

## 3.0 DESCRIPTION OF THE DEVELOPMENT

### 3.1 OPERATIONAL OVERVIEW

This type of power plant will operate when electricity demand is higher than average, typically during morning and evening peak usage times. The plant will regularise energy provision in the electricity grid especially in the context of an increase in use of renewable energy technologies, such as wind and solar power. The plant technology allows the delivery of an efficient, safe and secure electricity system by helping to manage fluctuating electricity demands and compensate for shortages occurring from wind or solar power. This will accommodate and support Ireland's transition to a low-carbon economy and mean that Ireland can continue to invest in renewable sources of power in order to meet future national and EU targets.

The power plant may also have the capacity in the future to facilitate the electricity needs of data centre development in Profile Park and its surrounding areas.

The design of the plant and its ultimate usage is therefore flexible such that it may provide power directly to the national electricity grid and/or to nearby data centre development.

The power plant will be minimally manned with a dedicated team with responsibility for carrying out routine maintenance, attending meetings, accepting deliveries and security services.

The key design characteristics of the proposed power plant include an engine hall/building comprising up to 6 no. gas engines and 1 no. exhaust stack cluster; 2 no. 110 kV electrical transformers; and a gas above ground installation (AGI).

Natural gas, supplied from the Gas Networks Ireland national grid, will be the primary fuel source for the plant. In order to comply with Commission for Regulation for Utilities (CRU) requirements to ensure security of energy supply<sup>2</sup>, low sulphur diesel oil will be stored as a backup fuel. Up to 120 hours (5 days) maximum running capacity of diesel oil is required to be stored in two bunded tanks on site (each tank with a volume of 1250m<sup>3</sup>). It should be noted that normal operations on the backup fuel is anticipated to occur for up to 18 hours per annum for testing purposes in accordance with EirGrid's (the Transmission System Operator) Grid Code which establishes the rules governing the electricity transmission system and the procedures for governing the actions of all transmission system users. Outside of these hours, it is expected that operation on diesel oil would only occur in very rare circumstances such as an interruption to gas supplies or other electricity grid system emergencies.

Electrical power will be exported from the power plant's main transformers to the existing Castlebaggot 220 / 110 kV Substation which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park. No confirmed details of this potential new substation were available for consideration as part of this EIAR.

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<sup>2</sup> Ensuring Security of Supply of the electricity system is a key legal function of the CRU. The Secondary Fuel Obligation is a policy designed to maintain security of electricity supply to consumers in the event of a gas shortage by requiring gas fired power generators to have the ability to generate electricity from a secondary fuel source should the supply of gas not be available. It should be noted that the CRU is currently reviewing these requirements.



## 3.2 DESCRIPTION OF KEY PLANT PROCESSES AND OPERATING PROCEDURES

### 3.2.1 GENERAL

The reciprocating gas engine is designed for continuous operation on gas, and has been selected due to the technology's:

- High operational efficiency;
- Operational flexibility
- Fast start capability, unique to this technology
- Dual fuel capability, in accordance with the grid code
- Load following and cycling capabilities;
- Low fuel consumption;
- High Reliability
- Ease of maintenance;
- Long component lifetime;
- Environmental performance: High efficiency means the plant will produce lower emissions (e.g. Nitrogen Oxides [NO<sub>x</sub>], Carbon Monoxide [CO], etc.) to atmosphere per unit of energy produced compared to similar engines available on the market.

### 3.2.2 POWER GENERATION PROCESS

The overall power generation process can be summarised as follows:

#### Gas Operation Mode

In gas operation mode, the gas-air mixture is mixed with air during the air intake period prior to the inlet valves. The combustion is fast, and after the working phase, the exhaust gas valves open, and the cylinder is emptied of exhaust gases. The intake air is turbocharged and intercooled. An alternative approach is to start up on diesel oil.

A schematic showing the typical operation in gas mode is shown in Figure 3-1.



