17 04 04					
Iron and Steel	17 04 05					
Tin	17 04 06					
Mixed Metals	17 04 07					
Cables other than those mentioned in 17 04 10	17 04 11					
Insulation and asbestos-containing Construction Materials	17 06					
Gypsum based construction Materials	17 08					
Other Construction and Demolition Materials	17 09					
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04					
Sewage Screenings	19 08 01					
Paper and Cardboard	20 01 01					
Wood other than that mentioned in 20 01 37	20.01 38					

Soil and Stones	17 05 04					
Mixed Municipal Waste	20 03 01					
Bulky waste	20 03 07					

Appendix B: Risk Assessment as per Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

Risk Assessment A – Locality/Site Information

	Low	Medium	High
Expected duration of work			
Less than 6 months			
6 months to 12 months			
Over 12 months			x
Proximity of nearest sensitive receptors			
Greater than 50 metres from site	x		
Between 25m and 50			
Less than 25 metres			
Hospital or school within 100 metres			
Day time ambient noise levels			
High ambient noise levels (>65dB(A))			
Medium ambient noise levels (55-65dB(A)		x	
Low ambient noise levels (<55dB(A)			
Working Hours			
7am – 7pm Mon-Fri; 8am-2pm Sat	x		
Some extended evening or weekend work			
Some night-time working, including likelihood of concrete power floating at night			
SUBTOTAL A	**2**	**1**	**1**

Risk Assessment B – Works Information

	Low	Medium	High
Location of works			
Majority within existing building			
Majority External			x
External Demolition			
Limited to two weeks			
Between 2 weeks and 3 months		x	
Over three months			
Ground Works			
Basement level planned			
Non-percussive methods only	x		
Percussive methods for less than 3 months			
Percussive methods for more than 3 months			
Piling			
Limited to one week			
Bored Piling Only		x	
Impact or vibratory piling			
Vibration generating activities			
Limited to less than 1 week			
Between 1 week and 1 month		x	
Greater than 1 month			
SUBTOTAL B	**1**	**3**	**1**

Total Risk Assessment

	Low	Medium	High
Risk Assessment A	**2**	**1**	**1**
Risk Assessment B	**1**	**3**	**1**
Total	**3**	**4**	**2**

The site is assessed as a low-moderate overall.

Appendix C: Risk Assessment Template - Example

	RISK ASSESSMENT (FRM-011)	Assessment Completed by:	Date of Works:
	Activity:	Site Name:	Job Number:
	Who may be harmed? Employees ☐ Sub-Contractors ☐ Members of Public ☐ Occupants / Site Staff ☐ Site Visitors ☐		

	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present? Yes	Hazard Present? No	Controls to be Provided	Risk Adequately Controlled?
1	*Lone Working*	• Absence of assistance in the event of a personal injury or accident leading to a worsening of outcome. • Increased vulnerability to attack or becoming the victim of a criminal act.				
2	*Working in or near water*	• Immersion in water, drowning and injury. • Waterborne infections. • Hypothermia associated with cold water and weather conditions. • Slips and falls / underwater hazards.				
3	*Working in or near excavations*	• Collapse & dislodged materials or objects falling into excavations. • Persons falling into excavations & injury during ingress and egress. • Water within excavations & exposure to contamination including gases, vapours and contaminated soils/liquids.				
4	*Traffic hazards (onsite or during access / egress)*	• Severe injury or death due to: • Collisions with vehicles. • Vehicles losing control and overturning. • Non-movement related e.g. loading & unloading of vehicles.				

	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present?		Controls to be Provided	Risk Adequately Controlled?
			Yes	No		
5	*Manual handling including use of hand augers & other hand tools*	• Back injuries. • Tendon, ligament & muscle injuries. • Work related upper limb disorders (WRULDs) • Hernias, cuts and broken bones.				
6	*Exposure to chemicals. biological agents & micro-organisms*	• Acute & chronic health effects causing harm or death due to dermal contact, ingestion, injection or inhalation. • May include chemicals that are toxic, harmful, corrosive, irritants or carcinogenic. • Biological agents include: fungi, bacteria & viruses.				
7	*Working at height (note: height is any elevation that could result in a fall)*	• Falling from height causing death, neck or spinal injury or broken bones. • Causing an object to fall onto people below.				
8	*Underground services*	• Striking electricity cables, gas pipes, water pipes, sewers, transfer lines & telecom cables. • Death or injury via burns, explosion, impacts, chemical exposure, electrocution or infection.				
9	*Overhead hazards including electricity cables & potential for objects to fall from height*	• Electrocution from overhead power cables. • Falling objects due to unstable structures above causing injury or death. Heightened risk during high winds. • Falling objects due to persons working overhead.				
10	*Plant, machinery & power tools (includes drilling rigs)*	• Collision with plant & contact with moving parts. • Electrocution and fire risk. • Damage to hearing due to noise, Hand & arm vibration syndrome. • Dust & projectiles, Trips due to cables.				
11	*Domestic pets, livestock & wildlife*	• Bites from aggressive dogs causing injury and infection. • Impacts and crushing from attack by cows or bulls. • Bites from wildlife including adders & false black widow spiders. • Stings from insects including wasps and hornets.				

	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present?		Controls to be Provided	Risk Adequately Controlled?
			Yes	No		
12	*Exposure to asbestos*	• Inhalation of asbestos fibers causing asbestosis, lung cancer, mesothelioma and pleural plaques. • Potential to occur where presence is unknown until disturbed during works such as internal spill & brownfield site investigation & remediation.				
13	*Working on oil depots, PFS & high risk commercial sites*	• Numerous risks present due to active nature of these sites and presence of fuel / chemicals, site traffic / plant, operations at height, noise, underground services and slippery surfaces. • Risk of injury or death due to chemical exposure, explosion, electrocution, falls from height and traffic.			*Note: RAMS and permit to work likely to be required in advance of work.*	
14	*Confined spaces*	• Fire or explosion • Loss of consciousness or asphyxiation arising from gas, fumes, vapour or lack of oxygen. • Loss of consciousness as a result of high air temperature and drowning.			**Note:- You ARE NOT AUTHORISED TO ENTER AND/OR WORK IN CONFINED SPACES without having the appropriate training and approval & documentation from management**	
15	*Waste Management*	• Unauthorised disposal • Causing secondary pollution by a lack of duty of care / due diligence • Legal noncompliance and chance of prosecution • Loss of client confidence and future appointments				
16	*Causing pollution during our site activities*	• Promoting pollution by introducing a preferential pathway • Permitting pollution of a controlled water (surface or ground) • Use of unclean/contaminated tools or equipment causing pollution • Causing secondary spillage due to activities on site				

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	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present?		Controls to be Provided	Risk Adequately Controlled?
			Yes	No		

Risk Assessment Written By:	Approved by:	Date:	Notes:
			• Additional hazards to those pre-populated above should be documented and assessed in the blank spaces provided above • Where additions to the initial RA are needed as work progresses, they should be added to the blank spaces provided above and be initialed and dated.

This risk assessment has been distributed to the following people who, by signing below, confirm they have reviewed its contents, understand the risks and control measures specified, and confirm that they will follow all control measures specified at all times and inform ORS of any additional risks, hazards, or control measures they deem necessary to undertake our activities safely.

Name	Signature	Date

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Risk Assessment Template - Blank

	RISK ASSESSMENT (FRM-011)	**Assessment Completed by:**	**Date of Works:**
	Activity:	**Site Name:**	**Job Number:**
	Who may be harmed? **Employees** ☐ **Sub-Contractors** ☐ **Members of Public** ☐ **Occupants / Site Staff** ☐ **Site Visitors** ☐		

	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present?		Controls to be Provided	Risk Adequately Controlled?
			Yes	No		
1						
2						
3						
4						
5						

	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present?		Controls to be Provided	Risk Adequately Controlled?
			Yes	No		
6						
7						
8						
9						
10						
11						
12						
13						

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	Hazard / Activity	Risk (potential consequences of hazard)	Hazard Present?		Controls to be Provided	Risk Adequately Controlled?
			Yes	No		
14						
15						

Risk Assessment Written By:	Approved by:	Date:	Notes:
			• Additional hazards to those pre-populated above should be documented and assessed in the blank spaces provided above • Where additions to the initial RA are needed as work progresses, they should be added to the blank spaces provided above and be initialed and dated.

This risk assessment has been distributed to the following people who, by signing below, confirm they have reviewed its contents, understand the risks and control measures specified, and confirm that they will follow all control measures specified at all times and inform ORS of any additional risks, hazards, or control measures they deem necessary to undertake our activities safely.

