

***This Report has been cleared for submission to the Director by Programme Manager,
Marie O'Connor***

Signed: 

Date: 30 August 2022



**OFFICE OF ENVIRONMENTAL
SUSTAINABILITY**

**INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE
APPLICATION, LICENCE REGISTER NUMBER P1168-01**

TO: TOM RYAN, DIRECTOR

FROM: GREG BEECHINOR

DATE: 30 AUGUST 2022

Applicant:	Equinix Hyperscale 1 (DB5) Limited
CRO number:	680086
Location/address:	Equinix DB5, Blanchardstown Industrial Park, Snugborough Road, Dublin 15.
Application date:	29 th November 2021

Classes of Activity (under EPA Act 1992 as amended):	2.1 Combustion of fuels in installations with a total rated thermal input of 50 MW or more.
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Category of activity under IED (2010/75/EU):	1.1 Combustion of fuels in installations with a total rated thermal input of 50 MW or more
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Main CID Note:	Commission Implementing Decision (EU) 2021/2336 of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants.
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All relevant CIDs, BREF documents and National BAT notes are listed in the appendix of this report.

Activity description/background: Operation of a power generation plant to provide power to three data centre buildings at the installation. The power plant will consist of nine (each with a capacity of 18.64 MW_{th}) dual fuel (gas & gas oil) turbine generators, which will be the primary energy supply to the site for the first two years of operation. After year two, the power plant will only operate as required under the Flex Contract with the utility operator as the site may be requested to reduce its demand on the grid or disconnect from the grid and operate in Island mode. A maximum of eight of the nine turbine generators will be required at any one time to meet the energy demand of the data centre when the site is required to operate in Island mode.

Additional information received:	Yes (19 th April 2022, 3 rd May 2022, 14 th June 2022 and 20 th June 2022, 3 rd August 2022)
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No of submissions received:	1
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Environmental Impact Assessment required:	NO
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Stage 2 Appropriate Assessment required:	No
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1. Introduction

Equinix (Ireland) Limited, hereafter referred to as Equinix, is proposing to operate a new data centre campus within the IDA Blanchardstown Business and Technology Park, Snugborough Road, Blanchardstown, Dublin 15. The installation is located approximately 10 km northwest of Dublin City centre on a 3.3 ha site. The data centre campus will comprise three data hall buildings, containing data storage units, nine standby dual fuel turbine generators, above ground infrastructure for the supply of natural gas from Gas Networks Ireland (GNI) and a gas oil fuelled fire pump.

The national electricity grid is currently struggling to balance the capacity of the network and the combined demand of the connected customers. There is a particular risk that the demand on the network may exceed the specific capacity of the network in the greater Dublin area. To address the risk of insufficient grid capacity to meet energy demand on the grid, the installation of nine dual fuel turbine generators at the Equinix site will provide a combination of backup power, flex contract support (Island mode) and shortage mode (up until Q4 2023) . These different modes of operation are explained in Table 1.1 below.

Table 1.1: Scenarios for the operation of the turbine generators.

Mode	Description
1. Test mode	Testing of each turbine generator for 1 hour each month
2. Backup mode	Due to a fault or outage of the national grid.
3. Island mode	EirGrid instructs the installation to disconnect from the grid and to operate in Island mode under the flex contract (up to 500 hours per year) if demand on the grid is close to exceeding the available capacity. Island mode is the scenario whereby the site is generating all its electricity on site and is not receiving any electricity from the National Grid.
4. Shortage mode (first two years only)	In the event that EirGrid is unable to provide the contracted power needs of the installation and given that the site will not have a high-pressure gas connection until Q4 2023, 2 no. turbines will operate on natural gas and 4 no. on gas oil. This mode is expected to occur up to December 2023.

Under mode 2 (backup mode) and mode 3 (Island mode) it is expected that up to 8 no. of the 9 no. turbine generators will run simultaneously and continuously using natural gas as the primary fuel. Under Mode 4, the first two year shortage mode, it may be necessary for the installation to operate 6 no. of the 9 no. turbines to bridge the gap in terms of the electricity demand of the data centre and the contracted mains electricity capacity being available.

The data centre is also protected from short-term black-outs by uninterruptable power supplies (UPSs). The UPS buffers small fluctuations in the power supply to the installation and in the event that the UPS detects an interruption in the power supply to the site or reduced power, the turbine generators at the installation will start

automatically to begin generating sufficient electricity to match the load demand required by the data centre. The UPS can supply power for a couple of minutes to allow for the generators to come online. Currently there is no plan to export electricity from the site to the National Grid.

2. Description of activity

The data centre campus is located within the IDA Blanchardstown Business and Technology Park, which surrounds the site to the east. To the north, south and east of the site, the land use consists of a mix of industrial activities and offices. Directly west of the installation, on the other side of Blanchardstown Road North there is a greenfield, and further beyond the greenfield is the Technological University, Blanchardstown, which is located approximately 250m to the west of the site boundary. The nearest residential receptor is located approximately 90m to the south-west of the site (See Figure 2.1 for an aerial view of the site location).

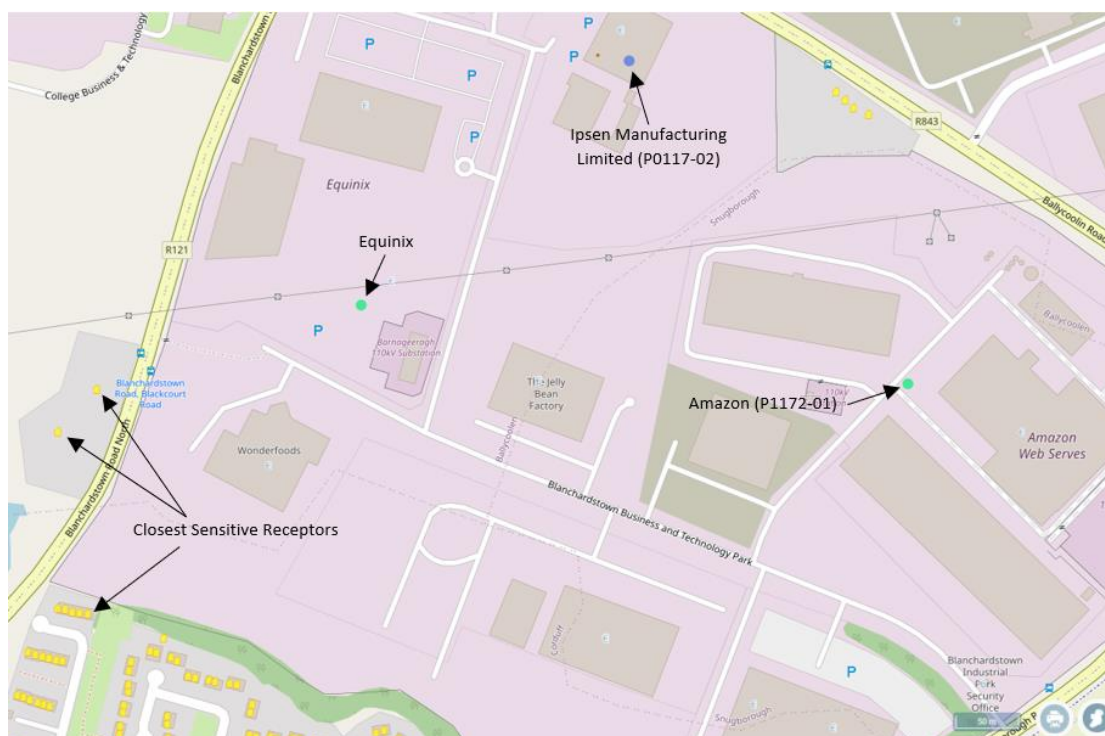


Figure 2.1: Location of the Equinix site relative to the closest sensitive receptors and other industrial sites.

