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Profile Park Power Plant

IEL Application
Reg. No.: P1196-01

Response to Request of Further Information

Profile Park Power Plant

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Document Control Sheet	
Document Reference	11069-D01
Report Status	Issue
Report Date	Feb 24
Current Revision	A01
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Project Number	11069

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Revision	Description	Author:	Date	Reviewed By:	Date	Authorised by:	Date
A03	EPA Issue	Various	29/01/24	JD	30/01/24	AS	09/02/24

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Appendices

Introduction

Greener Ideas Limited (GIL) is developing a gas fired peaking power plant at a site located in Profile Park, Dublin 22. Unlike traditional power stations, peaking plants generally run only when there is a high demand for electricity, typically during morning and evening peak usage times.

The following RFI is in response to the EPA letter dated the 14th November 2023. One of the main items of clarification throughout the document is the confirmation of the maximum 500 hour operation on back up fuel. Previous modelling was undertaken on extended usage on back up fuel in the event of a national shortage of gas.

The need for peaking plants on the Irish electricity grid has grown, as renewable forms of power generation increase their penetration onto the system. The variability of renewable power generation increases EirGrid's challenge to operate an efficient, safe, and secure electricity system. This is especially the case in the greater Dublin region, where demand is growing rapidly, and there is expected to be a large increase in offshore wind power generation by 2030.

The modular design of the Profile Park peaker power plant, and its fast response capability, means it can react quickly to vary its output. So, mirroring the peaks and troughs of electricity generation, from renewable generators. The proposed plant will also be part hydrogen enabled, in preparation for running on renewable gas when it is available. This is consistent with the policy objectives set out in the Climate Action Plan 2021.

The construction of peaking plants, such as the one proposed for Profile Park, is in line with the government policy statement published on 30th November 2021[1] which includes explicit Government approval that *"the development of new conventional generation (including gas-fired and gasoil/distillate-fired generation) is a national priority and should be permitted and supported in order to ensure security of electricity supply and support the growth of renewable electricity generation*". The construction of peaking plants will also facilitate the decommissioning of the older less efficient power plants, which the government policy statement states that, "*existing conventional electricity generation capacity, including existing coal, heavy fuel oil and biomass fired generation, should be retained until the new conventional electricity generation capacity is developed in order to ensure security of electricity supply*". For example, it is expected that Moneypoint, a 915MW coal fired power station, will remain operational, beyond the previous[2].

The need for the Profile Park peaking plant has also been emphasised by the operator of Ireland's electricity market SEMO, who awarded the plant a 10-year capacity market contract, starting in October 2024[3]. This in turn has prompted Eirgrid to issue the plant a grid connection offer, as directed by the Commission for the Regulation of Utilities, in March 2021[4].

It can therefore be seen that the construction of the Profile Park peaking plant not only supports development in the local area, but also in the greater Dublin region and is in line with policies set out in the National Development Plan and the Climate Action Plan 2021, which target the development of circa 2,000 MW of flexible gas-fired generation capacity.

[1] Dept of the Environment, Climate and Communications: *Policy Statement on Security of Energy Supply*.

[2] Dept of the Environment, Climate and Communications: *Press Release*

[3] SEM Capacity Market: *Final Capacity Auction Results 2024/2025 T3 Capacity Auction*

[4] Commission for the Regulation of Utilities: *CRU21030a CRU Direction to EirGrid*

1.0 RFI ITEM 1: OPERATIONAL SCENARIOS

The documentation summited as part of the application contains multiple operating scenarios. Please confirm what scenarios you are requesting to be assessed as part of the application e.g. operation 365 days a year 24 hours a day on natural gas, possibility to use diesel as a secondary fuel for up to 500 hours and use natural gas for 8,260 hours, diesel for up to 5,000 hours and natural gas for 3,760 hours or other scenarios.

GIL Response

The air dispersion modelling report has been updated to include one Proposed Operations scenario (with 500 hours emergency operation on back up fuel (i.e. diesel)) and a Cumulative scenario. The dispersion report has also been updated to assess emissions from 5 no. individual stacks, instead of 2 no. pseudo stacks.

The Proposed Operations scenario models the plant running on natural gas for 8,760 hours per annum and on back up fuel for 500 hours per annum.