Name	Signature	Date

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Appendix D: Minimum Statutory Requirement Checklist

As Per Conditions of the Contract and Planning Conditions

No.	Stipulation	Description	Responsibility	On File	
				Yes	No
1	Environmental	Botanical Survey	GIL		
2	Environmental	Discharge License	GIL		
3	Planning	Notification to Inland Fisheries Ireland	GIL		
4	Planning	Waste Management Plan	GIL		
5	Planning	Traffic Management Plan	GIL		
6	Planning	AF1 – Civil works	GIL		
7	Planning	AF2 – Commencement of works, Piling	GAMA		
8	Planning	South Dublin County Council Notification of commencement of works	GIL		
9	Health & Safety	Health & Safety Authority – Notification of Commencement of Works	GIL		
10	Environmental	IPPC/ EPA License	GIL		
11	Planning	Natura Impact Assessment (NIS)	GIL		
12	Planning	Environmental Impact Assessment Report (EIAR)	GIL		
13	Planning	Flood Risk Assessment	GIL		
14	Environmental	Noise Verification Report (Prior to Commencement)	GIL		
15	Environmental	Surface Water Monitoring (Prior to Commencement & During Construction)	GIL		

Appendix E: Monitoring Plan Checklist

No.	Description	Responsibility	Frequency
1	Biochemical monitoring of Baldonnell Stream	GAMA	Weekly
2	Environmental Clerk of Works Site Audits	ORS	Twice a month
3	Environmental Incident Response Plan	GAMA	
4	Inspection of materials imported and exported from site	Project Manager	
5	Dust Monitoring (Visual)	Project Manager	Regularly
6	Light Emission (LUX) Monitoring	Project Manager	
7	Noise Monitoring	Project Manager	
8	Archaeological Monitoring	Archaeologist	During Extensive Excavations
9	Traffic Management Measures outlined in Section 6	Project Manager & Resident Engineer	
10	Surface Water Monitoring (Suspended Solids, BOD, COD, pH, Nitrates, Orthophosphate)	Project Manager / ORS	Periodic
11	Noise & Vibration Monitoring	Project Manager / ORS	Periodic
12	Dust Monitoring (Total Dust)	Project Manager / ORS	Periodic
13	Sediment Control Mitigation Measures	Project Manager	Daily
14	Site Walks	Project Manager	Daily
15	Environmental Risk Assessment	All Staff	Where appropriate
15	Check for Asbestos during excavation works	All excavation works	Where appropriate

Appendix F: Action Plan Checklist

No.	Description	Responsibility
1	Environmental Incident Emergency Response Plan (accidental spillages)	
2	Fire Incident Response Plan	
3	Invasive Species Management Plan	
4	Landscape Master Plan	
5	Construction Traffic Management Plan	GAMA. Requires approval of South Dublin Co. Council
6	Dust Management Plan	
7	Waste Management Plan	
8	Archaeological & Cultural Heritage Plan	
9	Sediment Management Plan	
10	IPPC License for Commissioning of Facility	
13	Asbestos Survey	
14		
15		
16		
17		
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19		
20		
21		

2.0

CEMP – Substation Scope of Works (SS SOW)

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

(CEMP)

For

PROFILE PARK 110Kv STATION & GRID

Project No: 01-526

Table of Contents

Review and Amendments

The Project Manager will be responsible for reviewing the Plan and recording any changes made.

Review Date	Revision Number	Comments / Amendments	Initials
04/04/2024	00	First draft	MFY
25/04/2024	01	Revised as per GAMA comments	MFY

Prepared by:	Muhammad Faizan Yousuf	**Date:**	04/04/24
Reviewed by:	Mathew Keane	**Date:**	09/04/24
Accepted by:	Redmond FitzGerald	**Date:**	10/04/24

1. Introduction

The Construction Environmental Management Plan (CEMP) has been developed in conjunction with the An Bord Pleanála (ABP) Grant of Planning Conditions. ABP Grant of Planning Conditions will be available within the TLI Group Project File for future reference and will be consulted regularly in advance of the works, during and post completion of the different elements of construction undertaken both by TLI Group and their Subcontractors.

Note with reference to the plans & particulars submitted with the planning application, the mitigation measures specially specified in Appendix 2-1 – Schedule of Mitigation Measures shall be implemented in full by the TLI Group, except as may otherwise be required in order to comply with the conditions of this permission. Note this document should also be read in conjunction with The Contractor CEMP and the Project's Environmental Impact Assessment Report (EIAR).

The CEMP outlines the management practices to be adhered to during the main construction stage of the development and it incorporates specific details in relation to the implementation of the proposed mitigation measures, to ensure that the work is carried out in a way that minimises impact on the members of the public, environment, ecology and archaeology.

The CEMP should be considered a live document and as such be developed and amended if applicable as the project progresses. The Project Manager and HSQE Manager are responsible for ensuring that this document reflects the status of the project. Any reviews to the document must be carried out in consultation with those affected by the changes. NOTE TLI Group CEMP to be incorporated into the project CEMP which is compiled and managed by GAMA – The Contractor. Implementation of CEMP during Construction, EIAR and IE licence conditions during operations, and Decommissioning Management Plan during decommissioning to prevent pollution to soils/groundwater/surface water.

Mark Collins, TLI Group Project Manager (PM) will be responsible for ensuring compliance with CEMP. mark.collins@tli.ie

The level of detail contained within this plan is deemed to be commensurate with the complexity of the work and the risks involved. This plan has been developed to incorporate the works within the GAMA PSCS areas.

2. Objectives of CEMP

To ensure the project is undertaken in accordance with best practice guidance for the management of the environment, ecology and archaeology during construction works.

To ensure that construction activities are carried out in accordance with all planning conditions for the proposed development.

To carry out the proposed works with minimal impact on the environment, ecology and archaeology.

Ker

3. Project Details

3.1. Project Description

Construction of 110kV Baldonnell Substation and associated grids connection at existing Profile Park Substation. The associated Grid Works will include 110kV underground trench, ducting and cabling. The UGC route is approximately 0.3km in length and runs in a westerly direction from the proposed Baldonnell 110kV substation to the existing ESB Barnakyle 110kV substation utilising the existing road network.

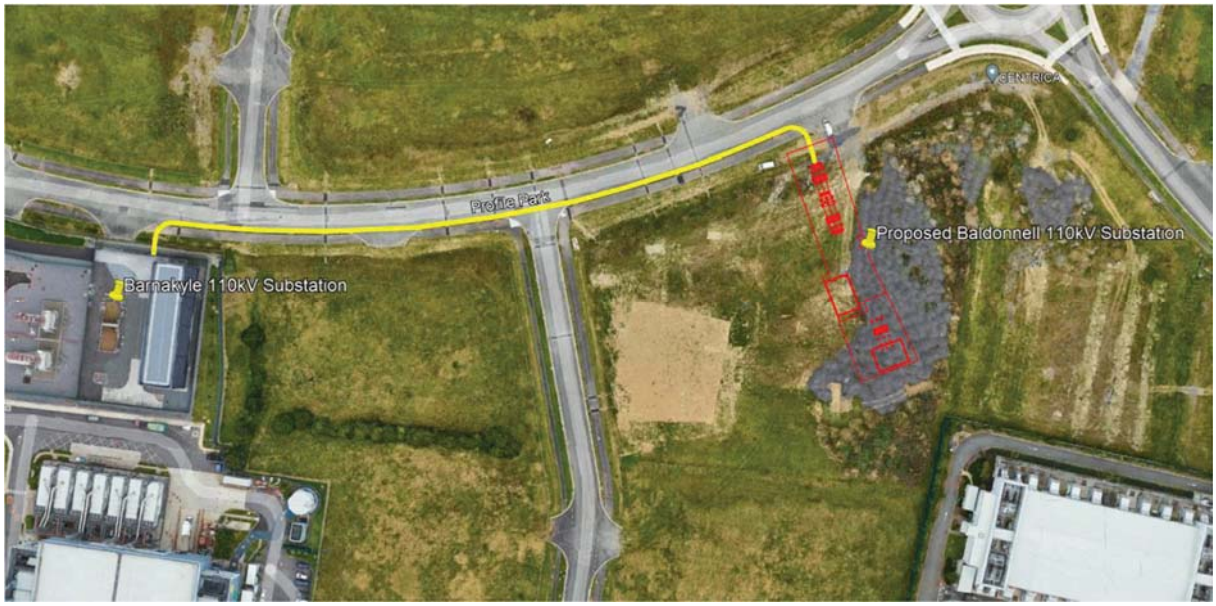
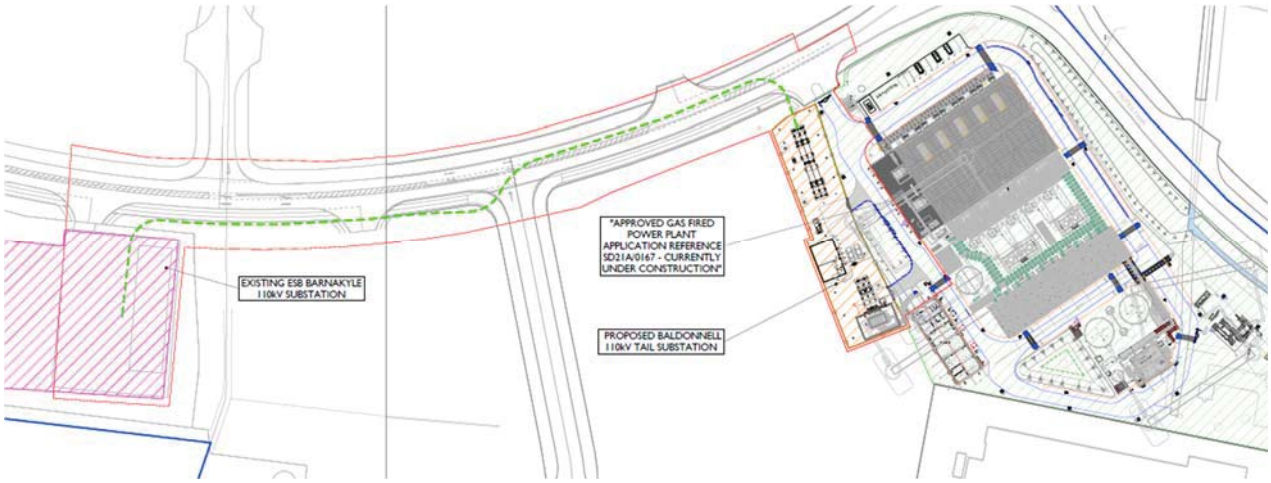


Fig 1 – Grid Connection Route Location (See Drawing 05868-DR-002/003/004)

Table 1 of this report summaries the route location features of the underground cable connection.

