

This Report has been cleared for submission to the Director by Senior Inspector, David Matthews

Signed: |

David Matthews

Date: 26/05/2023



**OFFICE OF ENVIRONMENTAL
SUSTAINABILITY**

**INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE
APPLICATION, LICENCE REGISTER NUMBER P1191-01**

TO: GERARD O'LEARY, DIRECTOR

FROM: JIM JOHNSON

DATE: 26 MAY 2023

Applicant:	Microsoft Ireland Operations Limited
CRO number:	256796
Location/address:	Microsoft Dublin Data Center Campus, Unit 74-76 Grange Castle Business Park, Nangor Road, Clondalkin, Dublin
Application date:	16 December 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.
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
Main BREF document/CID/BAT Note:	Not applicable
All relevant BREF documents are listed in Section 5 of this report.	
Activity description/background: Data centre with combustion plant (95 diesel generators) to provide power in the event of a loss or reduction in electricity supply from the grid.	
Additional information received:	Yes (16 March 2023, 23 March 2023, 24 March 2023, 18 May 2023)
No of submissions received:	1
Environmental Impact Assessment required: Yes	Stage 2 Appropriate Assessment required: No
Environmental Impact Statement (EIS) submitted: Yes 16-Dec-2022	
Site visit: N/A	Site notice check: 27 December 2022

1 Introduction

Microsoft Operations Ireland Limited, hereafter referred to as Microsoft or the applicant, currently operate a data storage facility on a 30 hectare site in Grange Castle South Business Park, Nangor Rd., Clondalkin, Co. Dublin.

The data storage facility includes 7 no. data storage installation buildings (DUB 6, 7, 8, 9, 10, 12 and 13) and serves as a centralised computer server system consisting of data halls which host, manage and distribute electronic data. The installation operates 24 hours a day, 7 days a week. There are approximately 400 personnel employed at the installation. The installation has been constructed and developed in a number of phases — DUB 6 in 2014, DUB 7 and 8 from 2016 and DUB 9, 10, 12 and 13 in the period between 2018 and 2022 (approximately).

Power for the installation is provided via a connection to the national electricity grid. In the event of loss or reduction of power supply, the installation is powered by 95 diesel generators. The combined capacity of these generators exceeds the 50 MW_{th} threshold of Class 2.1 First Schedule of the EPA Act 1992, as amended and therefore the applicant has applied to the Agency for an Industrial Emissions Licence.

The site comprises lands directly north of the New Nangor Road (R134) within the Grange Castle International Business Park, Clondalkin, Co Dublin and is located in the central and eastern part of the larger Microsoft Ireland data centre campus (Figure 1.1).

