

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

Signed: Marie O'Connor **Date:** 10/05/23



INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE APPLICATION, LICENCE REGISTER NUMBER P1177-01

TO: Directors

FROM: JIM JOHNSON

DATE: 10 MAY 2023

Applicant:	Amazon Data Services Ireland Limited
CRO number:	390566
Location/address:	Hibernian Industrial Estate, Greenhills Road, Dublin 24.
Application date:	26 March 2022

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/ies 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 BREF document/CID/BAT Not applicable
Note:

All relevant BREF documents are listed in Section 5 of this report.

Activity description: Data centre with 46 diesel generators to provide power in the event of a loss or reduction in electricity supply from the grid.

Additional information received:	Yes (10 March 2023, 23 December 2022)
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No of submissions received:	1
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Environmental Impact Assessment required: No	Stage 2 Appropriate Assessment required: No
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Site visit: N/A	Site notice check: 13 April 2022
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1. Introduction

Amazon Data Services Ireland Ltd, hereafter referred to as ADSIL or the applicant, operate a data storage facility on a 7.72 hectare site in Hibernian Industrial Estate, 250 m to the east of Greenhills Road, Tallaght, Dublin 24. The facility consists of 3 no. two storey data storage buildings (Building A to C). The facility is split in two, divided by the Hibernian Industrial Estate Road; Building B and C are to the north of the road with Building A to the south (Appendix 1: Site Layout). There are approximately 150 personnel employed on site each day.

The installation requires a continuous supply of electricity to operate, which is provided by a connection to the National Grid. However, outside of the normal operating conditions the site is first supplied electricity by the onsite battery storage (uninterruptable power supplies (UPSs)) and then by some or all of the onsite generators depending on the energy demand of the data storage facility. Typically, the generators will be brought online in the event of a loss, reduction or instability of grid power supply; critical maintenance of power systems; or a request from the grid operator to reduce grid electricity load.

2. Description of activity

The site is occupied by three data storage buildings, with ancillary elements, including loading bays, maintenance and storage spaces, associated water tanks, sprinkler, tanks, pump house and electrical rooms, security and utility spaces, underground foul and stormwater drainage network, on site attenuation systems, internal road network, and site landscaping.

There is a total of 50 generators at the installation: 46 generators associated with the data halls and 4 diesel powered fire pumps. The generators consist of 37 no. 5.19 MW_{th} diesel generators and 9 no. 6.60 MW_{th} diesel generators. The diesel fire pumps have a capacity of 0.42 MW_{th} each. The applicant has applied to the Agency for an Industrial Emissions Licence because the combined thermal input from generators (253.11 MW_{th}), exceeds the 50 MW_{th} threshold of Class 2.1 First Schedule of the EPA Act 1992, as amended, and therefore requires an IE licence.

The purpose of the generators is to provide power to the data storage facility in the event of an interruption or reduction of the National Grid power supply to the installation. There are no plans to export electricity to the National Grid. The UPS (battery storage system) also provides short term power for the change over from mains power to the generators.

The main emissions from the installation include noise, emissions to air 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 licence application form (Attachment 6.1 Stakeholder Engagement). An Environmental Impact Statement (EIS)/Environmental Impact Assessment Report (EIAR) was not submitted to the Planning Authority (South Dublin County Council) as part of these planning applications.

4. EIA Screening

In accordance with Section 83(2A) of the Environmental Protection Agency Act 1992, as amended (hereafter referred to as the EPA Act), 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 (located on an approx. 8 hectares site) is below the specified threshold of project types 3 (a) and 10 (a) in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended:

3. (a) 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.

10 (a) Industrial estate development projects, where the area would exceed 15 hectares.

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 of emissions from the activity.
- Air emissions from the diesel powered back-up generators, diesel powered emergency backup fire pumps and diesel tank emergency breather vents are not considered significant. There are no other process emissions to air.
- Emissions to sewer (other than sanitary effluent) consist of surface water drainage from the diesel tank farm, associated fuel unloading bays and the transformer compounds. This effluent is discharged to sewer and ultimately treated in the EPA licensed Ringsend WWTP (Register Number D0034-01) which is designed to provide secondary treatment with a plant capacity of approximately 1,640,000 population equivalent which is currently exceeded at the plant. Treated effluent from the Ringsend WWTP is discharged to the Liffey Estuary Lower (Water Framework Directive Code: IE_EA_090_0300). According to EPA Maps, the Transitional Waterbody Water Framework Directive (WFD) Status 2016-2021 for Liffey Estuary Lower is Moderate. The Coastal Waterbody WFD Status 2016-2021 for Dublin Bay is Good. Taking into account the nature and extent of these emissions to sewer, it is considered that these emissions are not significant will not have a significant effect on the Ringsend WWTP's capacity to treat waste waters and will not indirectly have a significant effect on the environment in the vicinity of the Ringsend WWTP Discharge in Dublin Bay.
- In addition to stormwater runoff from building roofs, yards and the road network, there is an emission to surface water of residual cooling water (recirculated mains water) associated with the evaporative cooling process in the Air Handling Units. The existing storm water outfall (combined attenuated stormwater) flows into the Tymon River and then the Poddle (Water

Framework Directive Code: IE_EA_09P030800) which ultimately connects to the River Liffey and Dublin Bay >15 kms downstream of the installation. These emissions are not considered significant.

- There are no direct process emissions to groundwater from the installation.
- The activity will not generate significant dust or noise emissions.
- The cumulative effect with other existing and/or approved projects will not be significant.

5. Best Available Techniques

A detailed BAT assessment was carried out by the applicant and is included in attachment 4-7-1 of the application form.

The individual generators are less than 15 MW_{th} and outside the scope of the Best Available Techniques (BAT) Reference Document for Large Combustion Plants (LCP). Instead, the requirements as set out in the Medium Combustion Plant (MCP) Regulations 2017 (S.I. No. 595 of 2017), which can be considered BAT at plant level, for combustion plant between 1 and 50 MW_{th} have been applied.