Table 1 – Approximate Route Location of Preliminary Design:			
Substation/Access Roads	**Public Roads**	**Private Land**	**Total Route length**
30m	216m	20m	266m



Above Extract from Drawing PRF-IN-DW-29-TLI-0001 Overall Site Layout Plan

3.2. Site address and GPS Coordinates:

Access to the Substation site is off the R134 Regional Road in Profile Park Industrial.

GPS co-ordinates:

Site Entrance:

3.3. Key Construction Activities

The construction and fit out of a new 110kV Baldonnell substation and connection into ESBN Barnakyle Substation at Profile Park Co. Dublin off the R134 Regional Road. Testing and commissioning of the complete civil, structural, and electrical installations.

3.4. Substation Building

The works involved will include the following:

- The construction of an 1954m² substation compound comprising of approx. 126m² EirGrid 110kV substation control building and all associated outdoor electrical equipment, associated internal access track and a 2.6m high station perimeter fencing around the station will be built.
- Site Entrance, Hardstands and Site Tracks
- Electrical equipment plinths & associated ducting throughout the substation confines.
- Site Drainage. Note details to be confirmed.
- Wiring and cabling of HV/LV equipment, protection, and control cabinets.
- Commissioning of all electrical equipment.
- 110kV Cable sealing end and associated cable equipment to connect 110kV incoming underground cables into the substation.

Typical 110kV Electrical Infrastructure.

Electrical Fit out

Electrical fitout works within the newly constructed 110kV substation building:

- Installation, fit out and commissioning of electrical ancillary services.
- Installation, fit out and commissioning of the Customer switchgear and Control Rooms.
- Fit out of ESBN side of substation.

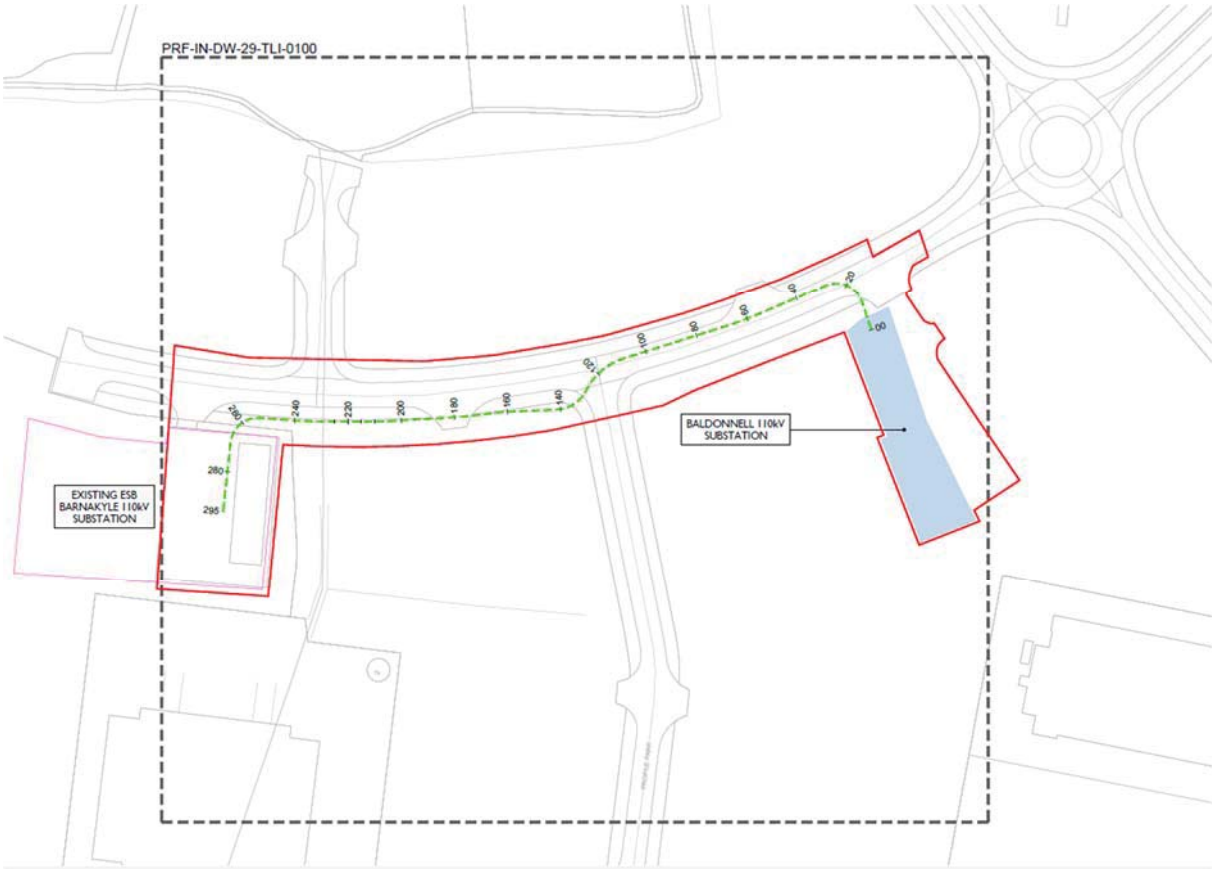
3.5. Underground Grid Connection (UGC)

The UGC will consist of 3 No. 160mm diameter HDPE Power cable ducts, 2 No. 125 mm diameter HDPE communications duct and a 63mm earth continuity conductor duct to be installed in an excavated trench between both the proposed and existing substation. The communications duct will accommodate a fibre cable to allow communications between the proposed Baldonnell 110kV substation and the existing ESB Barnakyle 110kV substation. The ducts will be installed, and the trench reinstated in accordance with the landowner or South Dublin County Council specifications, the electrical cabling/fibre cable is then pulled through the installed ducts between the two substations.

The construction works shall be carried out in such a manner as to ensure that the public roadways immediately local to the UGC route are kept clear of debris, soil and other material and cleaning works shall be carried out on the public roads by the developer and at the developer's expense on a daily basis.

Hard surface roads will be swept by The Contractor to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic.

Any road that has the potential to give rise to fugitive dust must be regularly watered by The Contractor, as appropriate, during dry and/or windy conditions.



Above Extract from Drawing PRF-IN-DW-29-TLI-0003 Overall Site Location Map showing Route

3.6. Trenching Methodology

The following section outlines the methodology to be followed during trenching works: -

1- All existing underground services along the UGC route shall be confirmed prior to the commencement of construction works.
2- Where the cable route intersects with culverts, the culvert will remain in place (where possible) and the ducting will be installed either above or below the culvert to provide minimum separation distances in accordance with EirGrid and Irish Water specifications.
3- Traffic management measures will be implemented in accordance with those included in the EIAR, and a detailed Traffic Management Plan (TMP) for the UGC route will be forwarded once agreed with all stakeholders and the relevant road opening licence/s is/are in place.
4- Excavated material will be temporarily stockpiled onsite for re-use during reinstatement. Stockpiles will be restricted to less than 2m in height. Stockpiles will be located a minimum of 50m from surface water features and all stockpiling locations will be subject to approval by the Site Manager and Project Ecological Clerk of Works (ECoW).
5- The excavated trench will be dewatered if required, from a sump installed within the low section of the opened trench. Where dewatering is required, dirty water will be fully and appropriately attenuated, through silt bags, before being appropriately discharged to vegetation or surface water drainage feature.
6- No more than a 100m section of trench will be opened at any one time. The second 100m will only be excavated once the majority of reinstatement has been completed on the first.
7- Where the cable is being installed in a roadway, temporary reinstatement may be provided to allow larger sections of road to be permanently reinstated together.