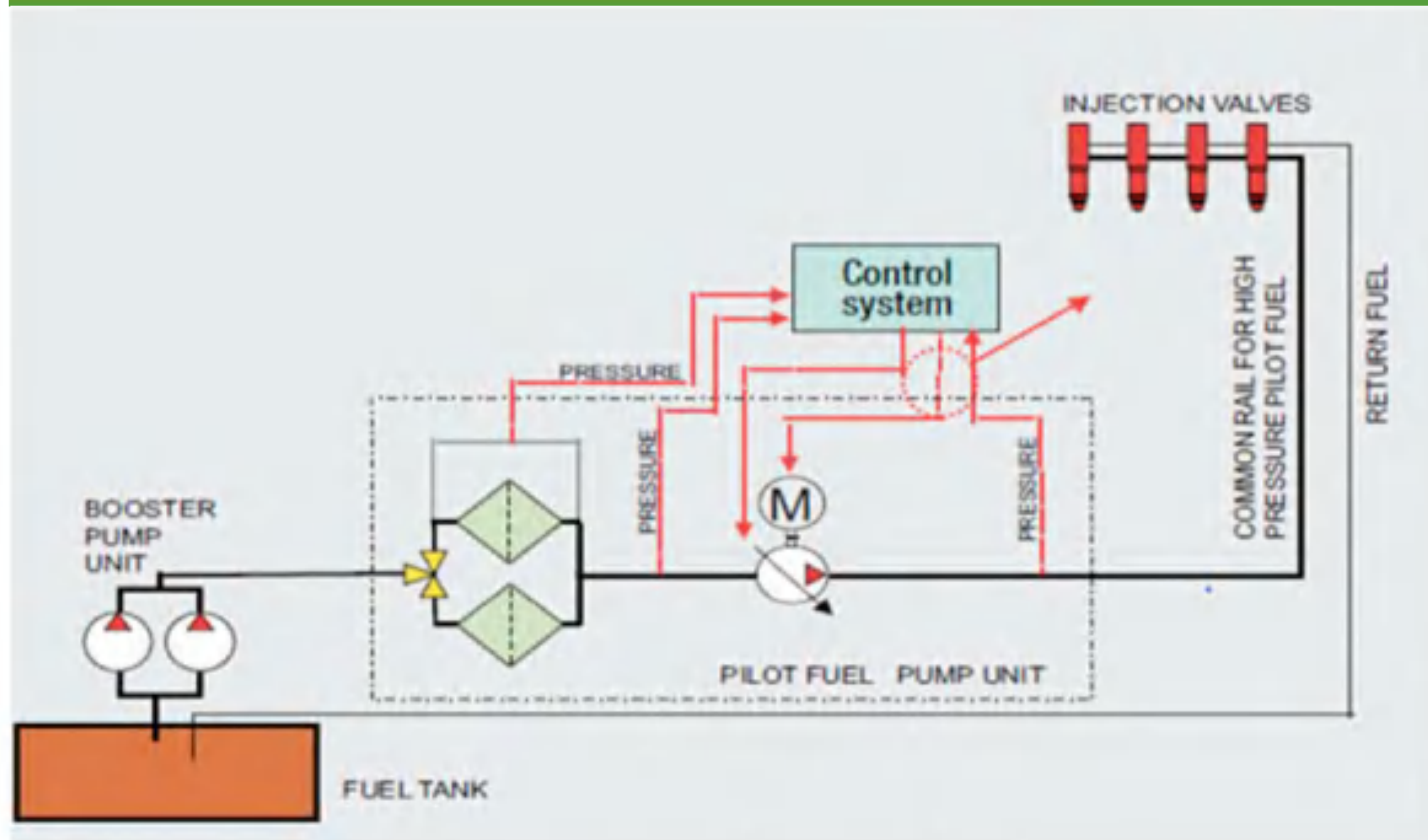


Figure 3-1: Typical Operation in Gas Mode

### Turbocharger and Air to Fuel Ratio Control System

Due to the high degree of integrated functions built into the design of these gas engines, only a minimum amount of support from external systems is needed. An embedded engine control system controls the combustion process, individually in each cylinder.

To maintain a correct air-fuel ratio, the engine is equipped with an exhaust gas wastegate. It keeps the air pressure in the receiver at an optimal level all over the power output range.

The exhaust gas wastegate valve by-passes the exhaust gases past the turbocharger. The wastegate valve acts as a regulator and adjusts the air-fuel ratio to the correct value, independent of variations in the site conditions such as ambient temperature and humidity.

The engine automation system monitors the average exhaust gas temperature after the cylinders. If the average exhaust gas temperature is higher than the set-point, the engine control system will close the wastegate gradually until the correct value is reached.

The wastegate valve is actuated by compressed air and controlled by the engine control system.