BAT for the installation was assessed against the following horizontal BREF documents:

- BREF document for Emissions from Storage (July 2006);
- BREF document for Energy Efficiency (February 2009);
- BREF Document for Industrial Cooling Systems (December 2001).

The applicant submitted an assessment of the installation's activity against the relevant BAT requirements set out under each of the above listed horizontal BREFs.

The assessment has demonstrated that the installation will comply with all the MCP Regulations and will be in line with the guidance specified in the relevant horizontal BREF Documents as listed above.

I consider that the applicable BAT Conclusion 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 Emissions to Air

This section addresses emissions to air from the installation and the environmental impact of those emissions.

6.1.1 Channelled Emissions to Air

The main emissions to air are from the combustion of fuels in 46 no. diesel generators at the installation (Table 6.1). These generators are operated for routine maintenance and testing and in the following circumstances:

- Loss, reduction or instability in power supply from the grid
- Maintenance of power systems supplying the installation
- A request from the utility supplier to reduce load on the electricity grid.

Table 6.1 Details of generators at the installation.

Building name	No. per Bldg	Capacity (MW thermal input)	Stack height above ground level (m) (vertical unless specified)
Building A	20	5.19	6m horizontal (14 no. generators) 8m (6 no. generators)
Building A ext.	4	5.19	18m
Building B	13	5.19	16.7m
Building C	9	6.60	21.7m
Total	46	251.43	

There are also 4 no. 0.42 MW_{th} fire pump generators at the site. These are considered minor emissions due to their emission characteristics and are not considered as part of this impact assessment.

Each individual generator is a Medium Combustion Plant (MCP). Under Reg. 13 of the MCP Regulations, plant which operate for not more than 500 hours per year are not required to comply with the emission limit values set out in the Regulations. The applicant has requested this exemption be applied to the generators on the basis that they will continue to operate less than 500 hours per year.

As part of the application, air dispersion modelling was carried out to assess the impact on ambient air quality from the generators. Modelling of NO₂ was undertaken in detail. However, no detailed modelling for the other pollutants including SO₂, CO, PM₁₀ and PM_{2.5} was undertaken given that emissions of these pollutants are significantly lower than NO_x emissions from the generators relative to their ambient air quality standards. Therefore, ensuring compliance with the NO₂ air quality standard will ensure compliance for all other pollutants.

The modelling carried out was in accordance with published Agency guidance and was considered sufficiently detailed and conservative to assess the impact of the main emissions to air.

The modelling was carried out using five years of meteorological data (2017 to 2021 inclusive) from Casement Aerodrome meteorological station, approximately 6 km west of the site. The modelling was used to predict the ambient ground level concentrations for each hour of the five years of meteorological data at every point on a grid beyond the installation boundary as well as at nearby residential receptors.

A concentration of 17 µg/m³ was considered representative of the annual average ambient background for NO₂. This was based on EPA monitoring data at suburban Zone A (Urban) background locations in Rathmines, Swords and Ballyfermot. A short-term (hourly) background of twice the annual (i.e. 34 µg/m³) was used as per Agency guidance. The ambient background concentration (BC) is added to the modelled process contribution (PC) from the installation to determine the predicted environmental concentration (PEC).

The following testing regimes and operation scenario were modelled. Testing was assumed to occur between 8am and 5pm, Monday to Friday.

- Test 1: Each generator tested once a week at 25% load for a maximum of 30 minutes. All 46 no. generators are tested one at a time in sequence.
- Test 2: Each generator tested once a quarter at 90% load for 1 hour. All 46 no. generators are tested one at a time in sequence.

- Generator operation: simultaneous operation of 42 no. of the 46 no. generators at 90% load (4 no. generators serve as standby generators) for 72 hours per year.

Emissions under generator operation were modelled as an average emission rate rather than the maximum as per Agency guidance on modelling of emissions from generators. The maximum hourly emission rates from the standby diesel generators were multiplied by a factor $\frac{72}{8760}$ (where 8760, is the number of hours in a year) and modelled as continuous emissions over the full year.

Table 6.2 gives details of the predicted impact of the proposed main channelled emissions to air. The results presented are for the worst case location outside the installation boundary and worst-case year.

Table 6.2 Dispersion Model Results – operation and scheduled testing

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 ($\mu\text{g}/\text{m}^3$)
Nitrogen Oxides (as NO_2)	99.8%ile hourly (2018)	34	125	159	79.4%	200
	Annual (2017)	17	15	32	81.0%	40

The contour plots supplied with the modelling report (below) show the location and extent of the areas where the maximum PC applies, and also the rate of change in ambient concentration with distance from the location of the maximum.

The results indicate that the maximum predicted ambient ground level concentrations are greater than 70% of the standard. However, the contour plots indicate that in both cases the highest values are concentrated in a small area at the boundary of the installation – covering the north east corner of Building A and into the industrial estate to the north. Beyond this area the predicted concentrations drop off to about half the maximum. The RD includes conditions to ensure compliance with air quality standards, which are discussed further below.



Figure 6.1: Maximum 1-hour NO₂ concentration (process contribution) (2018). [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment for EPA Licence Application, March 2022]