Fig 3.5.1. Example of 110kV Underground Duct installation

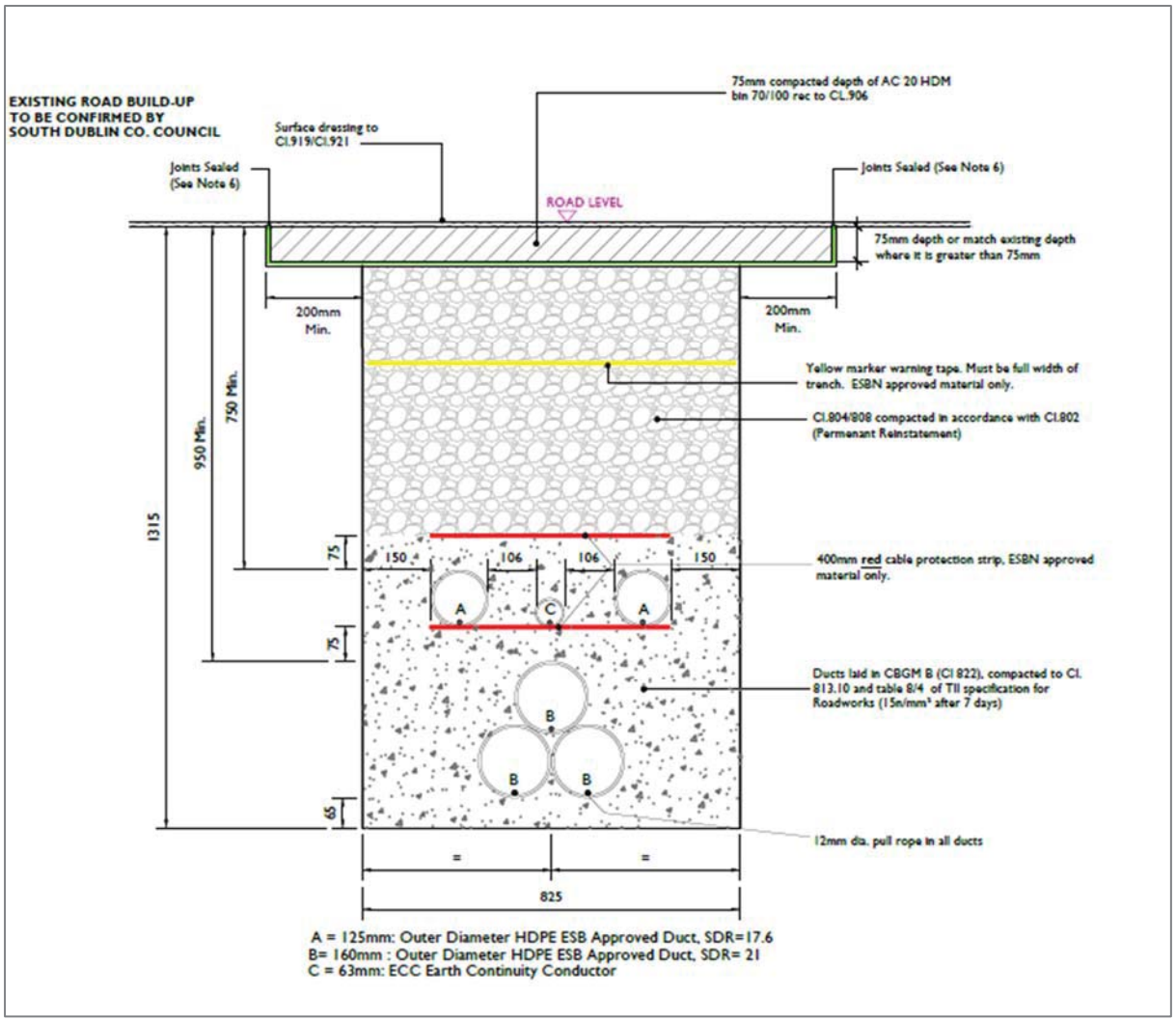
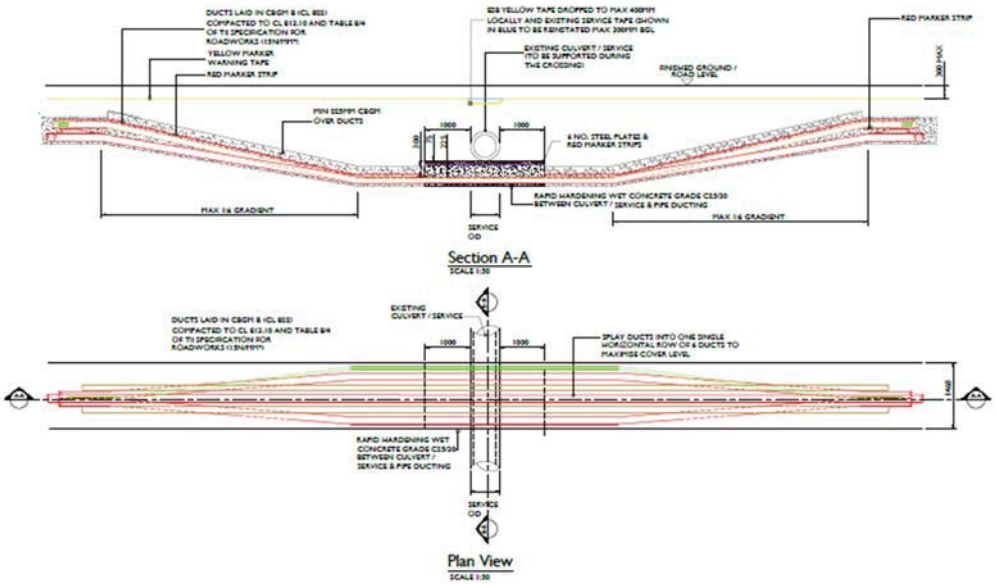


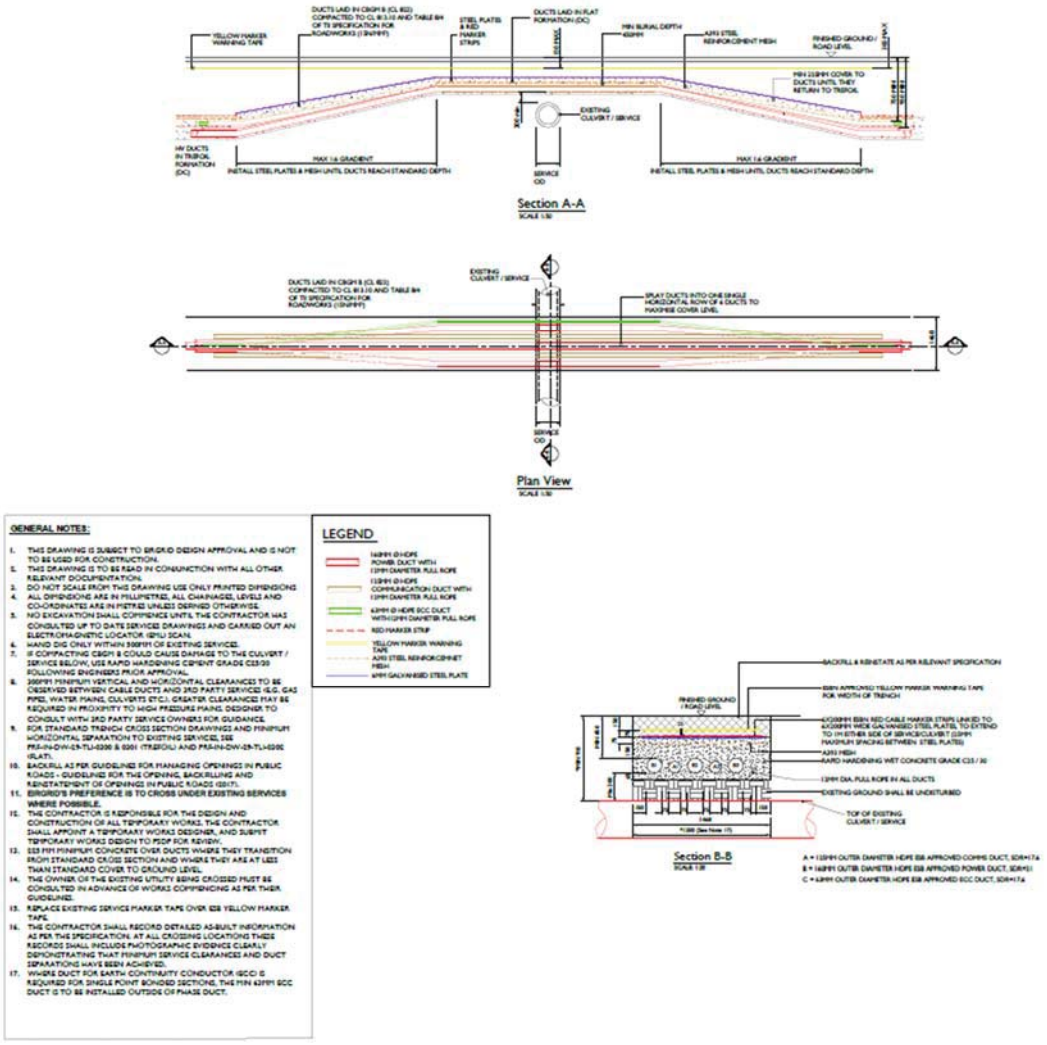
Fig 3.5.2. 110kV Trefoil Trench in Roadway

3.7. Crossings – Watercourses & Bridges

There is no bridge, river / water course crossings along the proposed UGC route. Note below typical TLI group detail below for a river or service crossing if encountered during the UGC scope.



110kV Culvert service undercrossing details



110kV Culvert Service Overcrossing details.

3.8. Abnormal Loads

All TLI Group substation site and UGC related materials will be made via rigid or standard articulated loads. TLI Group do not envisage any abnormal loads for their scope of works.

3.9. Relocation of Existing Services:

To facilitate the installation of the underground cable, it may be necessary to relocate existing underground services such as water mains, telecom networks or existing cables. In advance of any construction activity, the Contractor will undertake detailed surveys and scans of the UGC route to confirm the presence or otherwise of any services. If found to be present, the relevant service provider will be consulted with in order to determine the requirement for specific excavation or relocation methods and to schedule a suitable time to carry out works.

Where applicable efforts will be made to ensure extent of excavations are kept to a minimum. Excavated soil and bedrock will only be moved short distances from the point of extraction and will be used locally for landscaping. Landscaping areas will be sealed and levelled using the back of an excavator bucket. Upper vegetative layer will be stored with vegetation facing up to encourage new growth.

Soils, overburden, and rock will be used on site to reinstate any excavations where appropriate. Excavation slopes will be battered back between 1:1 and 1:2. Likelihood of excavation collapse would be mitigated by construction of granular berms or temporary sheet pile walls to support the clays during construction.

Consultation will be undertaken with all communication utility providers to confirm the current locations of their infrastructure.

3.10. Temporary Construction Compound – Contractor Layout.

TLI Group will utilise site offices facilities including office space and welfare facilities as provided by the Contractor within the main compound. In addition, and owning to the relative location of the TLI work zone and main compound, TLI Group will set up one store and a small office space at the work zone. NOTE no welfare facilities will be required at this location. All generated waste, from the main compound facilities will be managed and disposed of by the Contractor. Disposal of storm drainage within this compound footprint will also be managed by the Contractor.