### Emission Control System

The exhaust gases from the gas engines will be discharged to atmosphere through a 31.8 metre high stack. The single stack cluster will contain up to 6 no. exhaust flues, one for each of the gas engines.

The most commonly used secondary emission control method for NO<sub>x</sub> is the Selective Catalytic Reduction (SCR) technique. In the SCR system the NO<sub>x</sub> (NO and NO<sub>2</sub>) are reduced with the help of a reducing agent, a water solution of urea or ammonia which will be stored in tank with a



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volume of approximately 26m<sup>3</sup>. SCR does not produce any liquid or solid by-products and is suitable for both liquid and gaseous fuels.

The SCR NO<sub>x</sub> abatement system is combined with an oxidation catalyst and is named Combined NO<sub>x</sub> and CO control system.

The engine stacks will incorporate an in-situ proprietary Continuous Emission Monitoring System (CEMS). The selection, installation, calibration, ongoing quality assurance and annual surveillance testing of the CEMS will be undertaken in accordance with EN 14181 – Quality Assurance of Automated Measuring Systems and all relevant standards referred to therein. The requirements of EN 14181 will be incorporated into a Planned Preventive Maintenance Programme (PPMP) which will be submitted to and approved by the Environmental Protection Agency as part of the industrial emissions licence for this power plant.

### 3.3 POWER PLANT INFRASTRUCTURE

The power plant will comprise the following main components:

- Site Entrance;
- Engine Hall comprising up to 6 no. gas engines and 1 no. exhaust stack cluster;
- Electrical Annex Building;
- Workshop Building;
- Security Hut;
- Radiator Coolers;
- 110 kV Electrical Transformer(s);
- Gas AGI;
- Tank Farm comprising:
  - 2 x Fuel Oil Storage Tank;
  - SCR reagent Tank;
  - Lube Oil Storage Tank;
  - Lube Oil Maintenance Tank;
  - Pilot Oil Tank;
  - Fire Water Storage Tank;
  - Cooling Water Run-Down Tank;
  - Surface Water Attenuation Tank;
- Fencing;
- Car Park;
- Landscape planting around perimeter of site.

The site layout is indicated on Figure 3-2.

#### 3.3.1 ENGINE HALL AND ELECTRICAL ANNEX BUILDINGS

The engine hall building will have a height of approximately 18.9m, a length of 56.0m and a width of 40.0m and will include up to 6 no. dual fuel gas engines and supporting generating equipment.



**GENERAL LEGEND**

PLANNING APPLICATION BOUNDARY

TARMAC SURFACED ACCESS ROADS

CRUSHED ROCK HARDSTAND AREA

GRASSCRETTE PARKING AREA

OPEN LAND DRAIN

EXISTING GROUND LVL

BUILDING ID TAG

GRAVEL SURFACED ACCESS ROADS

CONCRETE HARDSTAND AREA

AREA RESERVED FOR LANDSCAPING

EXISTING BALDORNEL STREAM CULVERT

FINISHED FLOOR LVL

As agreed with South Dublin County Council in the pre-application consultation meeting the final finishes, including cladding materials and colour codes, will be agreed with the Council post planning through planning condition. Greener Ideas Limited will ensure only Council approved finishes are applied on site.

**NOTES:**

- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
- ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
- ENGINEERS/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY WORK COMMENCES BEFORE ANY WORK COMMENCES
- THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES
- ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