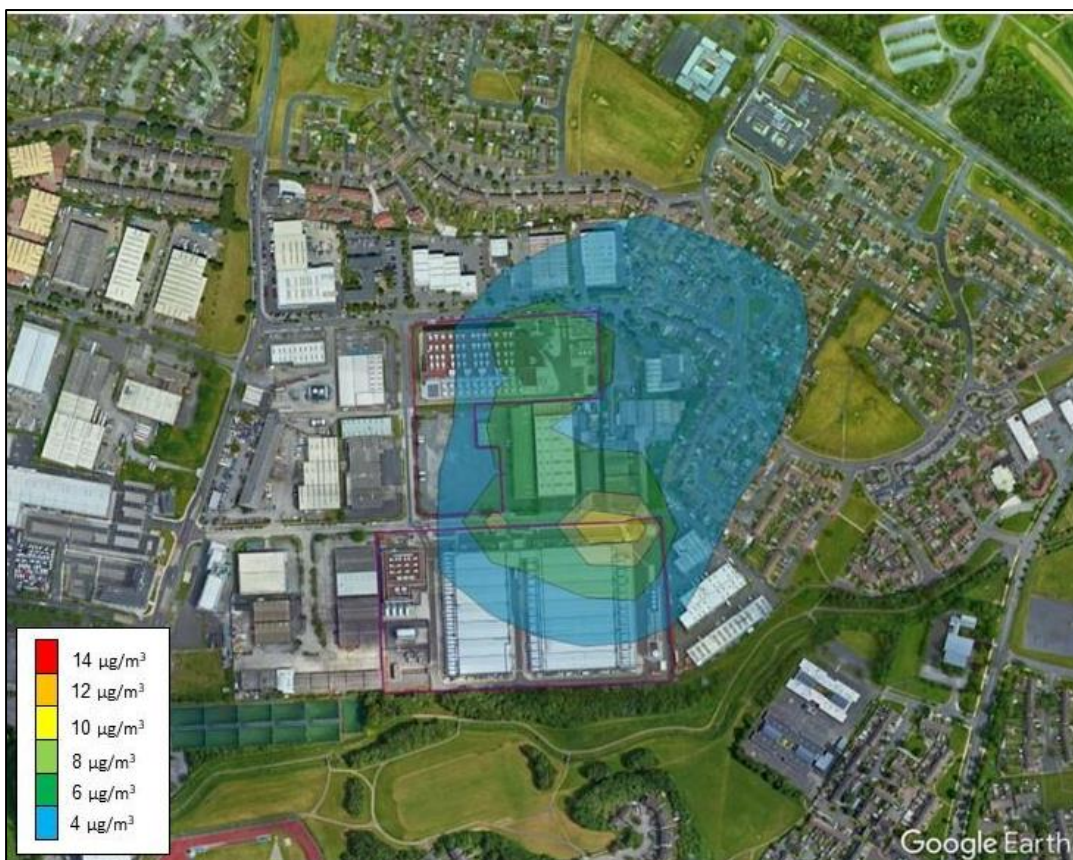


Figure 6.2: Maximum annual average concentration (process contribution) (2017). [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment for EPA Licence Application, March 2022]

Cumulative assessment

There is one other site with emissions to air within 1km of the subject installation – a data storage facility operated by the applicant and subject to a separate licence application (P1173-01). A cumulative assessment was carried out by the applicant that modelled emissions from both sites under testing and operation (72 hours per year). The cumulative NO₂ ground level concentrations at the worst-case locations at and beyond the site boundary are detailed in Table 6.3. The geographical variations in cumulative ground level NO₂ concentration (maximum 1-hour) for the worst-case years modelled (2018) are illustrated in the concentration contours in Figure 6.3.

Table 6.3 Dispersion Model Results – cumulative assessment

Parameter	Averaging Period	Background concentration (µg/m ³)	Process contribution to PEC (µg/m ³)	Predicted Environmental Concentration (PEC) (µg/m ³)	PEC as % of Air Quality Standard	Air Quality Standards/Guidelines (µg/m ³)
Nitrogen Oxides (as NO ₂)	99.8%ile hourly (2018)	34	125	159	79.4%	200
	Annual (2017)	17	16	33	82.3%	40



Figure 6.3: Maximum cumulative 1-hour NO₂ concentration (process contributions) for the worst-case year (2018).

For the worst-case year, the cumulative maximum ground level concentration was 79.4% of the maximum ambient 1-hour limit value and 82.3% of the annual limit value at the worst-case off-site receptor. It should be noted that although the plumes overlap, the worst case predicted concentrations in the cumulative scenario were not

significantly different from the installation operating alone (Table 6.2) i.e. the inclusion of the second site did not increase the maximum predicted concentration outside the installation boundary.

This modelling scenario can be considered conservative as it assumes that both sites would have to operate simultaneously under abnormal operating conditions for up to 72 hours at maximum load. Such a scenario is only likely to occur in the event of a prolonged fault or outage of the National Grid, a problem with the substations at both the sites or if the Transmission System Operator orders the installation to reduce its load on the national grid.

Given that the air dispersion modelling assessment is conservative, it is considered that the activity will not, cumulatively or otherwise, cause exceedances of the applicable environmental standards.

In the context of ecological receptors, the modelling indicates that the ambient ground level concentrations are within the relevant air quality standard for NO_x at the nearest ecological sensitive receptor – Dodder Valley proposed Natural Heritage Area (pNHA). For the worse case year modelled, the PC was 0.5% for the relevant critical level for NO_x. The air dispersion modelling assessment also demonstrated that the impact of emissions from the activity would be insignificant at the nearest European Site (Glenasmole Valley SAC) which is over 4 km away.

Recommendation

In light of the above the RD includes a number of conditions to ensure compliance with air quality standards as follows:

Schedule A restricts the operation of the generators to up to 72 hours per year, based on the modelling assessment completed by the applicant. Schedule A also limits the number of generators that may be operated simultaneously to a combined thermal input of no more than 251.43 MW_{th} (37 no. 5.19 MW_{th} and 9 no. 6.6 MW_{th}). If one or more of the generators is unavailable due to maintenance, then under Condition 3.18, the licensee may operate mobile generators in lieu of the stationary generator(s) provided that the combined thermal input of the generators in operation does not exceed the capacity specified in Schedule A i.e. 251.43 MW_{th}.

The RD also restricts the testing of the generators to no more than 25% load for a maximum of 30 minutes each per week, sequentially, and to no more than 90% load for a maximum of 1-hour, four time per year sequentially (Schedule A).

Condition 2 of the RD requires the licensee to submit a review of options for reducing emissions and improving dispersion of emissions from generators during testing, maintenance and operation.

Schedule C requires the licensee to carry out monitoring of emissions in line with the Medium Combustion Plant Regulations.

Condition 11 requires the licensee to maintain a record the type and quantity of fuel used, run times and loading under both testing/maintenance and operating scenarios.

6.1.2 Fugitive Emissions

No significant fugitive emissions are expected to arise. Fluorinated gases are used at the installation which are subject to the F-gas Regulations (EU No 517/2014).