3.11. Construction Hours

Standard working hours for construction will be 08:00 to 18:00 Monday to Friday and 08:00 to 14:30 on Saturday (if required), with no works permitted on Sundays or Bank Holidays except in exceptional circumstances of in the event of an emergency.

Moreover, material deliveries will be confined to these work hours also where practicably possible. Extension to working hours will be duly communicated to the Contractor for approval via email. In the event of concrete pouring and finishing activities, they may require extended working times which will be informed as required.

Consideration will be given to the sustainable sourcing of materials. Materials will be reused where possible. Design will be optimised to minimise the requirements for raw materials. Design will be optimised to minimise the requirements for raw materials. Raw materials will be sourced locally where possible. Raw materials will be managed in accordance with the CEMP for construction.

3.12. Project Team Details

Role	Company Name	Contact	Phone	Email
Client	GIL – Greener Ideas Limited	Liam Pitcher	(353) 86 856 7322	lpitcher@bordgais.ie
PSDP	Alcam Group		021 488 8822	contact@alcamgroup.com
PSCS	GCIL – GAMA Construction Ireland Limited	Onur Gezmişoğulları	(353) 87 474 4660	Onur.Gezmis@gama.com.tr
Contractor	GCIL – Gama Construction Ireland Limited	Onur Gezmişoğulları	(353) 87 474 4660	Onur.Gezmis@gama.com.tr
Sub Contractor	TLI Group	Ruairi Geary	086 795 2793	Ruairi.geary@tli.ie

3.13. Existing Pre-Construction Information

The Construction Stage Safety & Health Plan has been reviewed during the preparation of this plan. The following key environmental information has been identified:

Category	Information Summary
Pollution	Plant Fuel Storage on site
Construction and Demolition Waste	Timber, steel offcuts, Concrete demolition
Ground Conditions	Spoil from Excavations, trenches, Concrete washout
Noise	Plant and machinery on site Power tools / Hand Tools
Impact to local residential roads	Access via public road, Increased traffic and construction vehicle movement
Invasive species	Not anticipated
Local Wildlife	Wildlife is not anticipated to be impacted by this project
Watercourses	Not anticipated

3.14. Planning

All works shall be carried out strictly in accordance with relevant Planning Permissions and Conditions:

Bord Pleanála Case reference: VA06S.317297 for the 110kV Single-Bay air insulated substation (Baldonnell), 110kV Underground Grid Connection (UGC) and all associated works.#

4. Management of the Work

TLI Group is committed to carrying out activities in a manner that minimises Environmental impacts, conserves natural resources and provides effective stewardship of the environment.

4.1. Management Structure

- Refer to Appendix 03

4.2. On Site Environmental and Co-ordination Roles

The Project Manager (PM) is responsible for allocating key environmental coordination roles to members of TLI Group's management team, as soon as possible and before construction.

Day to day onsite environmental oversight will be provided for via the TLI Group Construction Manager (CM). This is supported through weekly engagement with TLI Health and Safety Personnel.

5. Construction Operations

Plant equipment required for the construction phase may include but not be limited to the following:

Equipment	Function
LDV's	Transport for operatives
Tracked Excavator	Excavating trenches
Site Dumper	Moving excavated materials
Cut off saw	Setting out trenches on road surface
Telehandler(s)	Distributing materials

All plant, machinery and equipment will be stored on site within the works area or within the temporary construction compound to be located within Profile Park.

To avoid all sensitive habitats, construction machinery will access and exit the TLI Group enclosed work zone through the predesignated and agreed route.

Oils and fuels will not be stored on site and will be stored in an appropriately bunded area within the consented temporary storage compound. Mobile bowsers, tanks and drums will be stored in secure, bunded, impermeable storage area, away from drains and open water. A spill kit will be stored with the bowser and the person operating the bowser will be trained in their use. TLI Group will have a COSHH store within their substation footprint in which will store liquids and sprays required for the project.

Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area of the site, away from surface water gullies or drains.

Any servicing of vehicles will be confined to designated and suitably protected areas such as construction compounds

Vehicles exiting the site shall make use of a wheel wash facility, as provided by The Contractor, where appropriate, prior to entering onto public roads.

6. Monitoring arrangements

6.1. Auditing Arrangements

Audits are primarily associated with measuring procedural compliance standards both of TLI Group's own management systems and those of the Contractors working on TLI Group projects. In addition, the TLI Group Environmental Audit will be utilised to measure compliance with this CEMP document. The CEMP will be continuously reviewed and updated throughout the construction works to ensure it takes account of all environment auditing and site inspections.

The information obtained allows the project team to analyse compliance standards with company health, safety and environment procedures and to develop action plans to improve overall safety performance standards.

All audits are accessed through Survey123 (Survey 123 is an app used by TLI Group to collect HSQE information from all projects) and recorded directly onto the system.

Results of auditing is reported weekly at the Company Performance Issues and Targets (PIT) meeting. This meeting is attended by the Managing Director, Directors, Project Managers and the HSQE Department. The meeting is chaired by the HSQE Director. This is a company weekly HSQE review meeting.

Non-conformance trends are analysed to identify the key causes; this enables the implementation of focussed improvement action programmes.

Note a record of daily checks that the works are being undertaken in accordance with the CEMP shall be kept for inspection by the planning authority.

6.2. Environmental Audit Schedule

Audit Title	Description of Audit	Stage of Works Audit Undertaken	Scheduling of audits	Auditor	Input Support / Auditee
Environmental Audits	Audit of the implementation of specific Environmental management Systems and processes relative to the current works on site	Construction Stage- During construction activities	Quarterly throughout the construction stage	H&S Mgr. TLI Project Manager Project Engineer	Contractor Site Manager / Supervisor

7. Environmental Management

7.1. Pollution and Emissions

Vehicle emissions will be kept to a minimum throughout the duration of construction works.

- Fleet vehicles are serviced on a regular basis
- Plant in inspected and serviced on a regular basis
- Plant will be switched off when not in use

TLI Group will ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use on site. As per statutory requirements TLI Group will check all their plant and equipment. Plant & Equipment will be hired from reputable suppliers and will be checked in full before being dispatched to site. Any issues with an item of plant or equipment will be immediately reported to the hired company or owner principle for immediate attention. If unable to fix on site, the unit will be removed from site and replaced.

7.2. Spill Prevention and Containment

Spill prevention and containment measures apply to environmentally sensitive materials, i.e., materials that may cause harm to health or the environment.

These are identifiable as materials with one or more of the following symbols:

- All fuel, lubricants, hydraulic fluids as well as any solvents, oil and paints will be handled properly shall be placed on an impermeable base within a bund and secured.
- All such chemicals shall be secured against unauthorized access or vandalism.
- All storage tanks and containers must be labelled to identify contents.

All other materials of a hazardous nature, i.e. paints, acids, spray paints, solvents etc., will be stored in a secure bunded area, i.e. either in a concrete bund or on poly spill pallets. Materials such as these must not be used around the site without the aid of drip trays.

- All servicing or repairs to plant must be done so on a hard standing area with the use of drip trays and oil absorbent material.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the works area for disposal or recycling.
- Ancillary equipment such as hoses, pipes will be contained within the bund.
- All equipment and machinery, 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
- Taps, nozzles or valves will be fitted with a lock system.

Emergency spill kits and hydrocarbon absorbent packs will be stored on site during the construction phase. All machine operators and staff will be fully trained in the use of this equipment.

Mobile measures such as drip trays and fuel absorbent mats kept with all plant and bowsers and will be used as required during all refuelling operations.

The volumes of hydrocarbons and chemical storage will be kept to a minimum (as required), subject to a COSHH assessment and in compliance with the requirements of REACH, i.e., European Communities Regulation 1907/2006 for the Regulation, Evaluation, Authorisation and Restriction of Chemicals.

In the unlikely event of a minor spill, the spill will be collected at the dedicated refuelling hardstand area, with collection only to be completed by trained operatives, and with spill kits to be made readily available.

The Site manager / ECoW will be put in place a response procedure to deal with any accidental spill events. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained by the Contractor and the contaminated soil removed from the works area and properly disposed of in accordance with all relevant waste management legislation.

7.3. Waste Management

Waste can be classified into three broad categories:

- **Inert** waste means waste that does not undergo any significant physical, chemical or biological transformations.

  Inert waste will not dissolve; burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health.

  - Inert waste will include C&D materials such as: clean soil and stones, concrete, bricks, tiles and ceramics.

- **Non-Hazardous** Waste means waste which does not fall under the “hazardous waste” classification, as described below.

  This waste type will biodegrade over time, and needs to be disposed of in an engineered, lined landfill site, which will control landfill gas and leachate generation.

  - Non-hazardous waste includes municipal solid waste, household waste, commercial office waste, food/kitchen waste.

- **Hazardous Waste** is waste listed as hazardous on the EWC (European Waste Catalogue) list. Hazardous waste poses substantial or potential threats to public health or the environment and as such should be handled using PPE and disposed of properly i.e. by using a specialist waste Contractor.

  - Hazardous waste includes asbestos-containing materials, fluorescent tubes, batteries oil, chemicals, paints and materials with lead-based paint coatings, electrical components,

The TLI Group Site Manager will monitor the segregation of the waste on site and carry out the relevant checks on waste carriers, waste disposal destinations and ensure the correct completion of all waste documentation.

All site personnel are encouraged to assess their behaviour in relation to waste generation on site. e.g. the storage of materials on site can be an issue in waste generation.