The purpose of the turbine generators is to provide power in the event of a failure of the national grid supply or if EirGrid instructs Equinix to disconnect from the utility grid and operate in Island mode under its flex contract. The data centre is also supported by ancillary processes including a closed loop chilled water system utilising 13 no. cooling towers and chillers when required to cool the data halls. There will also be a water treatment system (2 no. reverse osmosis systems and 1 no. nanofiltration) for the treatment of water for use in the cooling towers and the water injection system to abate NO_x emissions from the dual fuel turbine generators.

The main emissions are emissions to air from the turbine generators, emission to sewer and storm water discharges.

3. Planning Status

A number of planning applications have been made by the applicant for the area within the installation boundary. Details of these relevant planning applications and permissions have been provided in the application form. Planning permission for the proposed development was granted by Fingal County Council on the 19th February 2018 (File no. FW17A/0205). Subsequent alterations were granted on the 27th April 2018 - File no. FW18A/0030, 11th June 2018 - File no. FW18A/0032, 5th February 2020 - File no. FW19A/0176, 18th November 2020 - File no. FW20A/0087, 27th July 2021 File no. FW21A/0073 and on the 30th March 2022 File no. FW21A/0176. An EIAR was not submitted in support of any planning applications.

Fingal County Council has confirmed that EIA has not been carried out by them for any part of the area within the installation boundary.

4. EIA Screening

In accordance with Section 83(2A) of the EPA Act 1992, as amended, the Agency must ensure that before a licence or revised licence is granted, that the application is made subject to an environmental impact assessment (EIA), where the activity meets the criteria outlined in Section 83(2A)(b) and 83(2A)(c).

In accordance with the EIA Screening Determination, the Agency has determined that the activity is not likely to have a significant effect on the environment, and accordingly an EIA is not required.

The activity is below the specified threshold of project type 3(a) in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended: *Industrial installations for the production of electricity, steam and hot water not included in Part 1 of this Schedule with a heat output of 300 megawatts or more.*

Having considered the information provided by the applicant, which satisfies the requirements of Annex II A of the EIA Directive, it has been determined that the activity is not likely to give rise to significant effects on the environment by virtue of its nature, size or location. This determination has been made having regard to the following:

- The limited nature and scale of the activity.
- There will be no process emissions to surface or ground water.
- The activity will not generate significant air, dust, odour or noise emissions.

- The cumulative effect with other existing and/or approved projects will not be significant.
- The activity will be located in a business park defined primarily by commercial and industrial developments.

5. Best Available Techniques

BAT for the installation was assessed against the BAT conclusions/guidance contained in the relevant Commission Implementing Decision (CID)/BREF documents specified in the appendix of the report. The table in the appendices sets out a summary of how the BAT conclusions have been taken into account in the licence.

Given that the total capacity at the installation level exceeds the threshold for a licence under Class 2.1 of the EPA Act 1992, as amended, BAT at the installation level was assessed against the LCP BAT conclusions. Installation level BAT conclusions included those relating to Environmental Management Systems (Condition 2 of the Recommended Determination).

However, due to the rated thermal inputs of the individual combustion plant being <50 MW_{th} the plant level BAT Conclusions set in the CID, including BAT AELs and monitoring requirements do not apply. The applicable emission limit values and monitoring requirements are those set in the Medium Combustion Plant Regulations¹, which can be considered BAT at plant level, for combustion plant between 1 and 50MW_{th}.

The assessment has demonstrated that the installation will comply with all applicable BAT Conclusion requirements specified in the LCP CID, and MCP Regulations, and will be in line with the guidance specified in the relevant BREF Documents as specified in the appendix of this report.

I consider that the applicable BAT requirements are addressed through the technologies and techniques as described in the application, as well as the conditions and limits specified in the RD.

6. Emissions

6.1 Channelled Emissions to Air

The proposed main channelled emission points at the installation arise from 9 no. dual fuel turbine generators with a rated thermal input of 18.64 MW_{th} when fired on natural gas or 18.54MW_{th} when operated on gas oil. Exhaust gases from the gas/oil turbines will be discharged to the atmosphere via 9 no. 15m high stacks.

Each of the dual fuel turbines will incorporate water spray injection abatement to abate NO_x emissions to air. Water spray injection will be delivered at a ratio of 1:1.3 (fuel to water) for NO_x reduction. The public water supply will be used for the water spray injection abatement system (see resource usage section of this report) and will be treated by reverse osmosis (RO) and nano filtration (NF) prior to use. The treatment of the public water supply by the RO and NF processes will give rise to a waste stream

¹ European Union (Medium Combustion Plants) Regulations 2017 (S.I. No. 595/2017).

that will be discharged to sewer (see Section 6.3 of this report). All water will be vaporised on injection of the water spray into the turbine generator stacks given that the temperature will be > 600°C. Water injection is an effective abatement technology for reducing NO_x emissions and is considered BAT under the LCP CID for turbine generators.

Given that the national utility grid is under critical stress loads, particularly during the winter period, the primary purpose of the 9 no. dual fuel turbines will be to provide a combination of supplementary power, flex contract support and back-up power in the event of an outage to the data centre. It is expected that full time operation of 8 no. of the 9 no. generators may be required in the first two years of operation given the uncertainty around the capacity of the National Grid to meet the full energy requirements of the site.

As the rated thermal input of each individual dual fuel turbine is in the 1 – 50 MWth range, the dual fuel turbines are required to comply with the requirements of the Medium Combustion Plant Regulations 2017 (S.I. No. 595 of 2017), rather than the requirements set out under Chapter III of the Industrial Emissions Directive (2010/75/EU).

In addition to the Industrial Emissions Directive (2010/75/EU), the installation will be required to operate under a GHG Emissions Permit in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2020, (S.I. 490 of 2012 and amendments). The GHG permit does not control emissions of gases other than carbon dioxide. The applicant has applied for a GHG permit and at the time of preparing this report the GHG permit application is under assessment by the Agency.

Table 6.1 below gives details of all main channelled emissions to air at the installation, their location, the sources of the emissions, and the proposed ELVs.