6.2 Emissions to Water/Sewer

6.2.1 Emissions to Surface Waters

There are no direct process emissions to surface waters from the installation, other than the indirect emissions of water from the evaporative cooling system (Building A-C) which is discharged to the storm water drainage network.

6.2.2 Emissions to Sewer

There is no trade effluent discharged to the sewer network on site. Sanitary effluent from the data storage facilities is discharged to the public foul sewer (SE1-SE5).

Rainwater draining from diesel tank farms and associated fuel unloading bays in the drains to foul sewer via Class 1 full-retention oil interceptors. The drainage sumps at the tank farm and fuel unloading bays are fitted with hydrocarbon detectors which automatically shut off drainage from these sumps if diesel is detected, preventing contaminated stormwater exiting the bund. Surface water drainage from two transformer compounds also drains to sewer via hydrocarbon interceptors.

No monitoring of the overall sewer discharge is proposed.

6.3 Storm water discharges

Storm water discharges include storm water from roofs, the internal road network and hardstanding areas.

There are six storm water discharge points at the installation. Storm water from buildings A, B and C, internal roads and generator areas discharge via attenuation tanks (total capacity 924 m³) and hydrocarbon interceptors at discharge points SW1, SW2, SW3, and SW5. The interceptors are equipped with hydrocarbon level detectors that connected to a central alarm system. The discharge from the attenuation systems have a controlled release rate.

Rainwater from the roof of Building B is discharged at SW6. Rain water from a car parking area to the north of Building A discharges via SW4.

Storm discharge flows into the Tymon River (IE_EA_09P030800) via Bancroft Park before flowing northeast through Tymon Park and Tymon North as the River Poddle and ultimately flows into the River Liffey at Wellington Quay in central Dublin 10.2 km downstream of the site.

The residual cooling water associated with the evaporative cooling process (Buildings A-C) is also discharged to the storm water network. Evaporative cooling is used for a limited number of hours each year when ambient air temperatures are too high to achieve the required cooling.

The air handling units (AHU) at the installation provide conditioned air to the data centre buildings in order to maintain temperature, relative humidity and pressurisation in the data halls. The evaporative cooling system for the data halls operates in two modes; free cooling and evaporative cooling. Under the free cooling mode, conditioned air, at ambient air temperature is passed across the IT servers located in the data halls, and this air is either recirculated or exhausted to atmosphere. Under the evaporative cooling mode mains water is used as the cooling media to cool the ambient air that is introduced into the data halls. The majority of the mains water is evaporated in the process and no chemical dosing occurs. Prior to the cooling process, water is sanitised using ultraviolet disinfection. When water is used for cooling it is recirculated

in a closed loop system. When a conductivity set point of 1,500 µS/cm is reached, the cooling water is discharged to the storm water drainage network serving the installation at ambient temperature.

In effect the cooling water (predicted max flow of 59 m³/day) is indirectly discharged to the Tymon River via a public storm water drain. It should further be noted, under normal operating conditions, the evaporative cooling water is retained in the attenuation basins (924 m³). There is a dilution of the evaporative cooling water due to rainfall in the attenuation basins and further dilution occurs in the public storm water drain.

Due to the chemical properties of the evaporative cooling water and the combined buffering capacity of the storm water attenuation tanks (c. 924 m³) under dry weather conditions, it is considered that the concentration of salts in the storm water discharges from the site is not significant.

It is noted that hydrogen peroxide dosing of the cooling system (Air Handling Units (AHUs) and pipelines) only occurs when a positive legionella sample has been detected in a unit. Given the unstable nature of hydrogen peroxide, it will oxidise quickly in the environment thereby minimising any potential residual impacts. For the purpose of legionella management, the RD restricts the use of chemicals to hydrogen peroxide, unless otherwise approved by the Agency (Condition 2).

Table 6.4 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 Stormwater discharge point details					
Emission Reference	Monitored parameters (monitoring frequency)	Abatement	Drainage areas	Discharging to	Trigger levels established (Y/N)
SW1, SW2 SW3, SW4 SW5, SW6	Visual (daily); pH, TOC conductivity temperature (weekly)	Attenuation tanks and Class I by-pass separators (SW1, SW2, SW3, SW5)	Buildings, site roads and walkways, car parks	Tymon River via a public storm water drain	No Required by RD.

The RD requires the applicant to maintain the storm water drainage system. The RD also requires that the storm water discharge is visually inspected daily and monitored weekly for temperature, conductivity Total Organic Carbon (TOC) and pH, and any other parameters as required by the Agency, in accordance with Schedule C.2.3 *Monitoring of Storm Water Discharges*. It should be noted that the trigger values may be revised, to the satisfaction of the Agency under Condition 6 of the RD.

Condition 3 of the RD requires the licensee to examine the feasibility of diverting residual water from evaporative cooling system to sewer.

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.

6.4 Noise

The installation is located within an industrial park, but there are residential areas to the north, east and south. The closest residential property is located 50 m east of the site boundary. The primary source of noise is expected to arise from the installation's building service plant (i.e. the AHU air intake and the AHU air exhaust) as well as the operation of the generators during testing and operation (i.e. generator air intake, generator air exhaust and generator engine exhaust).

In support of its licence application, the applicant has submitted a noise assessment in accordance with Agency's NG4¹ Guidance. A Baseline noise survey was conducted at five representative sites in nearby residential areas (See Fig. 6.4). The predominant source of noise at the locations monitored was local road traffic.



Figure 6.4: The noise monitoring locations used for the baseline survey.

The noise impacts from noise sources at the installation were assessed under two operating scenarios:

- A. Normal operations representative of the day to day operations whereby the energy demand of the data centre is provided from the national grid and
- B. Representative of a situation whereby generators are operated due to either a loss, reduction or instability of grid power supply, critical maintenance to power systems or a request from the grid operator to reduce demand on the grid.

Proprietary noise calculation software (DGMR iNoise) was used to quantify the noise level associated with the proposed building. Based on the noise assessment, it is evident under normal operating conditions that the installation will be compliant with the standard daytime, evening time and night time limits at the boundary.