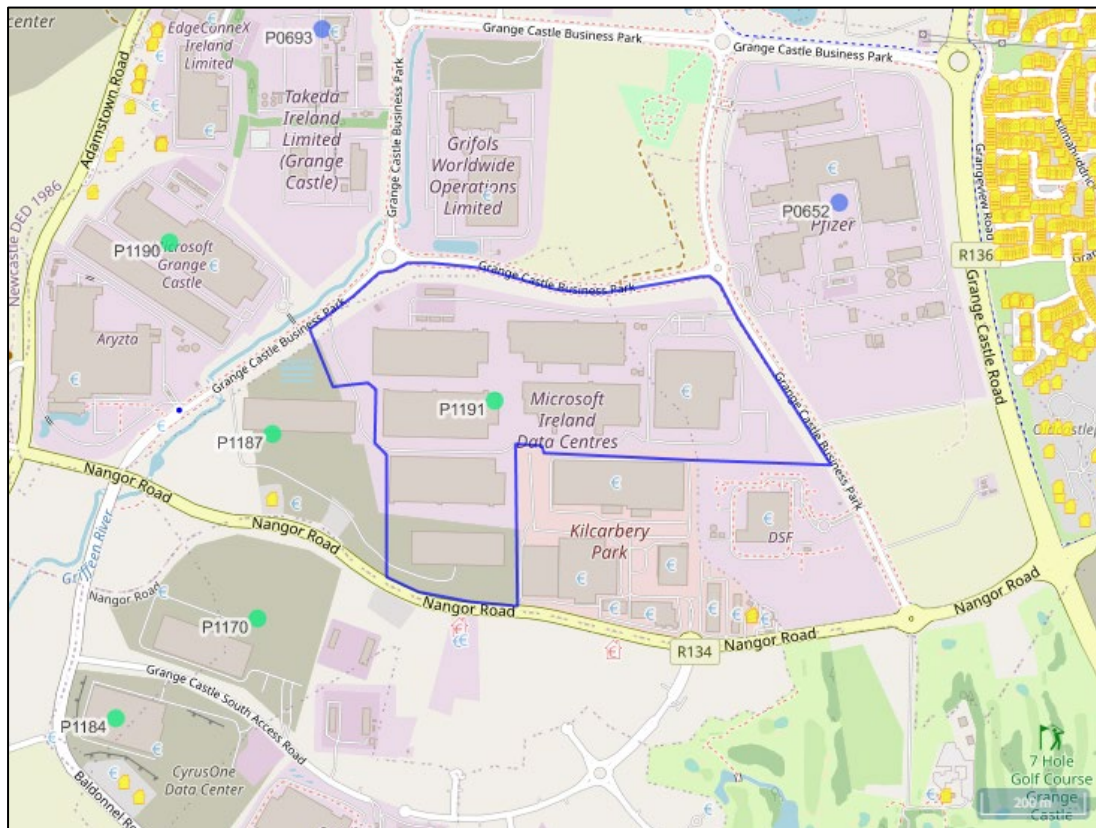


Figure 1.1: Location of the applicant's site relative to the closest sensitive receptors and other industrial sites. Buildings identified by yellow icons are residential.

2 Description of activity

The 7 no. data storage buildings at the installation include data halls, IT and technical hardware, administration blocks, mechanical and electrical spaces, air handling units and ancilliary spaces.

There are 95 diesel generators and associated sub-station infrastructure. The generators are medium combustion plant and range in capacity from 1.29 to 7.51 MW_{th} (mega watt thermal input). The total capacity is 579.28 MW_{th}. The generators are tested on an individual basis once per month. There are also 2 fire pumps powered by 2 engines (0.5MW_{th}) and a sprinkler tank. The purpose of the generators is to provide power to the data storage installation in the event of an interruption of the National Grid power supply to the installation. There are no plans to export electricity to the National Grid.

Diesel is supplied to the generators from double-skinned belly tanks which sit underneath the generators. The generators are contained in a containerised housing that has retention bunding in the base and a leak detection system to detect leaks from the fuel tank or lubricating oil tank. The generators are located on a yard of impermeable concrete that drains to a Class I oil interceptor.

Air handling units provide conditioned air to the data centre buildings in order to maintain their temperature and relative humidity. Ambient air is drawn in and passed across the IT servers located in the data halls. This air is then either recirculated or exhausted to atmosphere. During periods of hot weather (<5% of the year), air is cooled by passing it through media pads saturated with mains water (evaporative cooling). Mains water left over from this process is discharged to the storm water system. Mains water is also flushed through the system every 3 days to mitigate against legionella.

Emissions from the installation include noise, emissions to air and storm water discharges (including some evaporative cooling water).

3 Planning Status

A number of planning applications have been made by the applicant for the area within the installation boundary. Details of the relevant planning applications and permissions have been provided in the licence application form. Relevant planning permissions for the activity granted by South Dublin County Council include: SD13A/0143, SD13A/0265, SD14A/0194, SD15A/0343, SD16A/0088 and SD21A/0288.