Table 6.1 Main Channelled Emission Points

Main channelled emission points					
Emission Reference	Location	Process Description	Parameter	Operating Fuel	
				ELV when fired on Natural gas	ELV when fired on gas oil
A1-1 to A1-9	Services yard	Dual fuel gas turbines	NO _x	50	75
			Volumetric flow	75,600 Nm ³ /hr	

Note 1: The proposed ELVs are included in the RD and are in line with the limits set in the Medium Combustion Plant Regulations 2017.

There are other emission points to air at the installation such as a fire water pump (< 1 MWth) and gas oil storage tanks which, due to their emission characteristics are not considered environmentally significant and are therefore regarded as minor emissions. These minor emissions are not considered as part of this impact assessment.

As part of the application, air dispersion modelling was carried out to predict the ambient pollutant concentrations resulting from all main emissions. The modelling was carried out in accordance with published Agency guidance (AG4) and was considered sufficiently detailed and conservative to assess the impact of the main emissions to air. The modelling used five years of meteorological data from Dublin Airport (2016 to 2020 inclusive). For background air quality, EPA hourly data from Zone A was used.

The background data excludes the city centre locations of Winetavern Street, St. John's Road, Dublin Port and Pearse Street. As these areas are not considered to be representative of the background air quality at the location of the proposed activity, it is considered that the removal of such data points provides for a more representative background data for the purpose of the assessment.

Terrain data has been incorporated into the modelling assessment and building wake effects have also been taken into consideration. The model assumed that all emission sources are operating at maximum flow rates and maximum emitted emission concentrations, 24 hours a day and 365 days per year.

The air dispersion model assesses the impact of nitrogen oxides as primary pollutant from the turbine generators. In relation to other pollutants such as CO, no detailed modelling was undertaken. Emissions of these pollutants are significantly lower than the NO_x emissions for the generators relative to their ambient air quality standards and thus ensuring compliance with the NO₂ ambient limit value will ensure compliance for all other pollutants.

The following two scenarios were modelled:

Scenario 1: Island mode – 8 no. of the 9 no. turbines generators running simultaneously and continuously on natural gas.

Scenario 2: Shortage mode - 2 no. turbines on natural gas and 4 no. on gas oil. The applicant has proposed that this scenario accounts for the maximum number of turbines that will be fired on gas oil at any one time. This scenario is only likely to occur during the first two years of operation, as the site is expected to have high-pressure gas connection by Q4 2023. Natural gas will become the primary fuel for the turbines (Island mode) once the site has a high-pressure gas connection. The applicant has rejected the scenario of a simultaneous failure of the National Grid and the gas supply to the site. Therefore, the scenario of operating all turbines on gas oil is considered highly unlikely and has not been assessed further.

The modelling can be considered conservative based on the following assumptions:

- All major emission points will operate 24 hours a day, 7 days a week, 365 days a year;
- Turbine generators will operate simultaneously at the emission limit values (Schedule B.1) and operating limitations (Schedule A) as specified in the Recommended Determination

The modelling results provide the ground-level concentrations at the worst-case location outside the site boundary. Table 6.2 below gives details of the maximum predicted ground-level concentrations of nitrogen dioxide under the two worst- case operating scenarios as outlined above.

As part of this assessment, regard was had to the EPA's Air Dispersion Modelling for Industrial Installations Guidance Note (AG4), which required that the process contribution (PC) for industrial installations is combined with the background concentration (BC) to obtain the predicted environmental concentration (PEC). To assess the impact, each PEC is compared with the appropriate air quality standard. The applicable standards in Ireland include the Air Quality Standards Regulations 2011, which incorporate EU Directive 2008/50/EC.

Table 6.2 Predict impact of the proposed main channelled emissions to air

	Main channelled emissions impact						
	Parameter	Averaging Period	Background concentration ($\mu\text{g}/\text{m}^3$)	Process contribution to PEC ($\mu\text{g}/\text{m}^3$)	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines ($\mu\text{g}/\text{m}^3$) ^{Note 1}
Scenario 1 (8 no. turbines on natural gas)	Nitrogen Oxides (as NO_2)	99.8%ile hourly	43.2 ^{Note 2}	110.3	153.5	76.8%	200
		Annual	21.6	11.9	33.5	83.8%	40
Scenario 2 (2 no. turbines on natural gas, 4 no. Gas oil)	Nitrogen Oxides (as NO_2)	99.8%ile hourly	43.2 ^{Note 2}	103.2	146.4	73.2%	200
		Annual	21.6	10.1	31.7	79%	40

Note 1: Air Quality Standards Regulations, SI 58/2009 and 180/2011, unless otherwise stated.

Note 2: Twice the annual mean background concentration.

As can be seen from Table 6.2 above, all the predicted environmental concentrations are within the relevant air quality standards. Under Scenario 1, with 8 no. of the 9 no. turbines operating on natural gas, the maximum ground level concentration of NO_x is predicted to be 83.8% of the annual NO_x air quality standard ($40 \mu\text{g}/\text{m}^3$). The modelling for emissions of NO_x operating at full load can be considered conservative as the turbines will only be utilised in the event of a failure of the electrical supply, or if Eirgrid instructs the installation to reduce its demand on the grid or disconnect and operate in Island mode.

Under Scenario 2, in the first two years of operation and up until such point that the high-pressure gas connection is delivered to the site, the applicant may need to operate two turbines on low pressure gas and 4 turbines on gas oil to meet the energy demand of the installation in the event of a failure of the National Grid or if the site is instructed by Eirgrid to reduce its demand on the National Grid. It should be noted turbine generators will be used solely for the purpose of generating power for the installation. Based on the scenario modelled the maximum ground level concentration of NO_x is predicted to be 79% of the annual AQS for NO_x . However, this modelling scenario is considered sufficiently conservative as the scenario assumed that the disruption of the electricity supply from the National Grid would extend for 24 hours a day and 365 days per year, however, such a scenario is unlikely to occur as it would require a prolonged fault or outage of the National Grid, a problem with the substation or if EirGrid is forced to disconnect the power supply to the installation for a prolonged period under the flex contract.

In the context of cumulative considerations, the closest EPA licensed facility to the site is Ipsen Manufacturing Ireland which has no NO_x emissions to air. There are other back-up combustion plants at other sites in close proximity to the installation, however given the unlikelihood that a power outage would last for a prolonged period, the likelihood of a breach of air quality standard is considered low.

Each individual turbine generator has its own discharge stack and each turbine can be brought online individually as needed to meet the energy demand of the data centre. The ELVs and monitoring requirements as set out in the Medium Combustion Plant Regulations have been incorporated in the RD. It should be noted that the monitoring requirements have been set as quarterly in the RD, in order to ensure that turbines are compliant with the ELVs and the monitoring frequency may be amended by OEE under Condition 6.8 following an evaluation of monitoring results. In the event of failure or malfunction of the water injection abatement, the applicant will be required to shut-down the associated turbine generator (Condition 6.20).