¹ Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016

However, under Scenario B, it is evident that the installation would not be able to comply with the standard evening time (50 dB) and night time limits (45 dB) (see Figure 6.5). In its application, the applicant has proposed that a higher evening time and night time limit of 55 dB LAeq should be applicable in a scenario when the generators are in operation.

NG4 states that where licensed sites which have certain equipment which only operate in urgent events such as grid power failure (e.g. standby diesel generators), this equipment may be permitted to exceed standard noise limit values during such events.

However, given that the generators could be operated for an extended period (up to 72 hours per annum) it is considered that the standard noise limit values should apply at the noise sensitive locations given their proximity (c. 50 m) to the installation boundary.



Figure 6.5: Predicted noise levels when generators are in operation (Scenario B).

Based on the foregoing, the RD requires compliance with the standard noise emission limit values at noise sensitive locations. Noise limits at sensitive receptors have been imposed by the planning authority (planning permissions ref. no. SD11A/0116, SD14A/0232, SD14A/0232, and SD14A/0232). Imposition of standard noise limits by the Agency will achieve or surpass these limits.

Furthermore, as the noise levels under Scenario B, (the worst case scenario of all generators in operation) are predicted to lead to an exceedance of the standard noise limits at noise sensitive locations, the RD includes a requirement on the applicant to prepare a Noise Management Plan (Condition 6). The RD requires that the Noise Management Plan be implemented within six months of date of grant of licence.

7. Waste generation

Certain wastes are generated on site as part of the licensable activity. But given the nature of the activity waste generation is minimal.

The categories of waste that generated from the proposed activity include dry mixed recyclables (c. 47 tonnes/annum), food/organic waste (c. 2.5 tonnes/annum), waste arising from maintenance activities including filter materials, absorbents, wiping cloths (c. 0.5 tonnes/annum), waste from minor spills (e.g. oil) (c. 1.4 tonnes/annum), oily water from separators (c. 18 tonnes/annum) and e-waste including miscellaneous parts and equipment (e.g. fans, hard drives, cables, etc.) (c. 23 tonnes per annum). A full list of waste streams be generated at the installation, and conditions under which such waste streams arise, has 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. Hazardous waste, such as waste oil from the maintenance of the back-generators shall be stored in drums as and when required, and these are kept in a self-bunded area until they are disposed of off-site by the licenced/permited contractor. The most significant waste stream generated at the installation is dry mixed recyclables.

As evidenced in Attachment 8-1-2 of the application form, and in accordance with the hierarchy specified in the IED, waste generated at the site will, in order of priority, be minimised, be prepared for re-use, recycling, recovery or disposal.

8. Energy Efficiency and Resource Use

The operation of the installation involves the consumption of fuel (primarily diesel), water, and electricity. Table 8.1 below provides the applicant’s estimate of the maximum quantities of energy and resources used.

Table 8.1: Energy and resource use at the installation

Resource	Quantity per annum
Electricity	615,828 MWh
Gas oil (diesel)	662.94 tonnes
Public Water	23,913 m ³

The applicant employs a variety of technology to maximise the efficient use of energy within the installation, including a load management system, preventative maintenance on equipment, and efficient lighting systems.

It should further be noted that Buildings B and C at the installation can accommodate the future installation of heat recovery coils and an underground waste heat primary circuit, to allow waste heat to be distributed to a district heating system, should one be built locally. The heat recovery coils recover heat from the air after it passes through the data halls to a hydraulic (water) pump prior to the air being either recirculated to the data halls or vented to atmosphere.

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. In the case of the electricity generation sector, the Climate Action Plan sets a target to reduce CO₂-eq. emissions from the sector by between 2 to 4 Mt CO₂-eq. by 2030, which is to be largely facilitated by increasing the share of renewable energy generation up to 80% by 2030.

Direct effects on climate from the activity are from emissions from the combustion of diesel in the generators at the installation. The carbon dioxide (CO₂) emissions from the onsite generators are covered by the GHG permit issued by the EPA for the site (IE-GHG172-10469-4), required by the EU Emissions Trading System (ETS). The EU ETS covers emissions of CO₂ from power and heat generation. Verified CO₂ emissions from the installation were 318 tCO₂, 127 tCO₂ and 151 tCO₂ in 2019, 2020 and 2021 respectively. Further details of historical CO₂ emissions from the installation can be found on the European Union Transaction Log ([EUROPA - Environment - Kyoto Protocol - European Union Transaction Log](#)).

The use of the generators for up to 72 hours as proposed in the RD would be a transitional measure when there is a high risk of an outage occurring on the national grid and until such time as there is additional renewables (and flexgen as back-up) on the National Grid. There will be an ongoing requirement for testing of the individual generators but this has been the case prior to the licence application and monitoring under the GHG Permit has shown that emissions are less than 1,000 tCO₂ per annum. Maximum emissions of CO₂ from the installation would be up to approximately 2,105 tCO₂ per annum (calculated based on the applicant's estimated maximum diesel usage of 662.94 m³ per annum). To put this in context, greenhouse gas emissions from the entire energy sector in 2021 were just over 10 million tonnes of CO₂ equivalent (EPA, 2022³).

Indirect emissions of CO₂ may arise due to the use of electricity from the national grid, if generated from fossil fuels, which will contribute to climate change. The applicant states that the installation will consume approximately 615,828 MW hours of electricity per year. This equates to 214,185 tonnes of CO₂ per annum, based on an emission factor of 347.8g CO₂/kWh (SEAI 2021⁴), which is considered significant. To put this in context, greenhouse gas emissions from the entire energy sector in 2021 were just over 10 million tonnes of CO₂ equivalent (EPA, 2022⁵).

At a national level the direct and indirect effects of the activity on climate must be considered in the context of the wider electricity supply system. The generators will be used to provide capacity only in the event of a shortfall when renewable or other conventional generation is not available, or during testing. While there are national targets (as discussed above) and sectoral targets for the electricity sector the electricity

² Climate Action Plan 2023, Changing Ireland for the Better.

³ Ireland's Provisional Greenhouse Gas Emissions 1990-2021 (EPA, 2022). (https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Ireland%27s-Provisional-GHG-Emissions-1990-2021_July-2022v3.pdf).