**CO. DUBLIN**

OSI 1:2,500 Sheet No's: 3325-B, 3325-D, 3326-A & 3326-C

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10m 0 10m 20m 30m

Rev	Date	Description	By	Chkd
A	18.06.21	PLANNING ISSUE	WN	MM/C

Client: **Greener Ideas**

Project: **PROFILE PARK POWER PLANT**

Title: **FIGURE 3.2 SITE LAYOUT PLAN**

Scale @ A1: NTS

Prepared by: M. Nolan

Checked: M. McCarthy

Date: June 2021

Project Director: S. Tinnelly

Drawing Status: Planning

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Drawing No: **11069-2003**

Revision: **A**



**BUILDINGS & PLANT ID KEY**

Item ID	Item Name	Area
1	Gas Engine Hall	- 1,200m²
2	Electrical Store	- 1,200m²
3	Staff canteen	- 200m²
4	Gas MH	- 200m²
5	Workshop	- 200m²
6	Truck Filling Bay	- 200m²
7	Oil Storage Tank	- 1,200m³
8	Oil Storage Tank	- 1,200m³
9	Oil Storage Tank	- 200m³
10	Oil Storage Tank	- 200m³
11	Oil Storage Tank	- 200m³
12	Oil Storage Tank	- 200m³
13	Oil Storage Tank	- 200m³
14	Oil Storage Tank	- 200m³
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33	Oil Storage Tank	- 200m³
34	Oil Storage Tank	- 200m³
35	Oil Storage Tank	- 200m³
36	Oil Storage Tank	- 200m³
37	Oil Storage Tank	- 200m³

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The engines are 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. There is an alternator which is connected to each engine by a flexible coupling, rigidly mounted and grouted onto a separate and elevated concrete foundation.

The engines will each have an exhaust flu which will connect into a single stack 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 31.8m.

The electrical annex building will be located adjacent to the main engine hall. the electrical annex will contain the compressor room, cable rooms, switch rooms, station transformers, Control Room and messing facilities.

The power plant will be self-sufficient in providing electricity to power the various facilities, equipment, and utilities on site. During plant downtime (e.g. plant maintenance), a feed will be taken from the existing ESB electricity network. It is expected that there will be adequate capacity in the grid to accommodate this demand during plant downtime.

The image below illustrates a typical gas engine configuration inside an Engine Hall..



### **3.3.2 WORKSHOP BUILDING AND SECURITY HUT**

The Workshop building will have an approximate length of 30.0m, width of 11.0m and a height of 5.1m. This building will include a water treatment room, fire equipment room, and fuel pump and pilot oil treatment room. A security hut will also be provided which will have a height of approximately 3.2m.

### **3.3.3 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.

### **3.3.4 110 KV ELECTRICAL TRANSFORMER(S)**

The electrical generator associated with the gas engines will connect to the 2 no. 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 Castlebaggot 220 / 110 kV Substation which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park. No confirmed details of this potential new substation were available for consideration as part of this EIAR.

It should be noted that planning permission is not sought for these connections as part of the power plant application to South Dublin County Council. Either Greener Ideas Limited or EirGrid will be responsible in the future for securing the necessary planning permission for these electrical connections. Similarly, in the event that GIL and a data centre operator agree for a private power supply to be provided then this would also be subject to its own separate consenting process. Notwithstanding, as required under the EIA Directive, this EIA Report and the accompanying Screening for Appropriate Assessment considers these ancillary developments. Figure 3.3 indicates the route considered in terms of the grid connection.

### **3.3.5 ABOVE GROUND GAS INSTALLATION**

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 (GNI) Gas Networks Ireland that this connection will be via a new spur from the existing national gas transmission network which has an existing Above Ground Installation (AGI) AGI compound close to the Nangor Road approximately 1km to the north of the proposed power plant.

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. Gas Networks Ireland (GNI) GNI will be responsible for the installation, operation, and maintenance of all equipment within the AGI gas compound. The AGI will be an asset owned wholly by GNI who own, operate, build, and maintain the natural gas network in Ireland and connect all customers through a 13,830km pipeline network. All operations within the AGI will comply with standard GNI operational procedures, risk assessments, and will be carried out by approved GNI contractors. GNI will be responsible for any statutory consents associated within the incoming gas pipeline to the power plant. Whilst the current planning application does not include the proposed gas connection to the power plant the environmental impacts associated with both are considered in both this EIA Report and the accompanying Screening for Appropriate Assessment. Figure 3.3 indicates the route considered in terms of the gas connection.



THE INFORMATION ON THIS DRAWING IS TO THE ORDNANCE SURVEY IRELAND PLANNING SYSTEM

- GENERAL LEGEND**
- PLANNING APPLICATION BOUNDARY
  - CONNECTION TO NETWORK
  - ESS GRID CONNECTION TO NETWORK
  - APPLICANT'S LANDHOLDING
  - CONNECTION TO NETWORK
  - ESS GRID CONNECTION TO NETWORK

- NOTES:**
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
  2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE.
  3. ENGINEER/EMPLOYERS REPRESENTATIVE AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
  4. THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES.
  5. ALL LEVELS SHOWN RELATE TO ORDNAVANCE SURVEY DATUM AT MALIN HEAD.