The applicant has submitted five Environmental Impact Statements (EIS's) associated with planning permissions. The first EIS related to the activity (dated July 2013) was associated with planning ref: 13A/0143. Updated versions of the EIS (dated December 2013 and September 2014) were submitted to the Planning Authority as part of SD13A/0265 and SD14A/0194 respectively. Subsequently there was an EIS (dated November 2015) associated with SD15A/0343 and an EIS (dated March 2016) associated with SD16A/0088.

The Agency has had regard to the reasoned conclusions reached by the planning authority in undertaking its environmental impact assessment of the activity.

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 likely to have a significant effect on the environment, and accordingly is carrying out an assessment for the purposes of EIA.

The activity exceeds the following threshold in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended: *10(a) Industrial estate development projects, where the area would exceed 15 hectares.*

Five Environmental Impact Statements (EISs), as referred to above, were submitted to the Agency as part of the licence application on 16 December 2022. This is dealt with in the EIA Section later in this report.

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 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 form, 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 channelled emissions points are from 95 diesel generators with a rated thermal input capacity ranging from 1.29 to 7.51 MW_{th}. These are used in the event of a loss of or reduction in power supply to the data storage buildings. Most of the generators provide power to the data halls, with a number of generators for administrative buildings also present (Table 6.1). The total capacity of the generators is 579.28 MW_{th}.

Table 6.1 Main channelled emissions to air

Data hall	Generator Description	No.	Stack height above ground level (m)
DUB 6	Data hall	15	25
DUB 7	Data hall	15	25
	Admin	1	25
DUB 8	Data hall	15	25
	Admin	1	25
DUB 9	Data hall	12	25
	Admin	1	25
DUB 10	Data hall	12	24
	Admin	1	24
DUB 12	Data hall	12	23.3
	Admin	1	23.25
DUB 13	Data hall	8	25
	Admin	1	25
Total		95	

There are other emission points to air at the installation (e.g., diesel fire pumps) which, due to their emission characteristics, are not considered environmentally significant. These are regarded as minor emissions and not considered as part of this impact assessment.

Each of the generators is a Medium Combustion Plant (MCP). The diesel generators are operated for a limited number of hours. 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 at the installation.

The generators have emissions of NO_x, CO, SO₂, and particulate matter. As part of the application, air dispersion modelling was carried out by the applicant to assess the impact on ambient air quality from these emissions. Modelling of Nitrogen oxides as NO₂ was undertaken in detail. However, no detailed modelling for the other pollutants including CO, SO₂, PM₁₀ and PM_{2.5} was undertaken, given that emissions of these pollutants are significantly lower than NO₂ 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 1.5 km south 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 16 µg/m³ was considered representative of the annual average ambient background for NO₂ based on EPA monitoring data from the air monitor at Swords. A short-term (hourly) background of twice the annual (i.e. 32 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).

Two scenarios were modelled – emissions from the installation alone, and a cumulative scenario that included emissions from licensed installations and other data centres in the area.

Emissions from the installation consist of emissions from generator testing and operation as follows:

- Sequential testing of each generator 1 hour per week at 100% loading
- Operation of data hall generators for 200 hours per year and admin generators for 100 hours per year.

Emissions from generator operation were modelled as an average hourly emission rate rather than the maximum rate, which is in line Agency guidance on modelling of emissions from generators. The maximum hourly emission rate from the generators was multiplied by a factor $\frac{200}{8760}$ ($\frac{100}{8760}$ for admin generators), and modelled as continuous emissions over a full year.

The table below 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 – generator operation and scheduled testing

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 (2017)	32	58	90	45%	200
	Annual (2017)	16	11	27	68%	40

For the ambient 1-hour limit value (99.8%ile), the maximum predicted environmental NO₂ concentration was 45% of the standard. For the annual mean, emissions from the installation accounted for 68% of the standard at the worst off-site location.