The RD also has a limitation on the number of turbine generators that can be operated simultaneously on natural gas, but also the number of turbines that can be operated on either natural gas or gas oil simultaneously. These limitations in the Recommended Determination align with the Air Dispersion Modelling Assessment, dated 2nd August 2022, submitted as part of the licence application.

The installation will operate under a GHG Emissions Permit in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012, (S.I. 490 of 2012 and amendments), as the applicant has a GHG Emissions Permit application with the Agency. The GHG permit does not cover emissions of gases other than carbon dioxide. While utilising the generators to power the site, it is estimated that the total annual emission of CO₂ from the activity will be 140,000 tonnes per year. The GHG permit does not set a limit on the quantity of CO₂ emitted by the installation. The operator must report each year all CO₂ emitted from the activity listed in the permit and surrender sufficient emissions trading allowances to cover the emissions of the previous calendar year. The quantity of allowances made available on the market or by free allocation is controlled at EU level and is reducing each year in order to ensure that overall emissions from the ETS sector meet the EU targets. Since this site will be part of the EU ETS the impact of carbon dioxide emissions will be addressed in that market-based scheme. A local impact on air quality from CO₂ is not expected and there is therefore no CO₂ limit in the RD.

Indirect emissions of CO₂ may arise due to the use of electricity from the national grid. These emissions are covered under the EU ETS at the generating plant but the applicant is also required to address electricity usage as part of energy efficiency management.

6.2 Fugitive Emissions

No significant fugitive emissions are expected to arise from the proposed activity. It should also be noted that no F-gases are planned to be used at the installation.

6.3 Emissions to Sewer

The table below gives details on the installation's emissions to sewer; the processes which contribute to the emissions, off-site treatment and the proposed maximum daily flows.

Table 6.3 Emissions to sewer

On-site treatment			
Emission Reference	Process Description	Abatement	Proposed max. flow (m³/day)
SE-1	Wastewater will be generated through a number of processes including: 1. reverse osmosis (RO) used to treat water from the cooling towers so that it can be reused in the processes. 2. RO and nan-filtration system to improve the quality of the public water supply so that it can be used in the water spray injection system to reduce NO_x emissions from the dual fuel turbines (see emissions to air section of this report).	Direct discharge to sewer, with no onsite treatment proposed.	450
Total:			450
Off-site treatment			
Name of sewer network/agglomeration: Greater Dublin Area Agglomeration			
Responsible authority for network/agglomeration: Irish Water			
Wastewater discharge licence No: D0034-01			
Wastewater discharge licence parameters: pH, toxicity, faecal coliforms, CBOD, COD, Suspended Solids, Total Nitrogen & Total Phosphorus (as P)			
Treatment capacity of the sanitary wastewater treatment plant (as per the D0034-01 2020 AER): Peak hydraulic capacity – as constructed: 959,040 m ³ /day, average hydraulic loading: 458,641 m ³ /day, organic capacity – as constructed (PE): 1,640,000 and organic capacity – current loading (peak week load) (PE): 2,278,887.			
Type of treatment: Treatment operations at the Ringsend MWWTP consist of the following: Preliminary treatment, primary treatment (settling), secondary treatment (sequence batch reactors), and tertiary treatment (UV disinfection). Treatment capacity: The maximum flow rate from the installation represents approximately 0.1% of the influent to the Ringsend MWWTP (based on the 2020 AER). Therefore, it can be considered that the proposed discharge will not have an impact on the Ringsend MWWTP given the proposed maximum flow rate and the buffering capacity of the network. It is also, Irish Water's responsibility to ensure compliance with its own wastewater discharge licence, Reg. No. D0034-01.			
Receiving water name (and waterbody type): The Ringsend MWWTP discharges into the lower Liffey Estuary (IE_EA 090_0300). The current WFD ecological status of the receiving water body is good.			

Irish Water, under Section 99E of the EPA Act 1992, as amended, gave its consent on the 10th May 2022, for the discharges from the installation, specifying certain ELVs, as well as certain other conditions and monitoring requirements. These ELVs have been incorporated into the RD.

In considering the combination of emission limits proposed for the sewer emissions from the installation, the percentage volume the emission represents of the total loading to the MWWTP (i.e. 0.1%), and for the treatment provided by the Ringsend

MWWTP, it can be considered that the level of treatment of the installation's discharges is equivalent to BAT.

Given the above it is considered that the recommended ELVs for this discharge to sewer are considered to satisfy the requirements of the IED, the WFD, and the EPA Act 1992 as amended.

6.4 Storm water discharges

Storm water runoff from access roads, hardstanding areas and roofs will be collected and discharged to an existing IDA storm water drain serving the industrial estate via the emission point SW-1. The IDA storm water drain serving the industrial estate discharges to the Ballycoolen River which lies approximately 250m south of the installation. The Ballycoolen River discharges to the Tolka River which is located approximately 1.3km southwest of the installation. The Tolka River ultimately discharges to Dublin Bay, 10.3km southeast of the installation.

Surface water attenuation will be provided in underground tanks located to the east of the site to ensure that storm water discharges from the site will be balanced. Storm water runoff from all areas, excluding the roof water, will be routed through a Class I by-pass interceptor.

The table below gives details on the installation's storm water discharges to waters; the sources of potential contamination of these discharges, the type of on-site abatement, as well as details of the receiving water.

Table 6.4: Storm water discharge point details

Stormwater discharge point details					
Emission Reference	Monitored parameters (monitoring frequency)	Abatement	Drainage areas	Discharging to	Trigger levels established (Y/N)
SW-1	Visual (daily); pH & conductivity (weekly)	Class I by-pass interceptor (required in the RD)	Roads & hard standing areas.	IDA storm water drain which eventually discharges to the Ballycoolen River.	Y
Automatic diversion in place:	No, however, the attenuation tank will be equipped with a shut off valve.				

It should be noted that the applicant proposes to collect rainwater from the roofs for re-use. Such rainwater will be filtered prior to being connected to a separate rainwater attenuation tank. From the attenuation tank, the rainwater will be pumped to the onsite Water Treatment Building, where the water will be treated for re-use in the cooling system.

The RD requires the applicant to maintain the storm water/drainage system. While the applicant has not proposed any monitoring of storm water in its application form, and while the risk of storm water contamination is low given the proposed controls in

relation to the prevention of accidents and incidents (See Section 9 of this report), Condition 6 of the RD requires the applicant to establish trigger levels for pH and conductivity in order to provide for the protection of the receiving environment. Therefore, the RD requires that the storm water discharge is visually inspected daily, monitored weekly for pH and conductivity, and any other parameters as may be required by the Agency, in accordance with Schedule C.2.3 *Monitoring of Storm Water Emissions*.

The RD contains standard conditions in relation to the storage and management of materials and wastes. The RD also requires that accident and emergency response procedures are put in place. The controls pertaining to accidents and emergencies are addressed in Prevention of Accidents section later in this report.