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A	18.06.21	PLANNING ISSUE	MM	MM/CC



Client: **Greener Ideas**

Project: **PROFILE PARK POWER PLANT**

Title: **FIGURE 3.3 POTENTIAL ELECTRICAL AND GAS CONNECTION ROUTES**

Scale @ A1: **NTS**

Prepared by: **M. Nolan** Date: **June 2021**

Checked by: **M. McCarthy**

Project Director: **S. Tinnelly**

Drawing Status: **Planning**

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Revision:





### **3.3.6 TANK FARM**

#### **Low Sulphur Diesel Oil Supply and Storage**

In order to comply with CRU requirements, low sulphur diesel oil will be stored as a backup fuel. Up to 120 hours (5 days) maximum running capacity of diesel oil is required to be stored on site (volume total 1250m<sup>3</sup>) in 2 x bunded tanks. 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.

Diesel oil will be delivered to site by road tankers. The maximum number of expected tankers travelling to and from the site in any one day will be in the region of 2- 3 tankers, however this would be an extremely infrequent occurrence of once every 12 months when oil would start to degrade and would need to be replenished.

A standard operating procedure will be followed during tanker unloading and filling of the bulk tank. 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.

#### **Urea Storage**

The most commonly used secondary emission control method for NOX is the Selective Catalytic Reduction (SCR) technique. In the SCR system, the NOX (NO and NO<sub>2</sub>) are reduced with the help of a reducing agent, a water solution of urea, which will be stored in a tank with a volume of 26 m<sup>3</sup>. SCR does not produce any liquid or solid byproducts and is suitable for both liquid and gaseous fuels.

#### **Lubricating Oil Storage**

For two week's consumption, a tank of 26m<sup>3</sup> is required which will also contain sufficient oil to refill an engine after an oil change.

#### **Lubricating Oil Maintenance Tank**

The lubricating oil run-down tank will be used to hold the engine oil while maintenance work on the engine is being carried out. A tank with a volume of 26m<sup>3</sup> will be required. This tank will also be used to hold the used/dirty oil from an engine prior to disposal offsite by an appropriately licenced contractor.

#### **Pilot Oil Tank**

For two week's consumption, a pilot oil tank of 26m<sup>3</sup> is required. The pilot oil is the fuel source used for start up operations.

### **3.3.7 WATER SUPPLY AND WASTEWATER**

The principal water usage requirements of the power plant can be summarised as follows:

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- Potable water used for domestic purposes (drinking water, toilets etc.); and
- Water for fire-fighting purposes.

The water supply for the proposed power plant will be taken from the public water mains which is located immediately adjacent to the site. It should be noted that the volume water supply for this power plant is very small at approximately 0.11 l/sec. This volume is low due to the small operational workforce and lack of any process water requirement. Similarly, there is no process wastewater associated with this power plant. As such, any wastewater emissions are associated only with foul wastewater for the small operational workforce.

Irish Water has confirmed via its 'Pre-connections Enquiry' process that the above water supply volume can be facilitated through the existing network (IW reference: CDS21002228). A copy of Irish Waters confirmation is included in Appendix 3.1.

Water for fire-fighting purposes will be stored in a tank with a volume of approximately 1000m<sup>3</sup>.

### 3.3.8 SECURITY FENCING

The perimeter of the power plant will be surrounded by a 1.8m palisade or paladin fence.

### 3.3.9 ENERGY ANALYSIS

The following information outlines additional measures employed to improve energy efficiency during the operation of the proposed power plant:

- Planned maintenance schedules and plant conditioning monitoring will be employed to ensure optimum operating efficiency;
- Widespread use of insulation will be employed to minimise heat loss;
- Cladding and insulation will be inspected regularly and replaced / repaired as soon as practicable;
- Good housekeeping techniques will be employed to minimise energy wastage;
- Plant warm up procedures will be optimised to minimise supplementary fuel use;
- Heat transfer surfaces will be regularly cleaned;
- Where possible, equipment will be shut off when not in use;
- All employees will be provided with energy awareness and conservation training. Energy usage and opportunities for energy efficiency improvements will be identified and implemented through environmental management systems.
- High efficiency pumps and fans will be employed where practicable;
- High efficiency motors and drives with variable speed will be employed where practicable;
- The design of the main and ancillary buildings will comply with the requirements of the European Union (Energy Performance of Buildings) Regulations 2012;
- An energy efficiency audit will be completed as part of the EMS. The audit will be undertaken in accordance with the Guidance Note on Energy Efficiency Audits, EPA (2003); and
- The EMS will focus on resource and energy use minimisation. Objectives and targets will be developed to ensure continuous improvement as considered practicable.