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

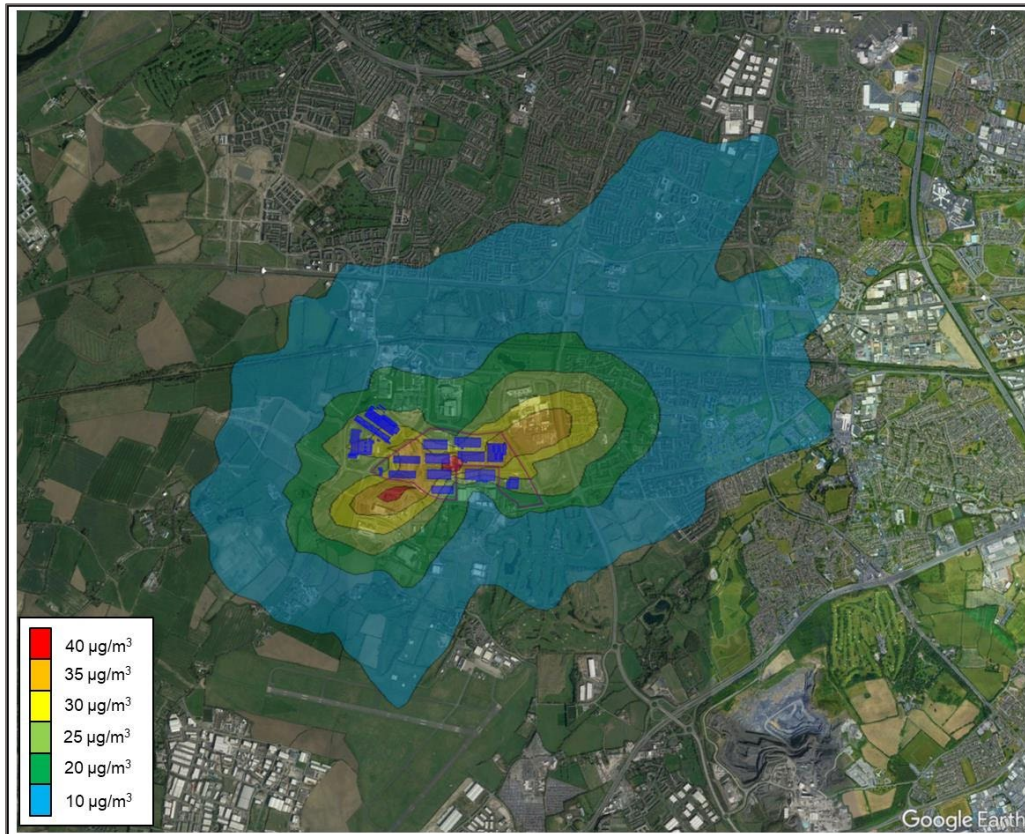


Figure 6.1: Maximum 1-hour NO_2 concentration (process contribution) for the worst-case year (2017). [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, December 2022]



Figure 6.2: Maximum annual average NO_2 concentration (process contribution) for the worst-case year (2017). [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, December 2022]

The results indicate that the predicted ambient concentrations are within the relevant air quality standards. In both cases, the highest concentrations occur close to the boundary of the site and decrease with distance from the installation. The modelling approach can be regarded as conservative as it includes a number of assumptions e.g. that testing is carried out once a week for an hour – in practice the generators are just tested once a month.

Cumulative Assessment

A cumulative air dispersion modelling assessment was carried out to assess the impact of emissions from the installation and licensed installations and other data storage facilities in the area (Figure 6.3). Details of data storage facilities were obtained from planning permission applications:

- IED licensed sites:
 - Pfizer (P0652-01)
 - Takeda Ireland Limited (P0693-02)
 - Grange Backup Power (P1033-01)
- Data storage facilities (licence application registration numbers):
 - Amazon Data Services Ireland Limited (ADSIL) (P1170-01, P1184-01)
 - Google Ireland Limited (P1189-01)
 - Microsoft Ireland Operations Limited (P1187-01, P1190-01)
 - Data and Power Hub Services Limited (P1165-01) (Echelon)
 - Vantage Data Centres Dub 11 Ltd
 - Interxion
 - Edgeconnex
 - Digital Reality Trust
 - Greener Ideas Limited