If materials are not stored securely and in accordance with supplier’s instructions, they can end up damaged and unusable resulting in waste generation.

The Waste Hierarchy as seen below will be incorporated on all TLI Group sites.

TLI Group will adopt an integrated approach to waste management on the project, with minimisation by implementing a *waste hierarchy* as shown below.

TLI Group WASTE MANAGEMENT HIERARCHY	**AVOID/REDUCTION –** The first priority is to either avoid or reduce the production of waste, priority to minimising the hazardous components, and eliminating hazardous materials for waste stream e.g. heavy metals.
	RE-USE – The second is to re-use, that is putting material into use as opposed to allowing it to re-enter the waste stream.
	RECOVERY – The third level is recovery, this includes firstly recycling, then composting and finally recovery of energy from waste. Whilst recycling is the preferred option the choice will be determined by the best practical environmental option.
	DISPOSAL – At the bottom of the Hierarchy, disposal is the least attractive waste management option. Disposal options include landfilling, incineration without energy recovery, specialised destruction and permanent capture or storage.

It is the responsibility of the construction manager to ensure that all waste material generated on site is managed, stored and disposed of in accordance with all applicable legislation.

Prior to any waste removal, the following shall be in place:

1. Waste /Recovery Facility Licence
2. Waste Collection Permit (NWCPO)
    - Permitted waste types
    - Permitted disposal sites
    - Permitted collection vehicles
    - Local authority areas

The TLI Group site manager shall ensure that adequate records of all waste generated and disposed off site is recorded. It is also the responsibility of the site manager to check permits and certificates of disposal from waste Contractors to ensure the Company's waste material has been disposed of in the correct manner.

- Any waste oil from drip trays or tanks must be either placed in a labelled waste oil drum located in the bunded area, or alternatively, mopped up using oil absorbent material and disposed of into a specific bin for oily rags.
- All hazardous waste will be stored in an appropriate manner (as outlined above) and a licensed hazardous waste collection company will be contacted for disposal of the waste.
- All spoil not reused on site will be disposed of at the agreed spoil deposition. From here a licenced haulier/Contractor will transport the waste to a licenced facility. Any contaminated soil or unsuitable spoil will be removed using a licensed Contractor. Records will be kept of all spoil disposed of by the Contractor.
- Skips will be used for general inert C&D waste (skips are not to be overfilled)
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed. Any spillages will be cleaned up and disposed of immediately.
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening.
- Concrete skips, pumps and machine buckets will be prevented from slipping when placing concrete.
- Mixer washings and excess concrete will not be discharged directly into any drainage ditches, surface water features or exposed groundwater.
- Surplus concrete will be returned to batch plant after completion of a pour.
- After concrete is poured at a construction site, the chutes of ready mixed concrete trucks must be washed out to remove the remaining concrete before it hardens.
- Wash out of the main concrete bottle will not be permitted on site; wash out is restricted only to chute wash out of trucks, mixers and concrete pumps.
- All concrete washout water and solids are to be collected in a leak proof container or impermeable lined wash out pits. Collected concrete washout water and solids will be emptied on a regular basis.

7.4. Emergency Response Plan

Emergency Response Plan (ERP) is in place in an event of any emergency on site. This ERP shall be activated in the event of an emergency such as an accident, fire, spillage, collapse etc. The ERP will also include details of all personnel inducted and authorised to work on the site as well as next of kin contact details and relevant medical information.

In the event of an emergency, the TLI Group Site Manager will inform the Contractor's HSQE Advisor and Project Manager immediately, they in turn will determine the scale of the emergency and the requirement for the assistance of emergency services. Works will cease around the incident and contact will be maintained with the emergency services to direct them to the scene of the incident as required.

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

In addition to above a site-specific ERP shall be submitted separately to this CEMP document.

7.5. Invasive Species Management

Irish Statutory Instrument 477/2011, which encompasses the EC Birds and Natural Habitats Regulations, brought forth significant legislation pertaining to invasive species within the Republic of Ireland. Article 49 explicitly forbids the introduction, breeding, release, or dispersal of specific species, while Article 50 prohibits the trading and possession of certain identified species.

Invasive species can be introduced into a location by contaminated plant, machinery, and equipment which were previously used in locations that contained invasive species. The UGC was surveyed for the presence of invasive plant species within none noted within the red line boundary of the UGC route. Similarly, no invasive plant species were recorded within or bordering the Baldonnell substation site nor at existing 110kV Barnakyle substation.

However, good site organisation and hygiene management shall be maintained always on-site, and best biosecurity measures will be implemented, as follows:

- Plant and machinery will be inspected upon arrival and departure from the site and cleaned/washed as necessary to prevent the spread of invasive aquatic/ riparian species.
- Site Hygiene signage will be erected in relation to the management of non-invasive material.
- Proposed construction work areas will be demarcated by The Contractor prior to construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas within the proposed development site.
- Construction vehicles will be restricted to designated access tracks to avoid impacting adjacent habitats and to ensure that soil compaction is restricted to these tracks.
- The area which provides suitable bird nesting habitat (i.e., wet grassland) will not be removed, cleared or trimmed between the 1st of March and 31st August, to avoid impacts on nesting birds protected under the Wildlife Acts and/or Birds Directive.

7.6. Traffic Management

TLI Group in conjunction with their subcontractor and in advance of site mobilisation will compile a TMP for our designated work area only. TLI Group and our subcontractor will align with the Contractor's TMP for the main site and surrounding public roads. This will be related to all TLI Group site attendees at the site-specific induction. The primary function of the TMP is to ensure the safety of the persons at work arising from vehicular and pedestrian traffic, the following controls will form the basis of the TLI TMP. NOTE Speed limit is 25km.

- Assistance will be provided when entering into or exiting the station at the roadside – where applicable TLI Group will have a spotter in place to direct vehicles whilst accessing and egressing the main site entrance.
- Excavations will be fenced off, signposted, and protected if they are left unattended.
- Where applicable pedestrian walkways will be delineated by hard barriers and applicable warning and directional signage affixed.

- Any changes to the TMP within the TLI Group designated site will be communicated to all on site.
- All visitors to sites must report to the Supervisor.
- The Supervisor will brief visitors to a work site on the hazards as identified on the Daily Site Risk Assessment for the particular site and the work being carried out at the worksite.
- Prior to the commencement of development, a revised roads layout shall be submitted to the planning authority ensuring that no pedestrian crossings conflict with vehicular entrances.

7.7. Noise & Vibration Management

Noise levels will be kept to a will be kept to a minimum throughout the duration of construction works.

- Noise levels will be monitored & logged throughout the construction stage of both the substation & UGC footprint and (where required) control measures implemented.
- Any noise generated as a result of the construction works will be restricted to within the permissible site working hours.
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturers specifications.
- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use.
- Plant and vehicles will be sequentially started up rather than all together.
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen.

There is no published statutory Irish guidance relating to the maximum permissible noise and vibration level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise and vibration limits at their discretion. However, there are several publications commonly used in Ireland to set appropriate construction criteria. Transport Infrastructure Ireland (TII) publication Guidelines for the Treatment of Noise and Vibration in National Road Schemes contains information on the permissible construction noise levels for various hours of operation. The noise level limits are outlined in Table below.

Date	Noise Levels (dB re. 2x10-5 Pa)	
	$L_{Aeq\ (1hr)}$	L_{Amax}
Monday to Friday 07.00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 14:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of relevant local authority.

The Contractor will be required to have regard to BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites, which sets out detailed guidance on the control of noise and vibration from construction activities. The HSQE officer, or equivalent, will supervise the works to ensure compliance with the noise and vibration limits set out in the Standards document referred above and the EIAR.

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

- Duration of works which create high levels of noise or vibration, such as piling, will be limited and staggered to prevent constant annoyance.
- A clear communication programme will be established by The Contractor to inform closest building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to exceed perceptible levels. The nature and duration of the works will be clearly set out in all communication circulars.
- Alternative less intensive working methods and/or plant items shall be employed, where feasible.
- Appropriate vibration isolation shall be applied to plant, where feasible.
- Cut off trenches to isolate the vibration transmission path shall be installed where required.

Note The Contractor will appoint a Site Noise Liaison Officer as per the ABP Planning Conditions. Monitoring will be undertaken by The Contractor at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

7.8. Dust, Mud and Debris

Works will be coordinated and planned in such a way so as to minimise ground disturbance in order to reduce the hazard of dust on site, as well as the transfer of mud and muck onto the existing public road.

- The access road, including a designated parking area will be stoned by the Contractor.
- Access onto the public road will be monitored and if necessary, cleaned periodically, as and when required by the Contractor.
- Speed limits are to be obeyed and speed restriction signage will be established on site.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned, if necessary, by The Contractor.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.

- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

7.9. Drainage and Water Quality Management

7.9.1. Site Drainage

The following mitigation measure have been proposed to ensure that no potential adverse effects will arise from construction related surface water discharges from construction of the proposed 110kV Baldonnell Substation and UGC works. TLI Group will put in place the following mitigation measures as applicable to the works.