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It should be noted in the power plant design that there has been no provision made for heat recovery or heat distribution because of the expected intermittent operating nature of the power plant operations. The plant has been designed to satisfy the system services requirements of EirGrid’s DS3 Programme as set out in Section 4.4. It may also be possible that in future the plant may provide an electricity supply to data centre development in Profile Park. However, the provision of heat recovery and distribution systems would not be financially viable and would not be considered BAT as per the requirements of the Industrial Emission (IE) Directive (2010/75/EU), BAT Reference Document for Large Combustion Plants (2017) and European Commission Implementing Decision on Best Available Techniques for the Large Combustion Plant (2017). Notwithstanding, in future years with developments in technology and subject to any changes in the operational profile of the plant, it may be feasible to consider such systems. In this respect, Greener Ideas Limited would be happy to accept a planning condition or an IE licence condition to undertake periodic technology and capacity reviews to investigate the potential for heat recovery or heat distribution.

### 3.4 CONSTRUCTION PHASE ACTIVITIES

#### 3.4.1 CONSTRUCTION PHASE DESCRIPTION AND DURATION

It is expected that construction will commence in 2023 with design, construction, and commissioning activities lasting for approximately 20 months. The plant is expected to be fully operational in 2024/25 subject to timely receipt of the necessary statutory consents.

The total number of construction staff on-site will vary during the construction phase of the works but are expected to peak at approximately 50 persons.

Normal working hours during the construction period are expected to be Monday to Friday 08.00 to 20.00 hours. During certain stages of the construction phase, it is expected that some work will have to be carried out outside of normal working hours however this will be kept to a minimum.

Construction activities will gradually phase out from pre-construction to predominantly civil activities followed by installation, commissioning and testing of the proposed power plant and equipment.

#### 3.4.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The primary objective of the Construction Environmental Management Plan (CEMP) is to safeguard the environment, site personnel, and nearby sensitive receptors, i.e. occupiers of residential and commercial properties, from site activity which may cause harm or nuisance. It is therefore intended to provide a framework to ensure transparent and effective monitoring, prevention, minimisation, management, and compensation measures to address the environmental impacts associated with the proposed power plant.

During construction, an EPC Contractor(s) will be appointed with responsibility for constructing the proposed power plant. Performance of the EPC Contractor(s) will be monitored on a regular basis. The following activities will be undertaken throughout the duration of the construction period:

- Review contractor documents against the requirements of the CEMP;
- Undertake regular audits;



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- Continuously check records;
- Set up a contractor reporting structure; and
- Conduct regular meetings where EHS is an agenda item.

It will be the responsibility of the EPC contractor(s) to implement the construction phase management and monitoring measures outlined in the CEMP. The CEMP will be finalised in consultation with South Dublin County Council. The EPC Contractor(s) will be required to undertake regular monitoring and inspections, keep up to date records as prescribed in the CEMP, and report regularly to Greener Ideas Limited.

During operation, Greener Ideas Limited will have responsibility for the operation of the power plant and will implement the operational phase management and monitoring measures as outlined in this EIAR and CEMP in consultation with South Dublin County Council.

A copy of the CEMP is provided in Appendix 3.2.

### **3.4.3 WASTE MANAGEMENT PLAN**

An Outline Waste Management Plan (OWMP) has been prepared in accordance with waste management guidance and principles as outlined in Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015) and Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, Department of the Environment, Heritage and Local Government (DoEHLG), June 2006.

The aim of the OWMP is to provide a framework for the development of a detailed Construction Waste Management Plan and to ensure that optimum levels of waste reduction, re-use, recycling, and recovery are achieved throughout the duration of the project. It is preliminary in nature as it has been prepared at a stage when exact quantities and volumes of waste material cannot be determined. Any quantities and/or volumes presented in this report should be considered indicative only.

The requirement to develop, maintain and operate this OWMP to a detailed Construction Waste Management Plan (CWMP) will form part of the contract documents for the project.

On commencement of the project, the EPC Contractor appointed to undertake the works will be responsible for the development of this CWMP and the implementation of all necessary protocols and measures to ensure regulatory compliance, including the provision of data to Greener Ideas Limited to enable fulfilment of reporting obligations.

The OWMP is included in Appendix 3.3 of this EIAR. A final CWMP will be agreed with South Dublin County Council prior to the commencement of construction on site. The final CWMP will be available for inspection at the site of the proposed power plant and at all reasonable times for examination by South Dublin County Council.

### **3.4.4 PRE-CONSTRUCTION**

The pre-construction phase of development includes 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. Typical activities will include preparation of the



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construction working area and topsoil stripping. Preliminary volume calculations provide an approximate estimation of stone fill required for all of the hardstanding foundations of 8,500m<sup>3</sup>.

Prior to the commencement of construction activities, the area for development will be fenced off. The footprint of the proposed power plant will require clearing and levelling. The site will be levelled to 74.8 AOD. Soil management proposals include:

- 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.

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 SAFEPASS or equivalent certification.

#### **3.4.5 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 filling 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) will be prepared in consultation with South Dublin County Council in advance of the construction phase of development 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 expanded 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;
- Site traffic management supervisor; and



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- Abnormal load (i.e. for substation transformer) and associated permit applications applied for and secured from/by South Dublin County Council in advance of abnormal load delivery to site.

The CTMP will also provide for the requirement that entrances and roads are kept clean and clear of obstructions to prevent the spillage or deposit of clay, rubble, or other debris on the entrance and other roads throughout the contract period.

## **3.5 OPERATIONAL PHASE ACTIVITIES**

### **3.5.1 HOURS OF OPERATION**

This power plant may operate in more than one operational profile. For example, the plant may connect to the national electrical grid in which case its actual operating hours would be determined by EirGrid, who are the Transmission System Operator (TSO). Alternatively, the plant may connect in the future to a data centre and provide a direct power feed to that data centre. In this case the operating hours would be subject to agreement between Greener Ideas Limited and that data centre. Notwithstanding, these operating profile scenarios, the environmental modelling undertaken as part of this EIA Report has predicted no significant environmental effects based on a worst case operating scenario (i.e. operating 24 hours a day, 365 days per year unless otherwise stated).

### **3.5.2 OPERATIONAL STAFF**

The power plant will be minimally manned with a dedicated team with responsibility for carrying out routine maintenance, attending meetings, accepting deliveries and security services.

Site specific management systems and operating procedures will be developed in accordance with industry procedures and policies. The Plant Manager will be directly responsible for the implementation of the Health and Safety, Environmental and Quality systems, policies and procedures.

The Plant Manager will be assisted by an Operations Engineer and the Environmental, Health, and Safety (EHS) Manager who will have varying degrees of responsibility for health and safety implementation. Operations will be carried out in accordance with legislative requirements and the conditions of the planning permission.

Out of hours security services will be arranged to ensure the site is secure.

### **3.5.3 UTILITIES AND SERVICES**

#### **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 stream 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:



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- 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 – 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 while 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 to 4.1l/s.
- Attenuation Tank – it is proposed to attenuate all storm water accumulated on site within an underground attenuation tank, which will be discharged to the Baldonnel stream via a Hydrobrake.
- Swale – it is proposed to install a swale to collect runoff from the adjacent North East 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.
- 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 system through infiltration, biodegradation and pollutant settlement.
- Infiltration Basin – It is proposed 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.

Surface water drainage calculations informing the drainage design are provided in Appendix 3.4.

#### **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, 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



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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). A copy of Irish Waters confirmation is included in Appendix 3.1.

### Process Wastewaters

There will be no process wastewater generated from the power plant.

### 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 neighbouring residential or commercial properties. This lighting plan will be designed in accordance with the International Standard IS EN 13201-2:2015 (Road Lighting). It is envisaged that lighting will be provided on building and no lighting columns will be required.

## 3.6 HEALTH AND SAFETY CONSIDERATIONS

### 3.6.1 PROJECT SUPERVISOR CONSTRUCTION STAGE

A Project Supervisor Construction Stage (PSCS) will be appointed by Greener Ideas Limited for the construction phase of the power plant. The PSCS will be responsible for managing and co-ordinating the safety and health issues on site.