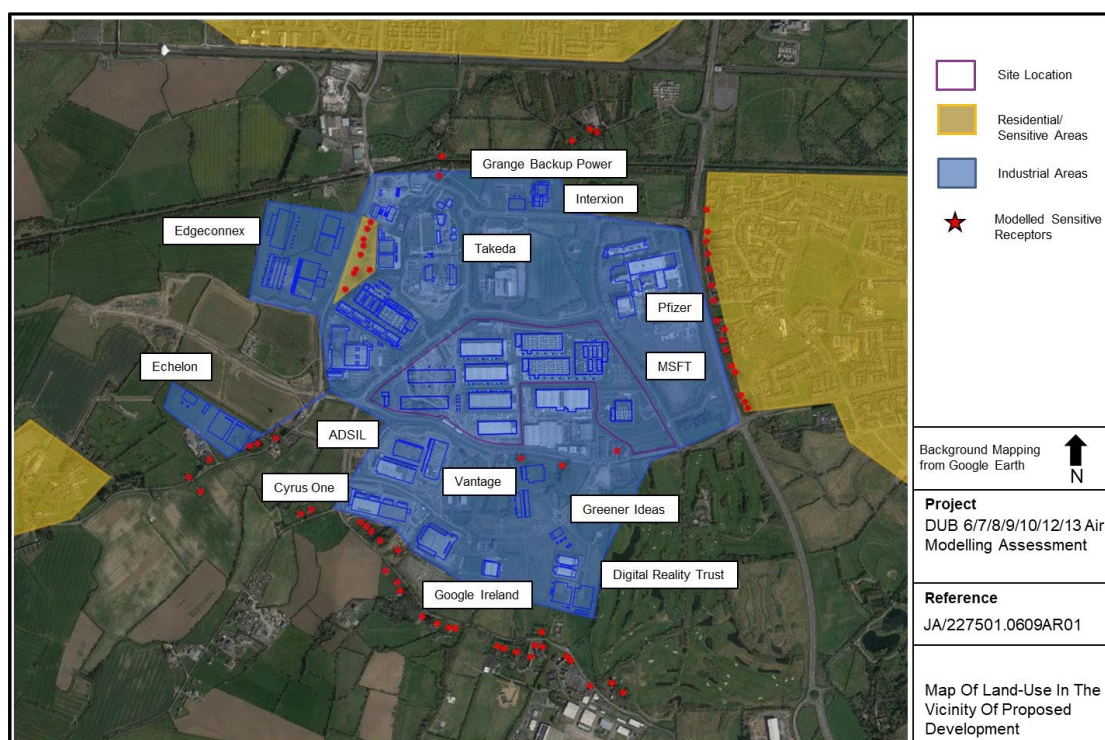


Figure 6.3: Installations and data storage sites in the vicinity of the subject site [Adapted from Attachment-7-1-3-2-Air Emissions Impact Assessment, December 2022]

The following assumptions were made for the cumulative assessment for the sources at other installations:

- The modelling included emissions from testing of generators at other data storage facilities and didn't include emissions from continuous operation of these generators;
- Emissions from IED licensed facilities at Takeda and Pfizer were assumed to be continuous, i.e. 24 hours a day, 365 days a year;
- Natural gas fired combustion plant were assumed to operate 24 hours per day, 365 days per year; and
- Scheduled testing of generators once per week or once per month; however, the testing regimes for third party generators was not known and is subject to variation.

The table below gives details of the predicted impact of the proposed main channelled emissions to air under the cumulative assessment. The results presented are for the worst case location outside the installation boundary and worst case year.

Table 6.3 Dispersion Model Results – cumulative assessment

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 (2020)	32	133	165	82%	200
	Annual (2017)	16	24	40	100%	40

For the ambient 1-hour limit value (99.8%ile), the maximum predicted environmental NO_2 concentration was 82% of the standard. For the annual mean, emissions from the installation accounted for 100% of the standard at the worst off-site location.