⁴ [Conversion Factors | SEAI Statistics | SEAI](#) (SEAI, 2022).

⁵ Ireland's Provisional Greenhouse Gas Emissions 1990-2021 (EPA, 2022). (https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Ireland%27s-Provisional-GHG-Emissions-1990-2021_July-2022v3.pdf).

market also plays a role in achieving these through the incentivisation of renewable energy and decarbonisation of the sector in accordance with the Climate Action Plan.

The Government Statement on the Role of Data Centres in Ireland’s Enterprise Strategy recognises data centres as core digital infrastructure for both Ireland’s and Europe’s digital economies and for strengthening Ireland’s position as a strategic international location for IT services. Government policy seeks to facilitate the ‘twin transitions’ of digitalisation and decarbonisation of our economy and society, and the RD has regard to the principles set out in the statement, in particular in relation to decarbonisation and energy efficiency. Condition 7 of the RD would further support National policy to reduce the emissions from the energy sector by requiring the applicant to carry out a feasibility study of opportunities to increase the use of solar power, sustainable biofuels and other renewable energy options including energy storage. The Energy Efficiency Directive 2012/27 (EED) mandates that large organisations complete energy audits. The SEAI manages and oversees compliance with Ireland’s obligations under Article 8 of the EED. However, Condition 7 of the RD requires the applicant to carry out an audit of energy use and the energy efficiency of the site within one year of the date of grant of this licence and repeat the audit at intervals as required by the Agency.

9. Prevention of Accidents

A certain amount of accident risk is associated with the licensable activity. Table 9 specifies the risks and associated safety measures relevant to this installation.

Table 9. Potential accidents & measures for prevention/limitation of consequences	
Potential for an accident or hazardous/ emergency situation to arise from activities at the installation.	<ul style="list-style-type: none"> • Potential for fire due to large quantities of diesel stored at the installation, leading to potential for emissions to air, water and/or soil and ground water. • Spillages/leaks due to accidents on-site. • Spills/leaks of oil or gas oil during storage, use or delivery. • Malfunction of the plant including generators, AHUs, etc., leading to the potential for fuel spills, or exceedances of the noise limits. • Failure of the hydrocarbon interceptors leading to discharges 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.	<ul style="list-style-type: none"> • Provision and maintenance of adequate bunding. Inspection system to detect leaks in over ground pipes carrying materials other than water. Testing of the integrity and water tightness of all tanks, bunding structures and containers every three years. • All diesel storage tanks are fitted with high/low level alarms which alarm to a central alarm system. • Fuel delivery will take place within the designated unloading areas under a Standard Operating Procedure (SOP). The refuelling process SOP has been submitted in support of the application. • Operation and maintenance of plant and equipment carried out in line with manufacturer’s recommendations.

Table 9. Potential accidents & measures for prevention/limitation of consequences	
	<ul style="list-style-type: none"> • Provision of spill kits and firefighting equipment. • The drainage sumps at the fuel unloading bays and in the bulk tank concrete bunds contain hydrocarbon detectors which automatically shutoff drainage from these sumps if diesel is detected in the sump. • Drainage from the diesel tank farm and transformer areas are equipped with a Class 1 full retention hydrocarbon interceptor. • All interceptors at the installation are equipped with an oil warning system which is connected to the central critical alarm system.
Additional measures provided for in the RD	<ul style="list-style-type: none"> • 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.

The installation is not a Seveso site as the only substance which would be controlled under the Seveso Regulations is diesel. The total amount of diesel stored at the installation will be 375 tonnes. Under the COMAH Directive (2012/18/EU) the quantity of diesel which qualifies a given site for the application of lower-tier and upper-tier requirements is 2,500 tonnes and 25,000 tonnes respectively. Therefore, the quantity of diesel stored at the site does not exceed the thresholds of the COMAH Directive.

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. These measures are listed in Attachment 9-2-3 of the application form. 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). The report states that the site has previously been used for commercial and industrial uses, prior to the construction of the original buildings. The lands in the southern section of the installation were formerly occupied by Powers Wholesale and Distribution and subsequently by a supermarket distribution centre from c. 1979. The centre of the installation was occupied by a pet supplies wholesaler, PBS sales, from c. 1979. The northern part of the site was occupied by Shinko Microprocessors from c. 1984. The applicant began developing the installation in 2011 in the southern part of the site. Further development took place in 2015 and 2018.

There was a known loss of diesel from underground pipework associated with a diesel header tank in the southern section of the site in 1998, which impacted the River Poddle. Stormwater from the site flows to the Tymon River, a tributary of the River Poddle. Remediation works, including installation of a sump to recover hydrocarbons and the removal of the underground pipework and an underground storage tank, were undertaken in response to this incident. No other bulk chemical usage is anticipated to have occurred.

The report refers to data from a 2008 site investigation (*'Disinvestment Site Assessment Tesco Distribution Warehouse, Greenhills Road, Tallaght, Dublin. For Tesco Ireland Ltd., Delta Simons Environmental Consultants 14th August 2008'*) on the southern section of the site. The soil and groundwater data indicated that, while there was localised hydrocarbon contamination, the site was deemed suitable for continued commercial use without further remediation.

A site investigation was carried out on the mid-section of the site in 2014 to assess geotechnical ground conditions. No visual or olfactory evidence of contamination was encountered.

No site investigation information is available for the northern component of the site.

The aquifer beneath the site, which is part of the Dublin groundwater body, is a locally important bedrock aquifer. For the purposes of the WFD, the groundwater body is classified as 'good', with a risk status of 'under review'.

There are no surface water bodies on or along the installation boundary. Stormwater and evaporative cooling water from the installation is discharged to the onsite attenuation basins prior to discharging to an existing water drainage network via a Class 1 by-pass hydrocarbon interceptor and flow control equipment. The stormwater is ultimately discharged to the Tymon River, which runs approximately 200 m south of the site. The Tymon river in turn discharges to the River Poddle.