6.5 Noise

The installation is located within the IDA Blanchardstown Business and Technology Park, Snugborough Road, Blanchardstown, Dublin 15. The installation is bounded to the north, east and south by industrial sites within the industrial estate. To the west of the installation is a greenfield with Blanchardstown Institute of Technology further beyond. The nearest residential receptor is located approximately 90m south-west of the installation along the Blanchardstown Road North.

The main sources of noise at the installation during the operation of the site includes cooling towers, condensers and turbine generators.

Noise modelling has been used by the applicant to predict worst-case impacts of noise sources from the proposed installation at two nearby sensitive locations. As part of the applicant the applicant modelled two different scenarios.

The following two scenarios were modelled:

1. Full load operation plus standby generator testing.
2. Full load operation plus 8 no. of the 9 no. turbines operating simultaneously.

Under Scenario 1 (full loading operation and standby generator testing) modelling demonstrates that the installation will be compliant with the relevant noise limits at the NSLs. This modelling assessment is considered to be sufficiently conservative as it is assumed that the installation is under full load, with a back-up generator running at 100% in test mode. Each back-up generator will only be tested once a month, for a maximum duration of 1-hour. The predicted noise levels in the modelling assessment decreases with distance from the installation.

Under Scenario 2, the modelling is considered sufficiently conservative as it is assumed that 8 no. of the dual fuel turbine generators are operating, yet fewer turbines are likely to be required to meet the energy demand of the data centre. Based on the noise assessment submitted with the application, the results indicate that the impact is low, and within the standard noise ELVs in the RD.

Based on the above assessment it is evident under worse-case conditions (i.e. full load) noise ELVs will be met at NSLs. Therefore, noise conditions and ELVs, which

apply at the NSLs, have been included in the RD. The location of NSLs relative to the installation can be seen in Figure 6.3 below.

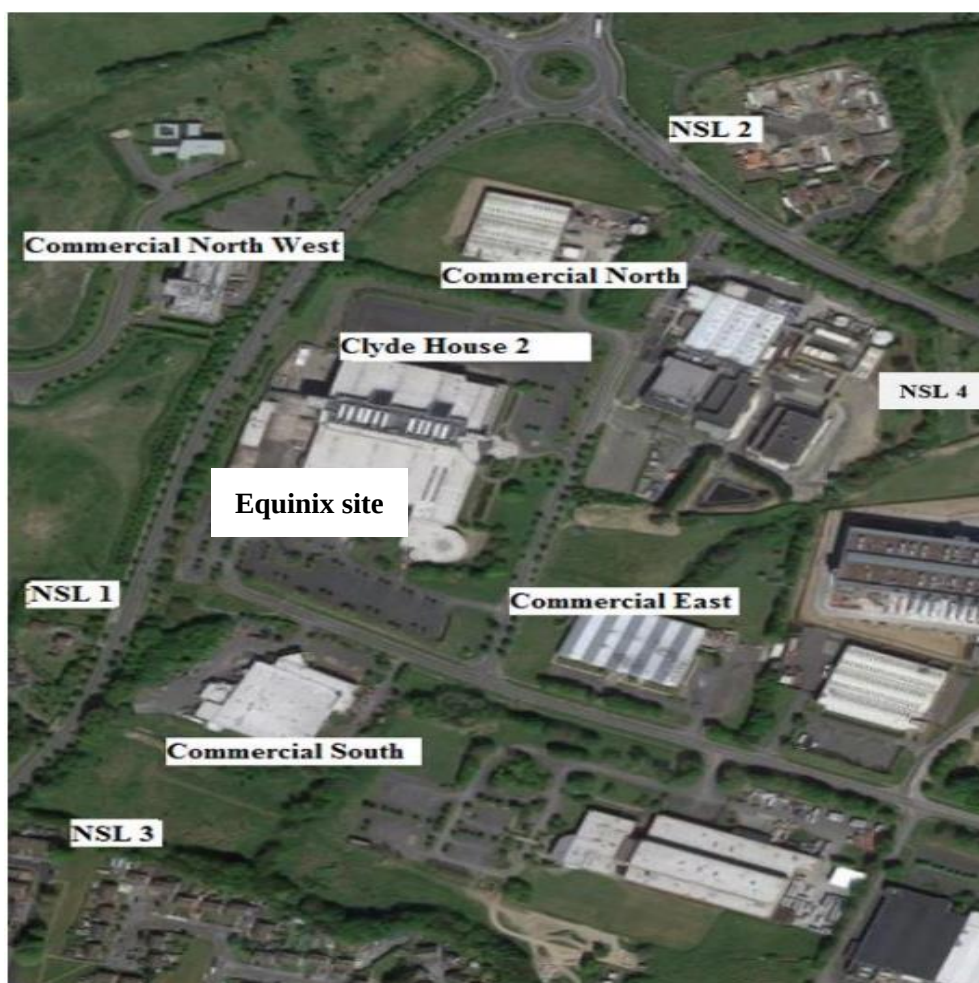


Figure 6.3: The location of NSLs relative to the installation (Source: Noise and Vibration Impact Assessment).

7. Waste generation

Given the nature of the activity to be undertaken at the installation it is expected that waste generation will be minimal.

The categories of waste that will be generated from the proposed activity will include commercial and industrial waste (10 tonnes/annum), mixed recyclables including glass (3.5 tonnes/annum), off-spec fuel oil (<1 tonnes/annum) and engine oil (< 1 tonnes/annum). Full details on the waste streams that will be generated at the installation, and the conditions under which such waste streams (e.g. off-spec fuel oil) will arise, have been provided in Attachment 8.1 of the application form.

The applicant will apply measures at the installation for the prevention and/or minimisation of waste. It is not considered that the quantities of waste generated on-site are significant. Hazardous waste, such as waste oil from the turbines will be stored in drums as and when required, and these will be kept in a self-bunded area until they are disposed of off-site by the licenced/permitted contractor. Most of the other waste generated at the installation will be mixed recyclables. Mixed municipal waste from the installation will be removed from the site by an authorised waste contractor.

The RD requires that disposal or recovery of waste on-site shall only take place in accordance with the conditions of the licence and in accordance with the appropriate National and European legislation and protocols.

8. Energy Efficiency and Resource Use

The operation of the installation involves the consumption of fuel and electricity. The table below provides estimated quantities of energy and resources that will be used during the first two years of full-time operation of the generator turbines and from year three onwards when the installation is operating under Island mode.

During the initial two years of operation of the activity (shortage mode) the energy efficiency at the installation will depend primarily on the efficiency of the turbine generators. The efficiency, taken at 15°C, is 31.8% with water injection when operated on natural gas. On gas oil, the efficiency, taken at 15°C is 31.4% with water injection. While the individual turbines are not within the scope of the LCP CID, it is worth noting for comparison purposes under the LCP CID¹ an open cycle gas turbine ($\geq 50 \text{ MW}_{\text{th}}$) would be required to have an energy efficiency within the range of 36 – 41.5%. This would indicate that the individual MCP turbines are not significantly less efficient than what would be required of an LCP plant under the LCP CID. Also, the configuration of the individual MCP turbines at the installation will enable the applicant to have flexibility in terms of the number of individual turbines that are brought online to meet the load demand of the data centre when the installation is required to reduce its demand on the National Grid and will thereby limit the overall energy usage and emissions from the installation.

Table 8.1: Energy and resource usage

Resource	Quantity per annum ^{Note 1}	Quantity per annum ^{Note 2}
Electricity	-	343,968 MWh
Renewable energy (solar) generated and used on site	28 MWh	28 MWh
Total non-renewable energy generated and used on site	370,512 MWh	21,150 MWh
Gas Oil	18,533 m ³	Note 3
Natural Gas	112,219,200 m ³	Note 3
Public water supply	749,129 m ³	455,114 m ³

Note 1: Estimated quantities that will be used per annum during the first two years of full-time operation of the generator turbines.

Note 2: Estimated quantities that will be used, from year three onwards, when operating under Island mode.

Note 3: Quantities that will be used will depend on the frequency that the site has to operate in Island mode.

The applicant will employ a variety of technology to maximise the efficient use of energy and resources within the installation, including regular preventative maintenance on equipment and the use of the rainwater from roofs to reduce the usage of the public water supply. Rainwater from the roofs will be collected, filtered and stored in an attenuation tank. From the attenuation tank the water will be pumped to the Water Treatment Building where it will be treated using reverse osmosis prior to being used in the cooling towers. Cooling tower bleed will also be pumped to the Water Treatment Building for treatment and further re-circulation.

In the application of BAT, Condition 7 of the licence provides for the efficient use of resources and energy in all site operations. It requires an energy audit to be carried

out and repeated at intervals as required by the Agency and the recommendations of the audit to be incorporated into the Schedule of Environmental Objectives and Targets as outlined in Condition 2 of the licence.

The Climate Action Plan² sets out a proposed pathway to meet the emission reduction target for the energy sector through a more rapid build out of renewables (wind and solar power), increased storage and the deployment of zero-emissions gas. While the decarbonisation pathway for power generation will be challenging, every power plant operator will have to play their part. Condition 7 also required the applicant to examine opportunities to increase the use of solar, sustainable biofuels, and alternative renewable energy source and submit a report to the Agency with a roadmap on how the applicant proposes to decarbonise the activity at the installation.

9. Prevention of Accidents

A certain amount of accident risk is associated with the licensable activity. The table below specifies the risks and associated safety measures relevant to this installation.

Table 9.1 Potential accidents and measures for the prevention/limitation of consequences.

Potential accidents & measures for prevention/limitation of consequences	
Potential for an accident or hazardous/ emergency situation to arise from activities at the installation.	• Potential for fire due to large quantities of fuel stored on site, leading to potential for emissions to air, water, and/or soil. • Spillages/leaks due to accidents on-site • Spillages of fuel (i.e. gas oil) during delivery and unloading operations. • Malfunction of the plant including the turbine generators leading to fuel spills or exceedances of the emissions to air ELVs. • Potential for fire due to the quantities of fuel stored on site. • Failure of the Class I interceptor leading to discharge of contaminated storm water.
Preventative/Mitigation measures to reduce the likelihood of accidents and mitigate the effects of the consequences of an accident at the installation.	• Provision and maintenance of adequate bunding. Bunds are visually inspected weekly, and integrity tested once every three years. • An Emergency Response Plan for the installation sets out the required actions in the event of an emergency. • In the event of a fire at the installation, the applicant will be able to isolate the storm water drainage system using a shut off valve if fire-water run-off is generated. • Fuel delivery procedure will be maintained and includes details in relation to the spill response plan. • Spill kits will be in areas at high risk of spills occurring such as the fuel unloading area. • Fire detection and suppression system (an automated sprinkler system).

² Climate Action Plan 2021, Securing Our Future.

Potential accidents & measures for prevention/limitation of consequences	
	• Each generator will be individually containerised and protected with an internal CO₂ fire suppression system. • Storm water drain will be fitted with a Class I interceptor. The RD requires that storm water is visually inspected daily, with pH and conductivity monitoring weekly. • All pipes containing environmentally significant materials are located aboveground and inspected routinely.
Additional measures provided for in the RD	• Accident prevention and emergency response requirements (Condition 9). • Integrity of tanks to be assessed every 3 years and maintenance carried out as required (Condition 6). • Storm water discharge points to be visually monitored (Schedule C). • Firewater retention risk assessment (Condition 3).

The risk of accidents and their consequences, and the preventative and control measures listed in the table above, have been considered in full in the assessments carried out throughout this report.

Condition 9 of the RD requires procedures to be put in place to prevent accidents with a possible impact on the environment and to respond to emergencies so as to minimise the impact on the environment.

It should be noted that the quantities of dangerous substances used are below the thresholds which would make the installation subject to the additional controls for major accident preventative and emergency response, specified in the Seveso III Directive (2010/18/EU).

10. Cessation of Activity

A certain amount of environmental risk is associated with the cessation of any licensable activity (site closure). For this installation the risks relate to the potential for soil, groundwater or surface water contamination.

The applicant has provided a list of measures to be taken in the event of site closure/cessation of activity. Condition 10 of the RD requires the proper closure of the activity with the aim of protecting the environment.

Baseline Report

Where an activity involves the use, production or release of Relevant Hazardous Substances, and having regard to the possibility of soil and groundwater contamination at the site of the installation, the IED requires operators to prepare a baseline report.

A baseline report was submitted with the application (attachment-4-8-3-Complete Baseline Report 7). The report states that the site has previously been used for agricultural purposes until it was developed in the mid to late 1990s as a multi-storey commercial and manufacturing building, with a tarmacadam carpark and green areas on site. Four groundwater wells (BH102, BH103, BH106 and BH108) were installed at the site during the geotechnical investigations, however no groundwater samples were taken and analysed. As the applicant has not completed groundwater analysis as part of the baseline report, the RD requires the applicant to complete such analysis prior to the commencement of the activity and every 5 years thereafter. The geotechnical investigation found that the groundwater well (BH102) is on made ground with the groundwater level being 1m below ground level. While, for three wells (B103, BH106 and BH108) installed in the bedrock aquifer, the groundwater level was found to be 1-2m below ground level. The aquifer underlying the site has been classified as a locally important aquifer. Under the WFD, the groundwater body (IE_EA_G_008) has been classified as good, and it is classified as not at risk.

As part of the geotechnical assessment of the site, twenty-five soil samples were collected and analysed. The assessment found that there is limited evidence of soil contamination by prior activities at the site. The RD requires soil monitoring every 10 years.