- Stockpiling of any excavated materials will be >50m from an open channel water feature. Stockpiled material will be side cast, battered back and profiled to reduce rainfall erosion potential.
- Any excavation works will not be carried out during or following heavy rainfall periods (i.e. is there is a yellow or higher rainfall warning in place or >5mm in a 1-hour period).
- Where possible to do so, dewatering of excavations will be avoided.
- Silt dewatering bags will be used whenever water is being discharged.
- No water discharge will be permitted to a stream or any other open channel surface water features, field drains or ditches.
- Provision of 50m exclusion zones and barriers (silt fences) between any excavated material and any surface water features to prevent sediment washing into the receiving water environment.
- All road drainage gullies within 50m of the open trench construction activities will be isolated and blocked off from the UGC works areas. The road drainage gullies will be isolated using sandbags or silt socks which will be installed under the supervision of the ECoW. Sandbags and or silt socks will remain in situ for the during of the open trench works.
- Water supply and drainage arrangements, including the attenuation and disposal of surface water, shall comply with the requirements of Irish Water / Uisce Éireann and the planning authority for such works and services as appropriate. The Developer shall enter into a water supply and wastewater connection with Uisce Éireann.
- Interceptor drains/diversion ditches will be installed by The Contractor ahead of the main earthworks activities to minimise the effects of collected water on the stripped/exposed soils once earthworks commence. This drainage will integrate into the existing site drainage.
- TLI Group will align with The Contractor's site protocol with respect to all treatment of surface water during the construction phase of the project.
- No material or runoff will be allowed to enter any waterbodies (e.g. Baldonnell Stream).
- Local surface water features in the immediate vicinity of the site boundary will be monitored by the Contractor pre-construction and during construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed development.
- Runoff will be maintained at Greenfield (pre-development) runoff rates

- Where applicable The Contractor will undertake field testing and laboratory analysis of a range of parameters will be undertaken ay adjacent watercourses, specifically following heavy rainfall events.

TLI Group will employ the best practice measures outlined in the Construction industry Research and Information Association (CIRIA) guidelines '*Control of Water Pollution from Construction Site' and "Groundwater control – design and practice"* and CIRIA 2010 'Environmental Good Practice on site'.

8. Risk Assessment & Method Statements

Contractors' risk assessments and method statements (RAMS) will be developed and submitted to TLI Group and reviewed by the management team accordingly. These shall include environmental risk assessments and controls as related to the work scope.

Contractors' management will undertake recorded RAMS briefings to their workforce and any others affected by the work. These briefings will take place prior to the commencement of the task and include and explanation of the risks and agreed methods and precautions.

Contractors will undertake re-briefing following any changes to the work in hand, or for ongoing works at regular intervals defined within their RAMS.

Daily Site Risk Assessments (DSRA) will be carried out by each crew (irrespective of the number of persons in the crew) before work commences at a given worksite.

The purpose of the Daily Site Risk Assessments is to identify hazards at each worksite before they commence work, the risks associated with each hazard and to identify and implement the necessary actions to eliminate, or reduce to an acceptable level, the risks associated with each hazard.

9. Management of Archaeology

9.1. Management

With reference to contracted scope of works, TLI Group have engaged a suitably qualified archaeologist, IAC Archaeology, to monitor (licensed under the National Monuments Acts) all site clearance works, topsoil stripping and groundworks. Prior to TLI Group commencing the works, both parties will walk the entire UGC route and substation footprint and agree the works methodology and in turn best practices when excavating for the ducting, drainage runs and substructures. Further to the joint site walk TLI Group RAMS detailing the works will be furnished to IAC Archaeology for review. In addition to the TLI Group RAMS, a programme of the works will also be shared with IAC Archaeology.

As per the ABP Grant of Planning conditions, the use of appropriate machinery to ensure the preservation and recording of any surviving archaeological remains shall be necessary. Should archaeological remains be identified during the course of archaeological monitoring, all works shall cease in the area of archaeological interest pending a decision of the planning authority, in consultation with the National Monuments Service, regarding appropriate mitigation. The developer shall facilitate the archaeologist in recording any remains identified. Any further archaeological mitigation requirements specified by the planning authority, following consultation with the National Monuments Service, shall be complied with by the developer. Following the completion of all archaeological work on site and any necessary post- excavation specialist analysis, the planning authority and the National Monuments Service shall be furnished with a final archaeological report describing the results of the monitoring and any subsequent required archaeological investigative work/excavation required. All resulting and associated archaeological costs shall be borne by the developer.

10. Project Phasing

10.1. Schedule

TLI Group Project Schedule has been issued to the Main Contractor for review and comment. In turn said schedule will be integrated into the Master Project Schedule by the Contractor. On a weekly basis TLI Group using the baseline schedule will update the Programme based on progress on impediments to the work sequence.

11. Appendices

APPENDIX 1: ENVIRONMENTAL POLICY

Environmental Policy

TLI Group is committed to carrying out activities in a manner that minimises Environmental impacts, conserves natural resources and provides effective stewardship of the environment. The senior management firmly believes in and is committed to pollution prevention and environmental protection. Our commitment to the environment extends to our customers, our staff, and the community in which we operate. It is TLI Group policy to;

- Comply with all applicable environmental legislation, regulations, codes of practice, and any other standard to which the company subscribes;
- Maintain a Comprehensive Environmental Management System;
- Prevent pollution whenever possible;
- Train all our staff on our environmental program and empower them to contribute and participate;
- Communicate our environmental commitment and efforts to our customers, staff, and our community;
- Set business specific environmental targets, auditing and reviewing performance against targets and report progress annually to the Board of Directors;
- Pursue continuous improvement in environmental performance especially in addressing the areas of resource use, energy and water consumption, increasing reuse and recycling.

To achieve our objectives, we require the help and co-operation of all employees and contractors to:

- Be aware of the potential environmental consequences of their actions at all times and take care to minimise any adverse consequences;
- Promptly report or otherwise address conditions that could result in a spill or release of hazardous or regulated material to the environment;
- Promptly report environmental incidents, i.e., events in which a spill or release of hazardous or regulated material to the environment occurred or could have occurred.

This policy will be reviewed as necessary and at all times remain relevant and appropriate to the company. It will be communicated to all employees and prominently displayed at all TLI Group workplaces.