The activity will have one relevant hazardous substance – bulk storage of diesel, which will be stored and managed within a bunded area which will be subject to routine integrity testing and fitted with a high-level alarm. Considering the quantity of hazardous substances and the measures to be taken to prevent accidents and incidents the possibility of soil and groundwater contamination from the activity is considered to be low.

In order to reduce the risk, the RD includes the following requirements:

- Appropriate bunding for tanks and drum storage areas, with routine integrity testing.

- Waste and hazardous materials are to be stored in designated areas and protected as may be appropriate against spillage and runoff.

Furthermore, and in accordance with the requirements of the IED, the RD requires monitoring for hazardous substances every five years for groundwater and every ten years for soil.

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 EPA Act, 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, that the applicant can be deemed a Fit & Proper Person for the purpose of this application.

12. Submissions

There was one submission made on this application.

While the main points raised in the submission are briefly summarised in the table below, the original submission should be referred to at all times for greater detail and expansion of particular points.

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 Recommended Determination (RD).

Name & Position: Ms. Angela Deegan	Organisation: Not Here Not Anywhere	Date received: 17 April 2023
Issues raised:		
<ol style="list-style-type: none"> 1. No information is provided on the quantity of non-renewable electricity that will be generated from the generators (Attachment 4.6.1 of the application). 2. That the development of new fossil fuel infrastructure is not consistent with national climate targets commitments and targets regarding the reduction of fossil fuel use and on this basis the licence application should be refused. 		

3. The submission additionally states that there is a lack of transparency about the type of data stored at the installation and submits that much data that energy should be conserved by prioritising data that is "business critical" over that which is not.
4. The submission states that the applicant should be required to power the installation with renewable forms of energy from either on or off-site sources in addition to having reliable energy storage.

Agency Response:

1. During normal operations the installation will be supplied electricity from the national grid. Non-renewable power generation from the generators will only occur onsite in the event of an interruption in the power supply to the installation from the national grid.
2. During normal operations, the installation is supplied by electricity from the national grid. Government policy in relation to the reduction in greenhouse gas emissions for the electricity sector applies to electricity supplied to the installation via the grid connection.

CO₂ emissions from the diesel generators are operated under a greenhouse gas Emissions Permit in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012, (S.I. 490 of 2012 and amendments). A GHG permit, requires the operator to report each year all CO₂ emitted from the operation of the generators 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 is controlled at EU level and is reducing each year in order to ensure that overall emissions from the Emissions Trading System (ETS) sector meet the EU targets on reducing greenhouse gas emissions. It should further be noted that the RD restricts the operation of the generators to no more than 72 hours per year.

3. The nature and management of energy used to store data is outside the scope of the licence.
4. The Recommended Determination (Condition 7) requires the licensee to examine the use of renewable forms of energy and to decrease or offset the use of fossil-fuel based energy at the installation.

13. Consultations

13.1 Cross Office Consultation

I consulted with the office of Environmental Enforcement in relation to the financial charges.

13.2 Transboundary Consultations

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

14. Appropriate Assessment

Appendix 2 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 Glenasmole Valley SAC (Site Code: 001209), Wicklow Mountains SAC (Site Code: 002122), Wicklow Mountains SPA (Site Code: 004040), South Dublin Bay SAC (Site Code: 000210), South Dublin Bay and River Tolka Estuary SPA (Site Code: 004024), North Dublin Bay SAC (Site Code: 000206), 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 has been made in light of the following reasons:

- The installation is located in an industrial estate and is not within a European site.
- European Sites and their qualifying interests are considered to be outside of the zone of influence of air and noise emissions arising at the installation with the closest European Site being approximately 4kms away (Glenasmole Valley SAC). Emissions to air consist of combustion emissions from the 46 diesel powered back-up generators and diesel powered emergency back-up fire pumps and fuel vapour emissions from the diesel tank emergency breather vents.
- In addition to stormwater runoff from building roofs, yards and the road network, there is an emission to surface water of residual cooling water (recirculated mains water) associated with the evaporative cooling process in the Air Handling Units. There is a hydrological connection to the European sites at Dublin Bay. The existing storm water outfall (combined attenuated stormwater) flows into the Tymon River and then the Poddle (Water Framework Directive Code: IE_EA_09P030800) which ultimately connects to the River Liffey and Dublin Bay >15 kms downstream of the installation. Taking into account the nature of these emissions and the distance downstream it is considered that these emissions will not have a significant effect on European Sites at Dublin Bay.
- Emissions to sewer (other than sanitary effluent) consist of surface water drainage from the diesel tank farm, associated fuel unloading bays and the transformer compounds. This effluent is discharged to sewer and ultimately treated in the EPA licensed Ringsend WWTP (Register Number D0034-01) which is designed to provide secondary treatment with a plant capacity of approximately 1,640,000 population equivalent which is currently exceeded at the plant. Treated effluent from the Ringsend WWTP is discharged to the Liffey Estuary Lower. According to EPA Maps, the Transitional Waterbody Water Framework Directive (WFD) Status 2016-2021 for Liffey Estuary Lower is Moderate. The Coastal Waterbody WFD Status 2016-2021 for Dublin Bay is Good. Taking into account the nature of the installation's discharge to sewer, it is considered that it will not have a significant effect on European Sites in the vicinity of the WWTP Discharge in Dublin Bay.
- There are no direct process emissions to ground or groundwater from the installation.

- Given the nature and scale of emissions, it is considered that the activity in combination with other plans or projects will not have a significant effect on European Sites.

15. EPA Charges

The annual enforcement charge recommended in the RD is €5,446 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. 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 Agency shall perform its functions in a manner consistent with Section 15 of the Climate Action and Low Carbon Development Act 2015 as amended.

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, and has regard to the AA Screening and EIA Screening. The assessment is consistent with Section 15 of the Climate Action and Low Carbon Development Act 2015 as amended. The RD gives effect to the requirements of the EPA Act and has regard to submissions made.

This report was prepared by Jim Johnson, Niamh Connolly, Philip Stack and Rachel Neeson.