It is in the applicant's interest to keep detailed records of operational practices such as inspections, maintenance, incidents, accidents and remediation under IED. The Agency's Office of Environmental Enforcement may refuse an application for surrender without detailed assessment and remediation proposals. Upon definitive cessation of the activity (and in accordance with Article 22(3) of the IED) the operator shall assess the state of soil and groundwater contamination by relevant hazardous substances used, produced or released by the installation. Where the installation has caused significant pollution of soil or groundwater by relevant hazardous substances compared to the state established in the baseline report, the operator shall take the necessary measures to address that pollution so as to return the site to that state, or otherwise to take actions aimed at the removal, control, containment or reduction of hazardous substances so that the site ceases to pose a significant risk to human health or the environment. For that purpose, the technical feasibility of such measures may be taken into account.

11. Fit & Proper Person

Technical Ability

The applicant has provided details of the qualifications, technical knowledge and experience of key personnel. The licence application also includes information on the on-site management structure. It is considered that the applicant has demonstrated the technical knowledge required.

Legal Standing

Neither the applicant nor any relevant person has relevant convictions under the Environmental Protection Agency Act 1992, as amended, or under any other relevant environmental legislation.

ELRA, CRAMP and Financial Provision

The proposed installation was assessed for the requirements of Environmental Liabilities Risk Assessment (ELRA), Closure, Restoration and Aftercare Management

Plan (CRAMP) and Financial Provision (FP), in accordance with Agency guidance. Under this assessment it has been determined that ELRA, CRAMP and FP were not required.

Fit & Proper Conclusion

It is my view, and having regard for the Conditions of the RD, that the applicant can be deemed a Fit & Proper Person for the purpose of this application.

12. Submission

There was one valid submission received in relation to the licence applicant.

The issues raised in the submission are noted and addressed in this Inspector's Report and the submission was taken into consideration during the preparation of the RD.

Table 12.1 Valid Submission

Submissions			
1.	Name & Position Ms Laura Duffy Acting Principal Environmental Health Officer	Organisation: Health Service Executive Dublin Fingal Food Control, Environmental Health Service, 1st Floor, Nexus Building, Blanchardstown Corporate Park, Dublin 15.	Date received: 23 rd December 2021
	Issues raised: In its submission the HSE has not raise any specific issues, but rather provided an assessment of the emissions from the installation and made the following statements: <i>The EHS are satisfied that any noise generated during the operational phase of the proposed development will not impact on local residents.</i> <i>The EHS are satisfied that no mitigation measures are required during the operational phase of the proposed development as no significant residual impacts on local air quality is likely as a result of the proposed development.</i> Agency response: The Agency notes that no specific concerns have been raised in the submission. Noise and Air emissions from the proposed activity are dealt with in detail in the noise and emissions to air sections of this report.		

13. Consultations

13.1 Cross Office Consultation

I consulted with Ann Lyng in relation to the financial charges and the OES Inspectors Marian Doyle in relation to AA and Rachel Neeson in relation to EIA.

13.2 Transboundary Consultations

There were no transboundary consultations undertaken as there were no transboundary impacts identified.

14. Appropriate Assessment

Appendix 1 lists the European Sites assessed, their associated qualifying interests and conservation objectives.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activity, individually or in combination with other plans or projects is likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at Rye Water Valley/Carlton SAC (Site Code: 001398), Malahide Estuary SAC (Site Code: 000205), South Dublin Bay SAC (Site Code: 000210), North Dublin Bay SAC (Site Code: 000206), South Dublin Bay and River Tolka Estuary SPA (Site Code: 004024), Malahide Estuary SPA (Site Code: 004025), and North Bull Island SPA (Site Code: 004006)

The activity is not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it can be excluded, on the basis of objective information, that the activity, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activity was not required.

This determination was made in light of the scale and nature of emissions to the environment and the distance from the installation to European sites and their qualifying interests.

- Air dispersion modelling has demonstrated that emissions to air from the installation will result in ground level concentrations well below the air quality standards. European sites are determined to be outside the zone of influence of air emissions from the installation.
- European sites and their qualifying interests are determined to be outside the zone of influence of noise emissions due to the distance from the installation.
- With regard to European sites which are hydrologically connected to the installation, there are no process emissions to surface water or to groundwater from the installation.
- The proposed emissions to sewer will not have a discernible effect on the discharge from the Greater Dublin Area Agglomeration (Reg. No. D0034-01) and therefore would have an insignificant effect on the European sites at Dublin Bay.

15. EPA Charges

The annual enforcement charge recommended in the RD is €12,112.00, which reflects the anticipated enforcement effort required and the cost of monitoring.

16. Recommendation

The Agency, in considering an application for a licence or the review of a licence, shall have regard to Section 83 of the EPA Act 1992, as amended. The Agency shall not grant a licence or revised licence unless it is satisfied that emissions comply with

relevant emission limit values and standards prescribed under regulation. In setting such limits and standards, the Agency must ensure they are established based on the stricter of both the limits and controls required under BAT, and those required to comply with any relevant environmental quality standard.

The RD specifies the necessary measures to provide that the installation shall be operated in accordance with the requirements of Section 83(5) of the EPA Act 1992, as amended and has regard to the AA Screening and EIA Screening. The RD gives effect to the requirements of the Environmental Protection Agency Act 1992, as amended and has regard to the submission made.

I recommend that a Proposed Determination be issued subject to the conditions and for the reasons as drafted in the RD.