To clarify, the maximum proposed operational hours on back up fuel is 500 hours per annum. Typically, the plant will only operate on back up fuel in an emergency or for testing purposes which are a fraction of the 500 hours mentioned above. The scenario for up to 5,000 hours per annum on back up fuel does not apply and was raised to assess the running in an extreme national emergency. However, this is not the proposed operation in the revised air dispersion modelling report and the licence is sought for operating on natural gas for 8,760 hours per annum and on back up fuel for a maximum of 500 hours per annum.

The updated air emissions assessment details the normal and the <500 hours on back up fuel use. Further clarity in relation to the cumulative effects scenario are detailed in the Air emissions assessment included in Appendix 1 (dated January 2024). The air emissions assessment has been updated to assess emissions from 5 no. individual stacks instead of 2 no. Pseudo stacks.

2.0 RFI ITEM 2: FUEL STORAGE /BAT

Please clarify, in relation to BAT, fuel use/storage volumes and other relevant information, whether the application reflects the proposed operational scenarios. Where necessary please update the application.

GIL Response

The original IE licence application proposed the development of a gas fired power plant. We confirm that the original application and this Response to the EPA's Request for Further Information reflect the proposed operational scenarios (including the scenario of operating on back up fuel for less than or equal to 500 hours per annum).

3.0 RFI ITEM 3: CUSTOMERS

Provide any update possible on who the planned customers are for the electricity generated.

GIL Response

The gas fired power plant will connect to the EirGrid electricity network. It is not proposed to supply individual customers. The extent of running of the gas fired power plant will depend on the network demand and energy market trading outcomes.

4.0 RFI ITEM 4: AIR EMISSIONS

Provide the cumulative modelling results data (and contour images) for the highest pollutant levels at or outside site boundary that fall within the requirements of AG4, not only at worst case receptors. Ensure cumulative results, assessment and conclusions are included for each scenario being assessed, based on response to question one.

Item 4a

a) Data for cumulative assessment was provided for NO_2 only. Provide cumulative modelling results for all pollutants modelled for human health and ecosystems (or justify why these are not required). Include relevant contour images. Provide detail of location of Profile Park site on the contour images and detail to identify what are the dark blue rectangles (if present on contour maps). Include background levels where relevant (or an appropriate justification if it is considered that background should be excluded). Where appropriate justify why some nearby installation(s) may have been excluded or their licensed operation(s) excluded from cumulative modelling.

GIL Response

The updated air emissions and cumulative assessment results are provided in Section 6.0 Appendix 1. The cumulative assessment and modelling results data (and contour images) are provided for the highest pollutant levels at or outside the site boundary. The assessment is as per AG4. The type of worst case receptor and results are provided.

The updated air emission assessment is included in Appendix 1. Details of the cumulative modelling results for all pollutants modelled for human health and ecosystems are provided along with contour plots in Section 6.3. All relevant installations for the cumulative assessment have been included in the modelling. Identification of the model objects (blue rectangles) has been added to the contour plot legend. The installation site is now labelled on the cumulative contour plots. An explanation of the use of process contribution (PC) on the contour plots has been added to each results section, as well as additional text under the pollutant background sections (Appendix 1 Section 4.0). The approach taken is consistent with standard approach to air emission modelling and previous studies/reports in the area.

Item 4b

b) The cumulative contour images currently provided for NO_2 exclude the background. Provide updated contour images or provide an adequate explanation for why the background is excluded? Provide detail of location of Profile Park site on the contour images and detail to identify what are the dark blue rectangles.

An explanation of the use of PC on the contour plots has been added to each results section, as well as additional text under the pollutant background sections (Appendix 1 Section 4.0). The geographical variations in ground level NO_2 concentrations beyond the facility boundary for the worst-case years modelled are illustrated as concentration contours in Appendix 1 Section 6.3, to demonstrate the direction and extent of the emission plume. The predicted environmental concentration (PEC) is not displayed on these contours due to the methodology for calculating PEC, which varies depending on the pollutant assessed (see Appendix 1 Section 4.0 for pollutant backgrounds). The installation site is now labelled on the cumulative contour plots.

Item 4c

c) The Air Impact Assessment document submitted as part of the application discusses modelling results for worst case off-site receptors. Which receptors were worst case? Provide the name(s), identification number(s) and cumulative results for the worst case off-site receptor(s).