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

Signed



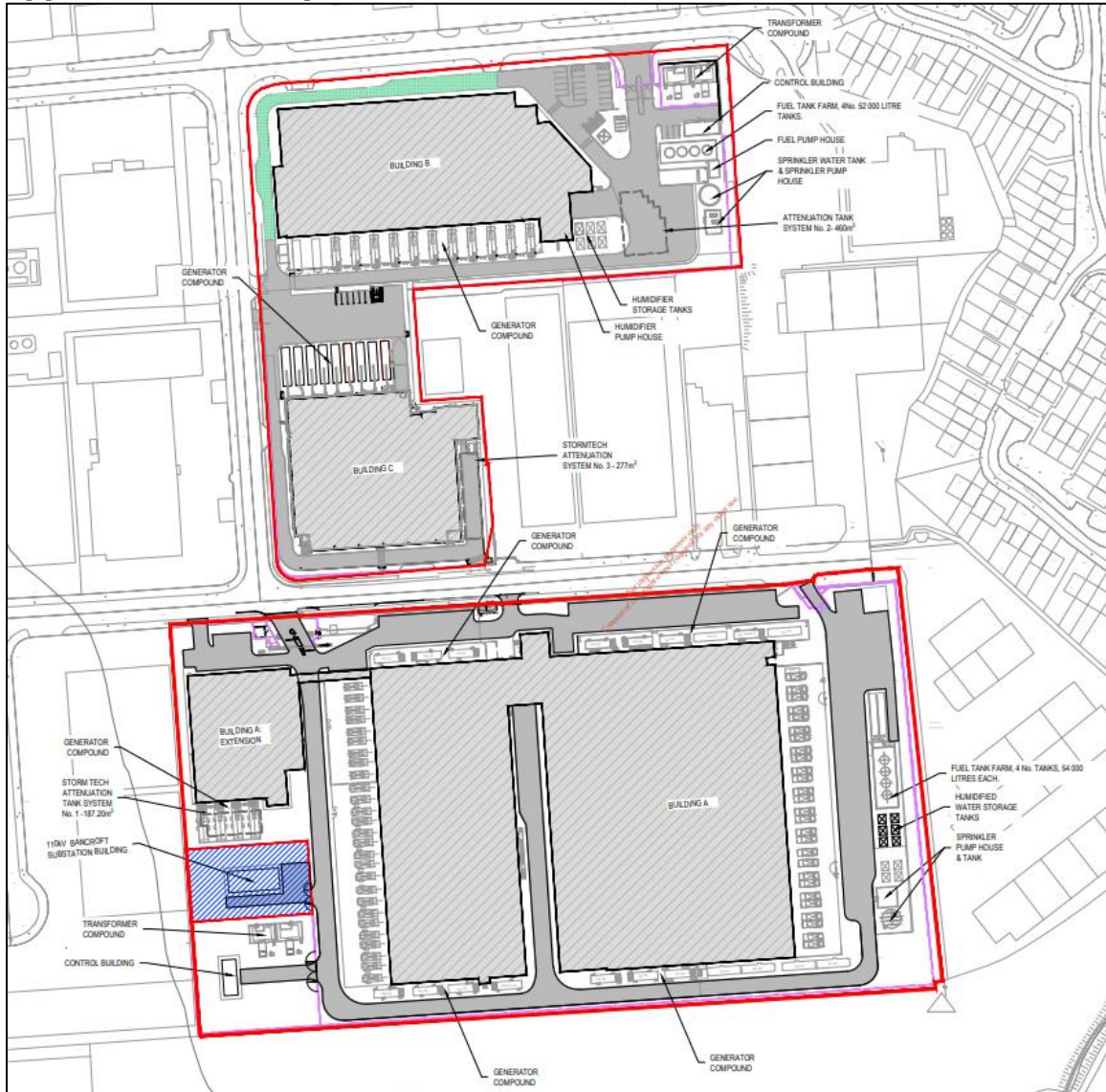
Jim Johnson

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 EPA Act, as soon as may be after the expiration of the appropriate period.

Appendices

Appendix 1: Site Layout



Detail from the drawing titled 'Site Layout Plan', submitted as part of the licence application on 26 March 2022.

Appendix 2: List of European Sites assessed, their associated qualifying interests and conservation objectives.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
001209	Glenasmole Valley SAC	<p>Habitats 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7220 Petrifying springs with tufa formation (Cratoneurion)*</p>	<p>NPWS (2021) Conservation Objectives: Glenasmole Valley SAC 001209. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.</p>
002122	Wicklow Mountains SAC	<p>Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with Erica tetralix 4030 European dry heaths 4060 Alpine and Boreal heaths 6130 Calaminarian grasslands of the Violetalia calaminariae 6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)* 7130 Blanket bogs (* if active bog) 8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) 8210 Calcareous rocky slopes with chasmophytic vegetation 8220 Siliceous rocky slopes with chasmophytic vegetation 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>Species 1355 Otter (<i>Lutra lutra</i>)</p>	<p>NPWS (2017) Conservation Objectives: Wicklow Mountains SAC 002122. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>
000210	South Dublin Bay SAC	<p>Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines</p>	<p>NPWS (2013) Conservation Objectives: South Dublin Bay SAC</p>

		1310 Salicornia and other annuals colonising mud and sand 2110 Embryonic shifting dunes	000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
000206	North Dublin Bay SAC	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>Glaucopuccinellietalia maritima</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.
004040	Wicklow Mountains SPA	Birds A098 Merlin (<i>Falco columbarius</i>) A103 Peregrine (<i>Falco peregrinus</i>)	NPWS (2022) Conservation objectives for Wicklow Mountains SPA [004040]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.
004024	South Dublin Bay and River Tolka Estuary SPA	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>)	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.

		<p>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</p>	
004006	North Bull Island SPA	<p>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</p>	<p>NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>

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)
Waste Framework Directive (2008/98/EC)
Dangerous Substances Directive (2006/11/EC)
Medium Combustion Plant Directive (EU) 2015/2193
Air Quality Directives (2008/50/EC and 2004/107/EC)
Energy Efficiency Directive (2018/2002/EU)
Environmental Liability Directive (2004/35/CE)
EU Directive 199/32/EC (Relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC)