TOBIN
CONSULTING ENGINEERS
BUILT ON KNOWLEDGE

Greener Ideas

PROFILE PARK POWER PLANT

DESIGN STATEMENT

TOBIN
CONSULTING ENGINEERS

www.tobin.ie

PROFILE PARK POWER PLANT

DESIGN STATEMENT

Document Reference	11069
Report Status	Planning Issue
Report Date	June 2021
Current Revision	D01
Client:	GREENER IDEAS LIMITED
Client Address:	C/O Centrica Business Solutions, 1 Seapoint Building, 44-45 Clontarf Road, Dublin 3, D03 F4A7
Project Number	11069

Galway Office Fairgreen House, Fairgreen Road, Galway, H91 AXK8, Ireland. Tel: +353 (0)91 565 211	Dublin Office Block 10-4, Blanchardstown Corporate Park, Dublin 15, D15 X98N, Ireland. Tel: +353 (0)1 803 0406	Castlebar Office Market Square, Castlebar, Mayo, F23 Y427, Ireland. Tel: +353 (0)94 902 1401

Revision	Description	Author	Date	Reviewed by	Date	Authorised by	Date
D01	Planning Issue	LB	11/06/21	MMC	23 /04/21	MMC	23/06/21

TABLE OF CONTENTS

1.0 INTRODUCTION

Greener Ideas Limited is proposing to develop a gas fired power plant with capacity to generate up to 125MW of electricity at a site located in Profile Park, Dublin 22.

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 Irelands 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 purpose of this document is to provide an overview of the proposed power plant, it's surrounding context and basis of design. The design statement should be read in conjunction with drawings, plans and other information submitted as part of this planning application.

2.0 PROPOSED DEVELOPMENT

The project will involve the development of a gas fired power plant with capacity to generate up to 125MW of electricity and will comprise the following main development 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.

Access to the site will provided on the north western boundary, which adjoins the existing internal road network of Profile Park.

The proposal includes the adoption of Sustainable Urban Drainage System (SUDS) design measures in order to effectively manage surface water on site.

3.0 EXISTING SITE

3.1 Site Description

The site of the proposed power plant is approximately 1.9 hectares in size and greenfield. The topography can be described as mostly flat with elevations from c. 73 mAOD to 76 mAOD. Baldonnell Stream is located within the site boundary and flows through the site from in a north-south direction. There are currently no land use activities on site.

The north western and eastern boundaries of the site are defined by the internal road network of Profile Park and Digital Realty Trust is located immediately south of the site.

3.2 Site Location

The site of the proposed power plant is located in Profile Park, Dublin 22. This is a 100 acre (40.5 Ha) fully enclosed, private business park which has been developed to the highest of standards. It is easily accessible from the major arterial roads in the city including the M50, M7 and M4, and is served by excellent public transport links.

Within Profile Park the proposed power plant will be located on greenfield lands immediately adjacent to the existing Digital Realty data centre. The site of the proposed power plant has been identified by South Dublin County Council in its County Development Plan 2016-2022 as Zoning Objective 'EE' which is 'To provide for enterprise and employment related uses'. The siting of a power plant in Profile Park would bring additional opportunity to further accommodate data centre development. In this context it should be noted that Profile Park is connected directly onto the Dublin metropolitan fibre network called the T50. The T50 is a multi-duct fibre carrying system which extends over 44 km and provides connectivity to 24 business parks and from these into the global networks through.

Existing tenants within Profile Park and the surrounding business and enterprise parks include Google, Microsoft, Digital Realty Trust, Telecity and others. Immediately adjacent to Profile Park is the Castlebaggot 110 / 220 kV substation which provides electrical transmission connectivity to the national electricity transmission grid system.

The nearest residential properties are located some 400m to the south of the site and some 450 m to the north east. Grange Castle Golf Course is located approximately 120m east of the site and Baldonnel Aerodrome 450m south of the site.

3.3 Site Context

The immediate area is predominantly commercial / industrial in nature.

The proposed power plant will be located within the functional area of South Dublin County Council and the application site is situated within land designated as "Employment and Enterprise" under the South Dublin County Council Development Plan 2016 -2022 (CDP). The objective of 'Enterprise and Employment (EE)" Zoning is to provide for enterprise and employment related uses; specifically:

> *"Enterprise and Employment (EE) zoned lands will accommodate low to medium intensity enterprise and employment uses. Enterprise and Employment zoned lands to the west of the County in the vicinity of the Grange Castle and Citywest economic clusters have the capacity to attract high tech manufacturing and associated strategic investments, due to the availability of large sites that are supported by high quality infrastructure and services."*

The proposed power plant is consistent with EE zoning objectives and furthermore, sympathetic to the overall development strategy of the surrounding environment as envisioned in the CDP.

An Environmental Impact Assessment (EIA) Report has been prepared in order to inform the planning application for the proposed power plant.

4.0 BASIS OF DESIGN

4.1 Design Considerations

The design and layout of the proposed power plant has considered the following:

- Presence of site features and constraints such as Baldonnell Stream;
- Proximity to neighbouring sites such as Digital Realty Trust;
- Potential environmental impacts with respect to noise, air and visual; and
- Integration into the surrounding industrial landscape.

4.2 Design Approach

4.2.1 Massing

The arrangement of buildings and structures seeks to break up and soften the visual impact of the development.

The layout of the proposed power plant is arranged into zones, each area providing a unique function for the overall operation of the development. The principal building, the proposed Engine Hall, is located to the forefront of the site, with additional and ancillary infrastructure placed in the background. The tallest structure on site, the proposed exhaust stack is centrally located and set back from all adjacent buildings and existing public roads. The proposed tank farm is located along the southern boundary of the site, which adjoins the adjacent Digital Reality site.

4.2.2 Materials

The proposed design of the buildings has included a simple palette of materials which is both in keeping with the functionality of the proposed use and cognitive of the site location within an industrial park.

As discussed in pre-application consultation meeting with SDCC it is proposed that a high quality cladding specification will be agreed with SDCC prior to the commencement of development.

4.2.3 Integration

The application site is situated within land designated as "Employment and Enterprise" by the CDP's Land Use Zoning Map no. 4.

The objective of 'Enterprise and Employment" (EE) Zoning is to provide for enterprise and employment related uses; specifically:

"Enterprise and Employment (EE) zoned lands will accommodate low to medium intensity enterprise and employment uses. Enterprise and Employment zoned lands to the west of the County in the vicinity of the Grange Castle and Citywest economic clusters have the capacity to attract high tech manufacturing and associated strategic investments, due to the availability of large sites that are supported by high quality infrastructure and services."

Land Use Classes identified as 'Permitted in Principle' within EE zones include, Public Services, which is further defined as:

"A building or part thereof or land used for the provision of public services. Public services include all service installations necessarily required by electricity, gas, telephone, radio, telecommunications, television, drainage and other statutory undertakers, it includes: public lavatories, public telephone boxes, bus shelters, bring centres, green waste and composting facilities."

Section 11.2.5 of the CDP states: "Enterprise and employment areas are characterised by a structure that is distinctly different to those of other urban areas. Most industrial estates are characterised by large functional buildings that are set back from the street, extensive areas of hard surfacing and security fences. A number of industrial estates, and in particular newer business parks, incorporate extensive areas of open space to create a more attractive parkland-like setting."

According to Table 11.18 of the CDP, the key principles within Enterprise and Employment Zones entail the three broader categories of 'Access & Movement,' 'Open Space and Landscape" and 'Built Form and Corporate Identity.' The criteria of these categories are as follows:

Access and Movement:

- Major links to and through a site are provided as identified within a local plan, Masterplan and/or as determined by a site analysis process.
- The street network is easy to navigate and a clear a hierarchy is applied, identifying the function of each street.
- Individual streets are designed in accordance with the requirements of the Design Manual for Urban Roads and Streets.
- Large areas of parking (in particular staff parking) are located to the rear of buildings and screened from the street. Smaller areas of parking can be located to the front of buildings provided they are well designed (including areas of planting) and do not result in excessive setbacks from the street.

- The design and layout of new business parks should promote walking, cycling and the use of public transport, including adequate provision of cycle and pedestrian linkages.

Open Space and Landscape:

- Recreation of an open space network with a hierarchy of spaces suited to a variety of functions and activities.
- Development within business parks maintain and promote a parkland-like setting with high quality landscaping.
- Important nature features of the site such as trees, hedgerows and watercourses are retained, integrated within the landscape plan and reinforced with the planting of native species.
- Natural buffer zones and defensive planting are used to define private space and the use of fencing to the front of buildings minimised. Where fences interface with the public domain they should be of a high quality and incorporate elements of landscaping (for screening).

Built Form and Corporate Identity:

- Building heights respond to the surrounding context with transitions provided where necessary and reinforce the urban structure with taller buildings located along key movement corridors, gateways and nodes.
- Individual buildings should be of contemporary architectural design and finish (including use of colour). Various treatments should be employed to reduce the bulk, massing and scale of larger buildings.
- The layout and design of buildings maximise frontages onto the public realm and enclose private external spaces (such as service yards and car parks) and storage areas behind them.
- Signage should be simple in design and designed to integrate with architectural feature and/or the landscape setting (see also Section 11.2.8 Advertising, Corporate Identification and Public Information Signs).

Section 9.2.0 of the CDP pertains to landscape.

Heritage, Conservation and Landscapes (HCL) Policy 7 Landscapes:

"It is the policy of the Council to preserve and enhance the character of the County's landscapes particularly areas that have been deemed to have a medium to high Landscape Value or medium to high Landscape Sensitivity and to ensure that landscape considerations are an important factor in the management of development."

HCL7 Objective 1:

"To protect and enhance the landscape character of the County by ensuring that development retains, protects and, where necessary, enhances the appearance and character of the landscape, taking full cognisance of the Landscape Character Assessment of South Dublin County (2015)."

HCL7 Objective 2:

"To ensure that development is assessed against Landscape Character, Landscape Values and Landscape Sensitivity as identified in the Landscape Character Assessment for South Dublin

County (2015) in accordance with Government guidance on Landscape Character Assessment and the National Landscape Strategy."

According to the South County Dublin Landscape Character Assessment, the study area is located within the 'Newcastle Lowlands' Landscape Character Area. The key characteristics of this Landscape Character Area are:

- Low-lying and gently undulating agricultural lands over limestone
- Established communication corridors include the Grand Canal and railway corridor traverse east to west and two aerodromes at Weston and Baldonnel
- Agricultural landuse primarily pasture and tillage
- Increasing influence of urban activities closer to the motorways, national roads and regional roads
- Long history of historic settlement and human activity with medieval landscape complex associated with Newcastle village and surrounds.
- Number of demesnes associated with former country houses and institutions including reuse of older country houses at sites such as Peamount and Baldonnel.

In terms of 'Forces for Change,' these entail:

- Increasing urban influences that impact on the rural landscape character
- Fragmentation of agriculture -related habitats through piecemeal development
- Rural housing pressures
- Loss of separation distance between established urban and rural character
- The relatively flat and open landscape is vulnerable to adverse visual and landscape impacts of development

Designated Scenic Views and Prospects

In terms of visual and scenic amenity, the South County Dublin Development Plan contains designated scenic views and prospects, but none are relevant to the proposed study area.

A Townscape / Landscape Visual Impact Assessment has been undertaken as part of the EIAR for this projects and concluded that:

- The vast majority of the study area will not experience any likely visibility of the proposed development, including most areas of residential development;
- The highest likely visibility of the proposed development will be from within Profile Park, and this primarily entails views of the proposed engine building and exhaust stack;
- Aside from tree tops, only thin, isolated shards of likely visibility of the proposed development will be attainable from within Grange Castle Golf Club or Corkagh Park;
- The Grand Canal is unlikely to experience any visibility of the proposed development;
- Where likely visibility of the proposed development will be attained from within the grounds of Baldonnel Aerodrome, it almost exclusively pertains to the proposed exhaust stack only.

Mitigation has been embedded into the colour scheme of the proposed structures. This has been partly informed by the colour scheme of large buildings existing within the business park, but

also through a form of horizontal stratification of the proposed colour scheme. By adopting a tonal transition, from darker tones to lighter shades from the ground upwards, it will help diminish the perceived height of taller structures such as these. In summary, the lighter shades on the tallest structures (i.e. from about 7m high upwards) help to 'visually merge' with the sky backdrop; mid-layer tones are designed to merge with building and tree tops, while lower down (e.g. the bottom 2-3m of each structure) the darker tones help assimilate to earthy soil tones and/or vegetation. In addition, the proposed tanks will alternate between two different tones, to help deter perceptions of 'massing.'

A Landscape Mitigation Plan has also been prepared for the proposed power plant, which incorporates a buffer of native woodland thicket on the road-facing sides of the site. Along with a proposed native hedgerow and wild grass seeding elsewhere on the site, it will soften the appearance of buildings and to help integrate the site into the surrounding landscape setting.

Overall, the landscape proposals serve to add a high quality landscape finish to the apron of the facility and help to anchor and establish it within its business park setting. However, the site landscaping is mainly apparent within the immediate visual context of the facility and is not intended as screen planting in respect of receptors within the wider area.

Overall, it is considered that the proposed development is an appropriate contribution to both the existing and likely future built fabric of this peri-urban area and it will not result in any significant residual townscape or visual impacts.

4.2.4 Accessibility

An accessibility statement will be prepared as part of the building design and will be in the application to South Dublin County Council for a Disability Access Certificate (DAC). Part M of the B of the Building Regulations will be observed in respect of the works proposed. Dispensation from Sections 1.1 (part) and 1.3 will be south in respect of certain plant areas.

Segregated Pedestrian and Cycle access routes are provided in the Profile Park and along the R134 providing the main access route into Profile Park.

As recommended dropped kerbing and tactile paving slabs will be installed at all crossing points, in accordance with "Guidance on the Use of Tactile Paving Slabs". It is further recommended that disabled parking spaces, in accordance with the South Dublin Development Plan, be provided and located in accordance with the National Disability Authorities "Building for Everyone". The requirement is for5% of the proposed parking provisions to be designated for disabled parking as per Building for Everyone. 20% disabled parking is provided.

4.2.5 Access and Parking Provision

The existing site access from one of the main arteries within Profile Park will be used, this is a T-junction and is located on the north western boundary of the site.

Parking requirements are in accordance with the Design Standards for New Apartments 1998 and South Dublin County Council Development Plan 2016-2022. The car parking provisions at the site have been proposed as follows;

- 8 spaces for Staff;
- 2 Un-abled user spaces.
- Provision for 2 no. electrical charging points are also provided as part of the parking design.

4.2.6 Fire Safety

Part B of the Building Regulations will be observed in respect of the proposed power plant buildings, where relevant. The development will be carried out in compliance with a Fire Safety Certificate.

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 standpipe system inside the engine hall will follow 'NFPA14 class II standpipe 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.

4.2.7 Building Services

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.

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).

With regards to 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 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).

4.2.8 Sustainability

Part L of the building Regulations will be observed in respect of the works proposed. 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.

In addition, 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 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.

The proposal includes the adoption of SUDs design measures in order to effectively manage surface water on site. The following items are included in the surface water design strategy:

- Surface Water Pumps in Duty/Standby Arrangement
- Petrol Interceptor
- Down Pipes/Gullies
- Flow Control Device
- Attenuation Tank
- Swale
- Permeable Paving

- Infiltration Basin

5.0 CONCLUSION

The development has been designed in accordance with the following Acts, Regulations and Guidance:

- Planning and Development Acts 2000 (as amended)
- Planning and Development Regulations 2001 to 2021 (as amended)
- South Dublin County Council Development Plan 2016-2022
- Building Regulations 1997 – 2019
- Building Control Regulations 1997-2018
- Irish/British and European Standards and Codes of Practice.
- International Building Code (IBC) 2018
- Safety, Health and Welfare at Work Act 2005
- Safety, Health and Wealfare at Work (General Application) Regulations 2007 as amended
- Safety, Health and Welfare at Work (Construction) Regulations 2013
- Safety, Health and Welfare General Principles of Prevention
- National Disability Authorities "Building for Everyone"
- Design Standards for New Apartments 1998
- National Fire Protection Association (NFPA) standards
- BS 5266-1 Emergency lighting Code of practice for the emergency lighting of premises
- International Standard IS EN 13201-2:2015 (Road Lighting)
- European Union (Energy Performance of Buildings) Regulations 2012
- Guidance Note on Energy Efficiency Audits, EPA (2003)
- Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015)
- 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

Overall, it is considered that the proposed development is an appropriate contribution to both the existing and likely future built fabric of this peri-urban area associated with Profile Park and it will not result in any significant residual townscape or visual impacts. The design is considered compatible with the existing built and natural environment and with the provisions of the South Dublin County Development Plan.

www.tobin.ie

Galway
Fairgreen House,
Fairgreen Road,
Galway,
H91 AXK8,
Ireland.
Tel: +353 (0)91 565 211

Dublin
Block 10-4,
Blanchardstown Corporate Park,
Dublin 15,
D15 X98N,
Ireland.
Tel: +353 (0)1 803 0406

Castlebar
Market Square,
Castlebar,
Mayo,
F23 Y427,
Ireland.
Tel: +353 (0)94 902 1401