GIL Response

Additional information in relation to the identification of receptors is included in Appendix 1 - Section 3.1 and 3.6. The type of worst case receptor (boundary, sensitive or gridded) for which the worst-case results are provided has been identified in each results section. Each contour plot now shows the location of the highest concentration i.e. worst-case receptor. Table 2 in Appendix 1 Section 3.1 and Figure 2 in Appendix 1 Section 1.0 provide the locations of the modelled site boundary and discrete receptors.

Item 4d

d) Explain note 1 of Table 7 in the Air Impact Assessment document which states: "Note 1: Reduced emission rates based on USEPA protocol (assuming 100 hours per annum for the admin generators and 200 hours/annum for the data hall generators) used to predict 1-hour mean NO_2 concentrations during emergency operation of generators". This note is listed as being applicable to the applicant site.

GIL Response

Table 7 (now Table 10) notes have been reviewed and amended.

5.0 RFI ITEM 5: AIR MODEL INPUTS

Differing values are listed for air model inputs across the documentation submitted as part of the application. Provide the input data for what was modelled. At a minimum, provide the following information that was input into the air modelling (or justify why this information is not relevant): pollutant mass emission rates, exit diameter of stack/ flue that was modelled, temperature (actual), volumetric flow rate (actual), pressure (actual), moisture content % (actual) and dry oxygen measured % (actual).

GIL Response

All relevant process emissions information (pollutant mass emission rates, exit diameter of stack/ flue that was modelled, temperature, volumetric flow rate, pressure, moisture content % and dry oxygen measured %) needed for the air dispersion model is provided in Tables 8-10, Appendix 1. The revised Attachment 7.4.1 (available in Appendix 2) is consistent with this information (stack co-ordinates now in Irish Grid).

6.0 RFI ITEM 6: MONITORING LOCATIONS

Clarify whether monitoring and measuring of emissions is proposed at a flue level or stack level? Ensure all information in Attachment 7.4.1 - Emissions to Atmosphere - Main and Fugitive Emissions is updated to reflect what is being proposed for the installation (including emission points and proposed emission limit values taking into consideration the BAT-AELs for each fuel type). Confirm if CEMS will be present on each stack or flue.

GIL Response

Monitoring and measuring of emissions will take place at the individual stacks of the power plant. There are 2 groups of stacks, however, based on the requirement of the EPA, the air dispersion model was updated to assess the emissions from 5 no. individual stacks. The assessment therefore is more conservative in terms of dispersion modelling. CEMS will be present on each individual stack. Monitoring will be undertaken on each emission point i.e each stack. The emission points and proposed emission limit values take into consideration the BAT-AELs for each fuel type. The updated Attachment 7.4.1. is included in Appendix 2.

7.0 RFI ITEM 7: BACKUP GENERATORS

How many backup generators will be on site? What is the purpose of them? How many hours of operation is expected for each generator? What size is each generator (MWth)?

GIL Response

There will be one backup generator on site. This backup generator will generate electricity for low 'house' load when there is a disruption to the mains electrical supply from the national grid and the plant is not generating its own electricity. 'House' load means the electricity requirements of the various safety systems and other standby systems in the power plant. The annual hours of operation of this backup generator will normally be extremely low (and estimated to be less than 20 hours per annum), as this backup generator will only operate when there is no mains electricity available from the national grid and during test events. Test events will be required to ensure that the backup generator is functioning properly and thereby

available when needed. The capacity of this backup generator is 250 kVA (or approximately 0.25 MWs)

8.0 RFI ITEM 8: NATURAL GAS CONSUMPTION

Please provide an estimate of the quantity of natural gas to be consumed, as per the environmental modelling undertaken as part of the EIAR, i.e., 24 hrs per day and 365 days per year.

GIL Response

The revised Air Emissions Impact Assessment (included in Appendix 1) evaluated the operation of 5 no. dual fuel engines on natural gas 24 hours per day, 7 days per week for a full year. Testing of the 5 no. dual fuel engines operating on liquid fuel was included within this scenario. This scenario also included the emergency operation of 5 no. dual fuel engines operating on liquid fuel for a maximum of 500 hours per year.

In this albeit unlikely scenario, the estimated quantity of natural gas consumed is 175 million cubic metres per annum (standardised gas volume Nm3). In reality, the quantity of natural gas consumed will be significantly lower than this figure as the power plant is not expected to operate 24 hours per day. The actual hours of operation will depend on the electricity demand on the national grid and other considerations managed by Eirgrid to ensure safety and security of supply.

9.0 RFI ITEM 9: NET ELECTRICAL EFFICIENCY

Please confirm the net electrical efficiency of the engines.

GIL Response

The Net Electrical Efficiency of the engines will be in the range of 39.5% to 44%. The energy efficiency proposed is in line with the BAT requirement for Net Electrical Efficiency of engines - 'Best Available Techniques (BAT) Reference Document for Large Combustion Plants'.

10.0 RFI ITEM 10: APPROPRIATE ASSESSMENT SCREENING

Review the AA screening report, and update where required, in respect of any clarifications, amendments or additional information provided in response to this letter.

GIL Response

The AA Screening Report has been updated to take account of the updated Air Emissions Impact Assessment (included in Appendix 1). The revised AA Screening Report is provided in Appendix 3. There are no exceedances at the nearest Natura site or at Red Bog SAC. In conclusion, ambient levels of nitrogen oxides (as NO_2, including background) and other air emissions from the proposed power plant as well as the cumulative emissions (from Pfizer, Takeda, the Grange Castle Power Plant and other facilities) are in compliance with the air quality limit values for the protection of human health and it is predicted that air emissions from the proposed power plant will not result in any impacts on European sites.

11.0 RFI ITEM 11: RED BOG & KILDARE SAC

Please confirm if Red Bog, Kildare SAC should have been included in NOx dispersion modelling. Note: this SAC is within 15km and is included in the Air Impact Assessment document.

GIL Response

The nearest SAC to the proposed development is Rye Water Valley/Carton SAC, which is 6.1km north-west of the proposed development site. The Cumulative NOx at the worst-case receptor within Rye Water Valley/Carton SAC is 0.56 ug/m3 (excluding background). There are no significant effects on the nearest Natura Site. Red Bog SAC (site code 000397) is included in the updated air impact assessment – See Appendix 1. Red bog is located 15 km to the south west of the proposed development site. No significant effects will occur on any natura site as noted in the updated AA Screening report and updated Air Emissions Impact Assessment. The AA screening report has been updated to incorporate the updated Air Emissions Impact Assessment. There are no changes to the conclusions of the AA Screening.

12.0 RFI ITEM 12: ENVIRONMENTAL IMPACT ASSESSMENT REPORT:

Review the EIAR and update where required, in respect of any clarifications, amendments or additional information provided in response to this letter.

GIL Response

There are no significant updates to the conclusions of the impacts described within the EIAR. The updated air impact assessment has modelled the 5 no. individual stack arrangement, which is identical to that assessed in the EIAR. The results confirms there is no significant effect on the air quality and no additional mitigation measures are required. The findings of the updated air impact assessment are therefore consistent with those presented in the EIAR.

13.0 RFI ITEM 13: WATER:

Will the full retention interceptor be Class I?

GIL Response

A Class 1 full retention interceptor will be installed at the Profile Park site. Further details in relation to the operation of the interceptor is included in item 18 below.

14.0 RFI ITEM 14: NOISE

Please provide clarification on how the noise limits proposed for specific residential properties (i.e., 37 to 39 dB) and Grange Castle Golf Course (55dB) have been determined. Given Grange Castle Golf Course is an amenity area and subsequently a noise sensitive location, please provide the rationale for the proposed noise limit of 55dB.

GIL Response

The EPA NG4 screening approach results in 55/50/45 dB day/evening/night limits at offsite noise sensitive locations. The site is not located in an area of low background noise. Noise limits associated with the operations of the proposed power plant will not exceed 55 dB $L_{Aeq,15min}$ along the common boundary between the two sites in order to protect the recreational amenity of the facility.

In terms of the golf course query, please consider the following quote from BS 8233: 2014: *Guidance on sound insulation and noise reduction for buildings*.

> *"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited."*

This along with the fact that the lower evening and night time limits are typically associated with protecting sleep and rest which is not a pertinent issue in relation to the golf course. There are no tonal, impulsive and intermittent sounds associated with the installation.

As identified in the EIAR, representative location R15 is located between the golf course and the proposed development. The predicted noise level from the facility at R15 satisfies the relevant noise criteria adopted in the noise assessment. Noise levels predicted at R15 are less than the existing background noise levels and do not result in a significant effect. The golf course club house is an additional 540 m east from the nearest sensitive receptor (R15). Noise levels from the facility do not give rise to significant effects.

15.0 RFI ITEM 15: BAT

Please review (and update) the information provided in the application for BAT 3, 7 & 9.

GIL Response

We confirm that there are no additional updates required arising from the revised Air Emissions Impact Assessment (included in Appendix 1) and the other information provided in this Response to the EPA's Request for Further Information. . BREF for storage is updated and provided in Appendix 4.

16.0 RFI ITEM 16: STORAGE BREF

Please review the emission from Storage BREF provided as part of the application and update as applicable, as currently some information relates to the energy efficiency BREF.

GIL Response

BREF for storage is updated and provided in Appendix 4.

17.0 RFI ITEM 17: BAT INFORMATION

Review and ensure that all BAT information required for the scenarios being proposed for this installation is provided as part of the application documentation.

GIL Response

We are satisfied that all BAT information required for the scenarios being proposed for this installation is provided as part of the application documentation.

18.0 ADDITIONAL INFORMATION

The following additional information is provided to support the Industrial Emissions Licence application. This information was either not available at the time of submission of the application or was developed since the submission of the application.

Eircode

The Eircode for Profile Park Power Plant is :

Bord Gáis Energy Power Plant

Profile Park

Dublin 22

D22 C7W4

Monitoring of Plant Alarms

The power plant alarm systems will be monitored continuously from a remote Energy Control Centre that monitors similar power plants. The remote Energy Control Centre will always be supported by 'on call' local experienced personnel that are available to go to the power plant to react to alarm activations. In the event of the activation of an alarm, the operators in the remote Energy Control Centre will investigate this alarm and will take appropriate action by referring to an Alarm Response Procedure which will be established during the commissioning of the power plant. In the case of the activation of critical alarms on systems that manage emissions from the power plant, the remote Energy Control Centre will instruct an experienced 'on call' person to immediately go the power plant site and take appropriate action in line with procedures that will be developed for the power plant.

Management of Firewater

A Fire Water Risk Assessment is currently being developed as part of the detailed engineering phase of the project. This Risk Assessment shall appropriately section off the plant and determine where fire water retention is required. No dedicated fire water retention pond will be constructed as fire water retention shall be provided for in the stormwater attenuation facilities. There will be an automated valve on the stormwater discharge point. This automated valve will automatically close upon full activation of the fire alarm system at the power plant thereby retaining firewater on site (in the event of a fire).

Fire water that enters the stormwater attenuation system will be tested prior to discharge to the existing storm water network. Any water of unacceptable quality will be pumped out of the attenuation system and disposed of appropriately.

Surface Water Drainage System

The oil water interceptor on the surface water drainage system will include a high oil level detection system. There will be an automated valve on the stormwater discharge point. This automated valve will automatically close upon full activation of the fire alarm system at the power plant or upon activation of the high oil level detection system in the oil water interceptor. In the event of such alarm activations and the resultant automatic closing of the valve on the stormwater discharge point, the remote Energy Control Centre will instruct an experienced 'on call' person to immediately go the power plant site and take appropriate action in line with procedures that will be developed for the power plant.

The tank delivery hard standing area is sloped to contain any potential spillage. Deliveries to the bulk storage tanks are completed within an area that drains to a sump that is isolated from the surface water system. All hardstanding impermeable areas have conventional positive drainage systems with longitudinal and horizontal falls incorporating gradients sufficient to allow any rainfall runoff to be collected using a combination of kerb drainage, channel drainage and road gullies.

The hard standing areas that drain surface water from the fuel delivery areas and car parking areas pass through Class 1 interceptors prior to entering the surface water attenuation tanks or prior to discharge into the existing stormwater drain. The hydrocarbon interceptors treat rainfall and prevent hydrocarbon spillages entering the stormwater attenuation tank and existing stormwater system.

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Appendix 1: AWN Air Emissions Impact Assessment

Appendix 2: Air Emissions – Attachment 7.4.1

Appendix 3: AA Screening Report

Appendix 4: Attachment 4.7.2 BREF – Emissions from Storage