John Tuite
Managing Director

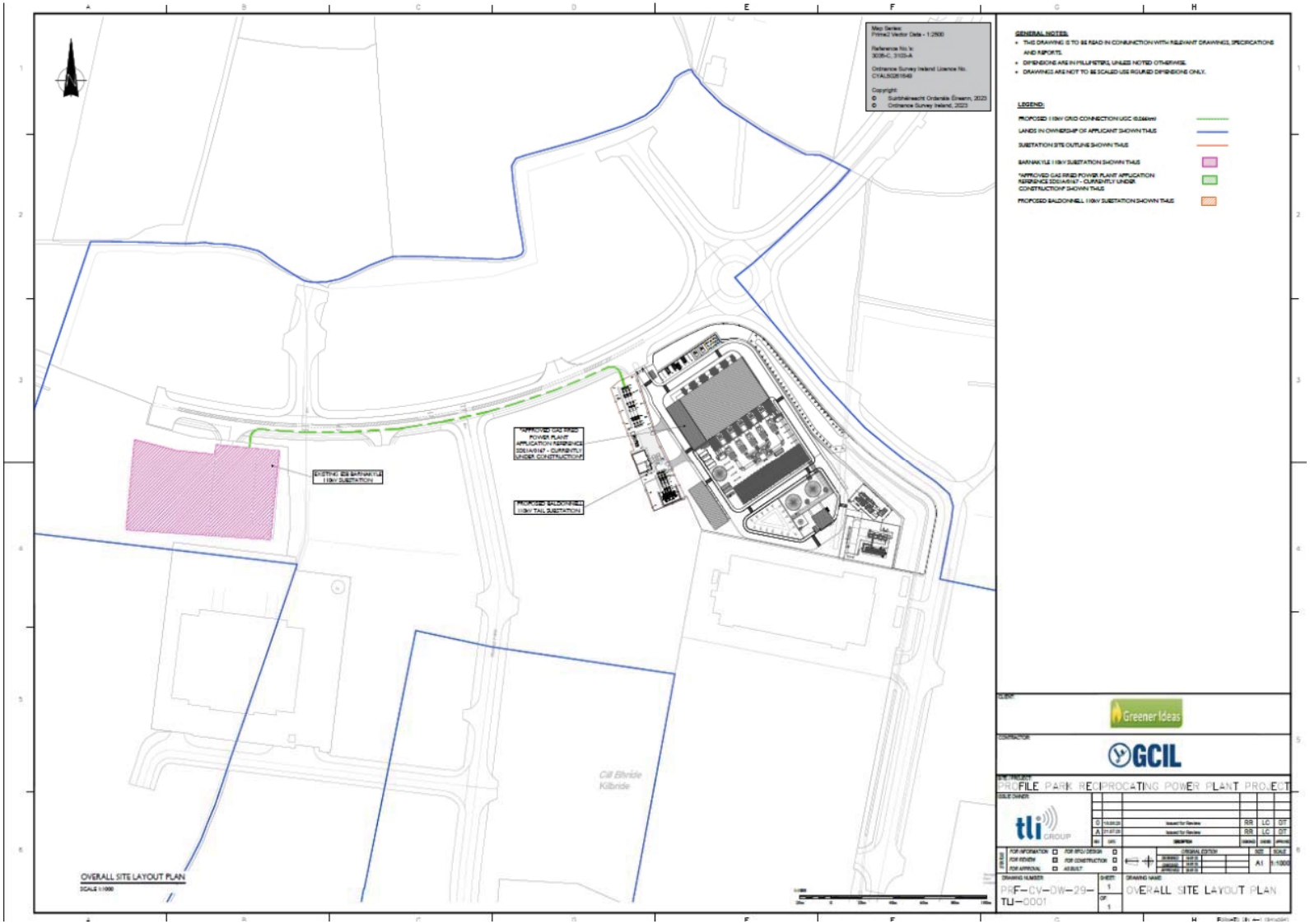
Date: 03/02/2023

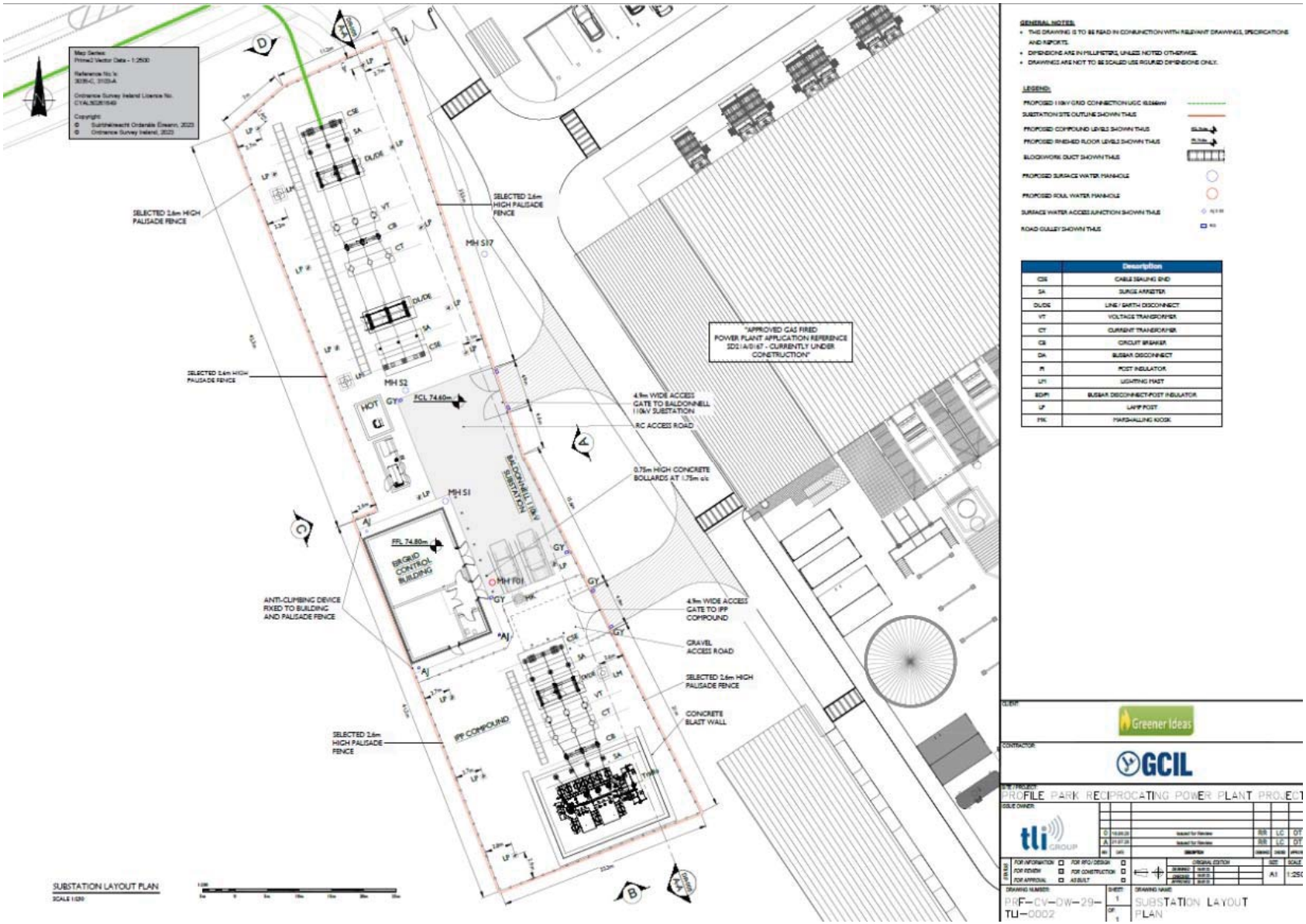
Our Values - Safety - Customer - Delivery - Flexibility - People - Teamwork
VAT No: 6338301C **Registration No:** 318301

ISO 9001 | **ISO** 14001 | **ISO** 45001

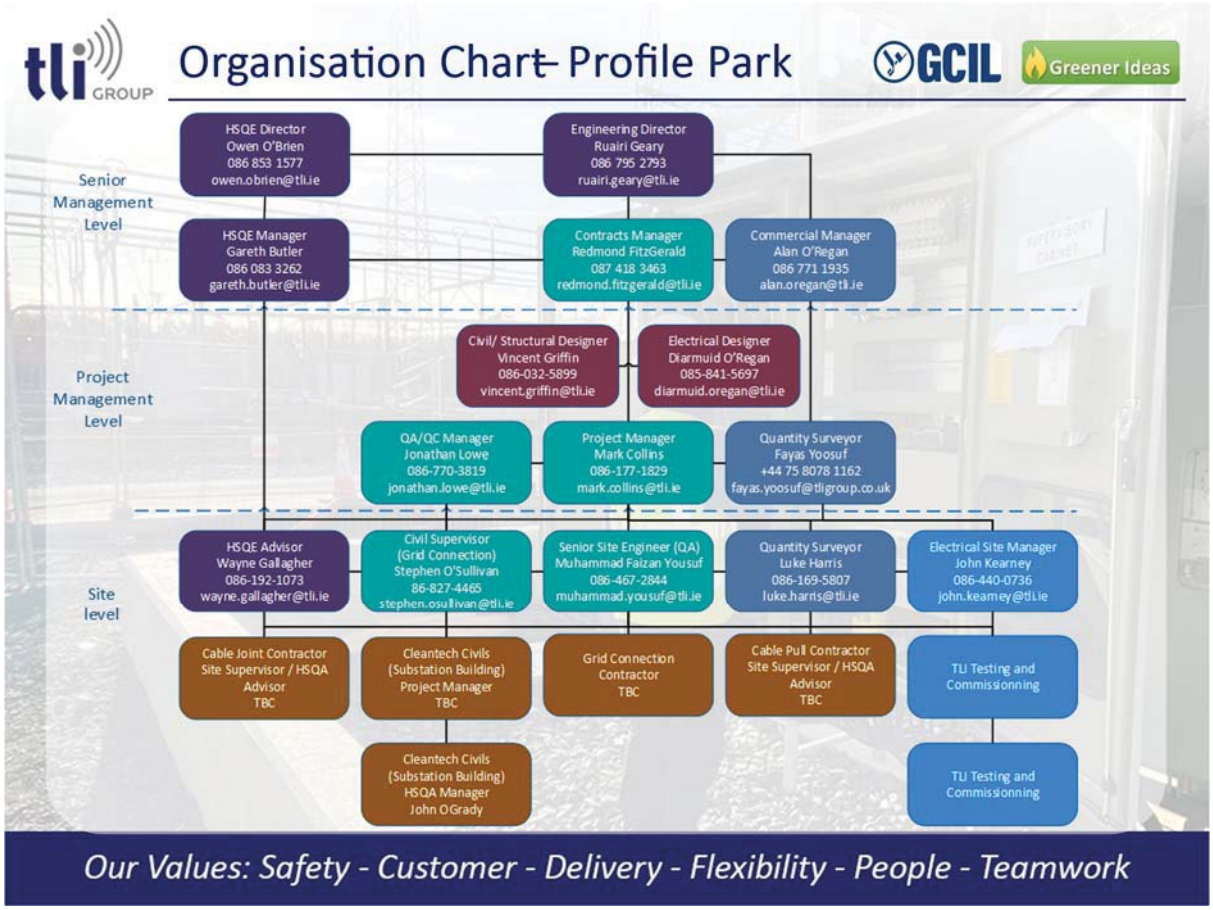
HSQE-P-02 | R0-02-23

APPENDIX 2 – SITE LAYOUT




SUBSTATION LAYOUT PLAN
SCALE 1:250
SELECTED 2.6m HIGH PALISADE FENCE
MH S17
MH S2
MH S1
MH T01
FCL 74.60m
FFL 74.80m
BALDONNELL 110kV SUBSTATION
ERGRID CONTROL BUILDING
IPP COMPOUND
"APPROVED GAS FIRED POWER PLANT APPLICATION REFERENCE SD21A/0167 - CURRENTLY UNDER CONSTRUCTION"
4.8m WIDE ACCESS GATE TO BALDONNELL 110kV SUBSTATION
RC ACCESS ROAD
0.75m HIGH CONCRETE BOLLARDS AT 1.75m c/c
4.8m WIDE ACCESS GATE TO IPP COMPOUND
GRAVEL ACCESS ROAD
CONCRETE BLAST WALL
ANTI-CLIMBING DEVICE FIXED TO BUILDING AND PALISADE FENCE
GENERAL NOTES:
LEGEND:
Description
CSE CABLE SEALING END
SA SURGE ARRESTER
DS/ES LINE / EARTH DISCONNECT
VT VOLTAGE TRANSFORMER
CT CURRENT TRANSFORMER
CB CIRCUIT BREAKER
BS BUSBAR DISCONNECT
PI POST INSULATOR
LPI LIGHTING MAST
BDPI BUSBAR DISCONNECT-POST INSULATOR
LP LAPP POST
MK MARSHALLING KIOSK
Greener Ideas
GCIL
PROFILE PARK RECIPROCATING POWER PLANT PROJECT
tli GROUP
PRF-CV-OW-29-TU-0002
SUBSTATION LAYOUT PLAN

APPENDIX 3 – TLI Group Project Organization Chart



Above – TLI Group Profile Park Project Organization Chart
Management Structure for both Off & On Site.