Signed

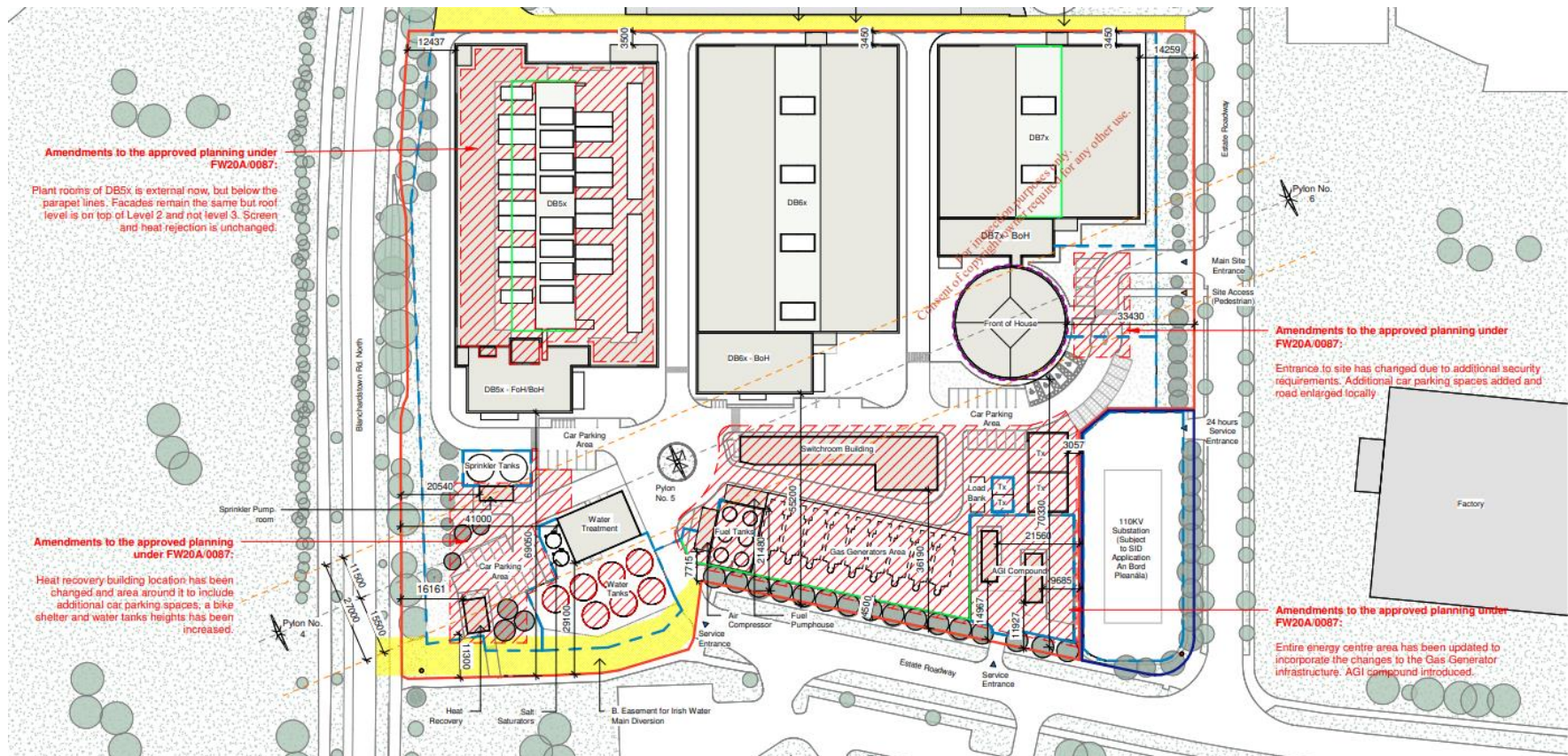


Dr. Greg Beechinor

Procedural Note

In the event that no objections are received to the Proposed Determination on the application, a licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Act 1992, as amended, as soon as may be after the expiration of the appropriate period.

Appendix 1 Site Layout



Appendix 2 Appropriate Assessment

List of European Sites assessed, their associated qualifying interests and conservation objectives.

Site Code	Site Name	Distance from installation	Qualifying Interests (* denotes priority habitat)	Conservation Objectives
001398	Rye Water Valley/Carlton SAC	8.9km south-west of the installation	Habitats 7220 Petrifying springs with tufa formation (Cratoneurion)* Species 1014 Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>) 1016 Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>)	NPWS (2021). Conservation Objectives: Rye Water Valley/Carlton SAC [001398]. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage (22 December 2021).
000205	Malahide Estuary SAC	12.8km north-east of the installation	Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*	NPWS (2013). Conservation Objectives: Malahide Estuary SAC [000205]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (27 May 2013).
000210	South Dublin Bay SAC	13km south-east of the installation	Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 2110 Embryonic shifting dunes	NPWS (2013). Conservation Objectives: South Dublin Bay SAC [000210]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (22 August 2013).

000206	North Dublin Bay SAC	13.4km west of the installation	Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)* 2190 Humid dune slacks Species 1395 Petalwort (<i>Petalophyllum ralfsii</i>)	NPWS (2013). Conservation Objectives: North Dublin Bay SAC [000206]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (6 November 2013).
004024	South Dublin Bay and River Tolka Estuary SPA	10.7km South-east of the installation	Birds A162 Redshank (<i>Tringa totanus</i>) A193 Common Tern (<i>Sterna hirundo</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A149 Dunlin (<i>Calidris alpina</i>) A137 Ringed Plover (<i>Charadrius hiaticula</i>) A194 Arctic Tern (<i>Sterna paradisaea</i>) A192 Roseate Tern (<i>Sterna dougallii</i>) A143 Knot (<i>Calidris canutus</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A144 Sanderling (<i>Calidris alba</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) Habitats Wetlands	NPWS (2015). Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA [004024]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (9 March 2015)

004025	Malahide Estuary SPA	12.9km north-east of the installation	Birds A130 Oystercatcher (<i>Haematopus ostralegus</i>) A005 Great Crested Grebe (<i>Podiceps cristatus</i>) A162 Redshank (<i>Tringa totanus</i>) A067 Goldeneye (<i>Bucephala clangula</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A149 Dunlin (<i>Calidris alpina</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A054 Pintail (<i>Anas acuta</i>) A048 Shelduck (<i>Tadorna tadorna</i>) A069 Red-breasted Merganser (<i>Mergus serrator</i>) A143 Knot (<i>Calidris canutus</i>) A156 Black-tailed Godwit (<i>Limosa limosa</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) Habitats Wetlands	NPWS (2013) Conservation Objectives: Malahide Estuary SPA 004025. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (16 August 2013).
004006	North Bull Island SPA	13.4km south-east of the installation	Birds A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A048 Shelduck (<i>Tadorna tadorna</i>) A054 Pintail (<i>Anas acuta</i>) A160 Curlew (<i>Numenius arquata</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A056 Shoveler (<i>Anas clypeata</i>) A169 Turnstone (<i>Arenaria interpres</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A052 Teal (<i>Anas crecca</i>) A144 Sanderling (<i>Calidris alba</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) A149 Dunlin (<i>Calidris alpina</i>) A156 Black-tailed Godwit (<i>Limosa limosa</i>) A162 Redshank (<i>Tringa totanus</i>) A143 Knot (<i>Calidris canutus</i>) Habitats Wetlands	NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (9 March 2015).

Appendix 3 Relevant Legislation

The following European instruments are regarded as relevant to this application assessment and have been considered in the drafting of the Recommended Determination.
Industrial Emissions Directive (IED) (2010/75/EU)
Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU)
Habitats Directive (92/43/EEC) & Birds Directive (79/409/EC)
Water Framework Directive [2000/60/EC]
Medium Combustion Plant Directive (EU) 2015/2193
Air Quality Directives (2008/50/EC and 2004/107/EC)
Seveso Directive (2012/18/EU)
Energy Efficiency Directive (2018/2002/EU)
Environmental Liability Directive (2004/35/CE)
EU Directive 1999/32/EC, (relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC)

Appendix 4 Other CIDs/BREF/BAT documents relevant to this assessment

Commission Implementing Decisions	Publication Date
Commission Implementing Decision of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants	November 2021
Horizontal BREF	Publication date
Reference Document on the Best Available Techniques on Emissions from Storage	July 2006
Reference Document on the Best Available Techniques for Energy Efficiency	February 2009
Reference Document on the application of Best Available Techniques to Industrial Cooling Systems	December 2001