The PSCS will develop a suitable Safety and Health Plan for the project prior to the commencement of construction. The plan will explain how the key safety and health issues will be managed. The other responsibilities of the PSCS include the following:

- Co-ordinate the implementation of the construction regulations by contractors;
- Organise co-operation between contractors and the provision of information;





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- Co-ordinate the reporting of accidents to the Health and Safety Authority;
- Notify the Health and Safety Authority before construction commences;
- Provide information to the site safety representative;
- Co-ordinate the checking of safe working procedures;
- Co-ordinate measures to restrict entry on to the site;
- Co-ordinate the provision and maintenance of welfare facilities;
- Co-ordinate arrangements to ensure that general construction workers and security workers have a Safety Awareness card, e.g. Safe Pass and a Construction Skills card where required;
- Co-ordinate the appointment of a site safety representative where there are more than 20 persons on site;
- Appoint a safety adviser where there are more than 100 on site;
- Monitor the compliance of contractors and others and take corrective action where necessary; and
- Notify the Authority and the client of non-compliance with any written directions issued.

It is important to note that the presence of a PSCS does not release other contractors/employers of their obligation to comply with their statutory safety and health obligations.

### 3.6.2 SEVESO

The inventory of substances to be stored on the proposed power plant is not subject to any of the requirements contained in the Chemical Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 which implement the Seveso III Directive, the main EU legislation dealing specifically with the control of onshore major accident hazards involving dangerous substances, into Irish law. The relevant threshold relates to storage of petroleum products which have a lower tier threshold of 2500 tonnes. The maximum cumulative weight of all petroleum products stored on the proposed power plant suite is below this threshold.

### 3.6.3 CHEMICAL STORAGE

Operators will receive specific training on the handling, containment, use, and disposal requirements for all potentially polluting products on site. All chemicals stored on site will be subject to a COSHH (Control of Substances Hazardous to Health) assessment and compliance with the requirements of REACH, i.e. European Communities Regulation 1907/2006 for the Regulation, Evaluation, Authorisation and Restriction of Chemicals. Chemicals will be managed in accordance with European Chemicals Agency's Guidance for Downstream Users (2014). Final selection of bulk chemicals will be subject to an assessment of trace elements to ensure that they are within acceptable limits. In addition to this:

- All potentially polluting substances, including waste, will be stored in designated areas in appropriate UN approved containers within bunds, drip trays, or spill pallets, as deemed necessary;
- All containers and bunds will be inspected regularly to ensure they have not become damaged or degraded;



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- Hazardous compressor cleaning products will be segregated in a locked cabinet with limited access to prevent misuse. This cabinet will be made of suitably fire rated material;
- All areas on site with potentially polluting substances will be hardstanding with drainage networks directing run-off to contained areas;
- Accidental spillages will be contained and cleaned immediately by suitably trained personnel;
- Spill equipment stocks will be stored at strategic locations around the site. Stocks will be subject to regular inventory checks. Incidents, accidents, and near-misses will be recorded on site and notified to the appropriate authorities in accordance with licence requirements; and
- An Emergency Incident Response Plan will be developed and implemented in consultation with the local emergency services. This plan will include emergency response contact details for site personnel and emergency services, maps and plans of the facility, emergency procedures, chemical inventories, and equipment lists.

#### 3.6.4 FIREFIGHTING SYSTEMS AND CONTROLS

The fire-fighting protection system philosophy is based on widely recognized National Fire Protection Association (NFPA) standards. Piping and equipment may still follow standards used by the fire protection equipment supplier.

The stand pipe system inside the engine hall will follow 'NFPA14 class II stand pipe system' requirements. Additionally, mobile foam units will be provided. For immediate action against small local fires, the engine hall will be equipped with a number of powder extinguishers at strategic locations and CO2 extinguishers for electrical fires (spacing as per NFPA10). The fire main will be built using the design guideline 'NFPA24 Private fire service main'.

The firefighting pump will operate on diesel. The pump will be located within the fire pump house. The pump will only be used in an emergency and for short duration testing, a maximum of 30 minutes once a week. The pump will have an electrical output of less than 100 kW.

The firefighting system for the plan will include a prefabricated, insulated fire pump house, firewater storage tank, engine hall water mist system, control and switchgear room suppression system, transformer water deluge system, fire hydrant ringmain, fire and gas detection system for the site.

### 3.7 DECOMMISSIONING

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;



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- 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.