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

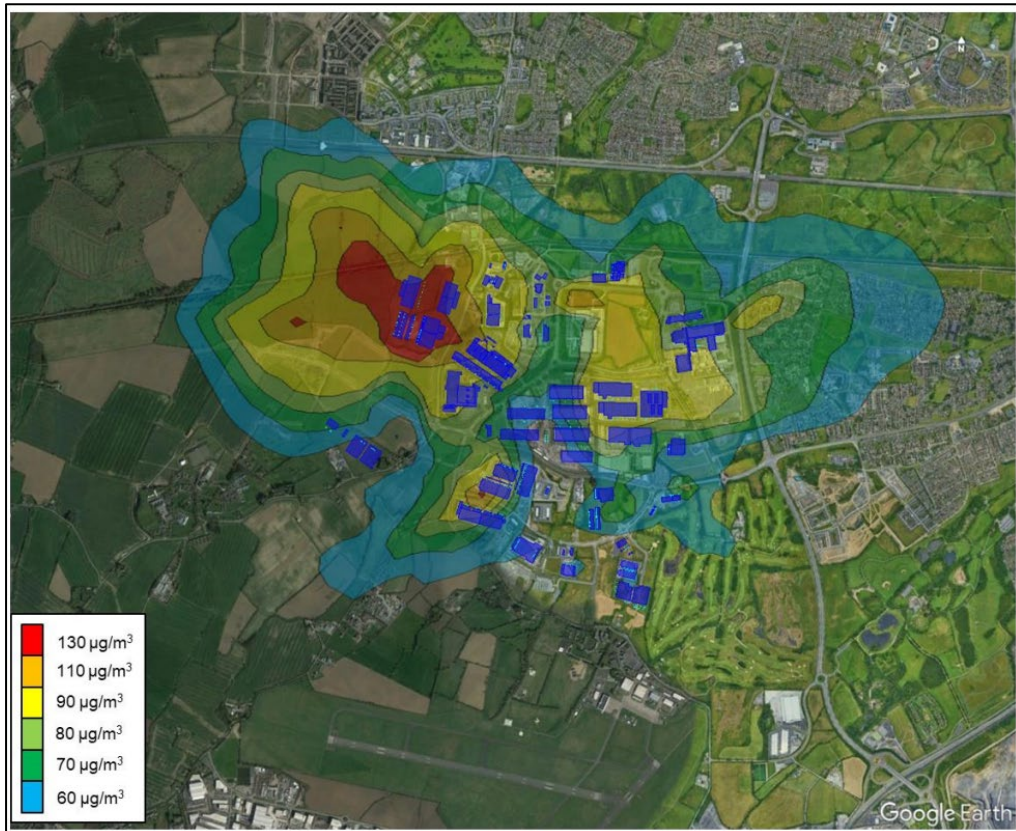


Figure 6.4 Cumulative Assessment - Maximum 1-Hour NO₂ Concentrations (as 99.8th%ile) (µg/m³) 2020 (excluding background concentrations) [From Attachment-7-1-3-2-Air Emissions Impact Assessment, December 2022]



Figure 6.5 Cumulative Assessment - Annual Mean NO₂ Concentrations (µg/m³) 2017 (excluding background concentrations) [From Attachment-7-1-3-2-Air Emissions Impact Assessment, December 2022]

Emissions under this scenario lead to an ambient NO₂ concentration that is 82% of the ambient 1-hour limit value (measured as a 99.8th percentile) and 100% of the ambient annual mean limit value at the worst case offsite receptor for the worst case year. In both cases (annual mean, 1-hour), the highest predicted concentrations occur near another data storage facility to the northwest of the Microsoft installation.

By comparing the impact of the Microsoft installation (Figures 6.1 and 6.2) with the cumulative impacts (Figures 6.4 and 6.5) it can be seen that the contribution of the Microsoft installation to the cumulative impacts is not significant. For the 1-hour limit, the Microsoft installation contributes approximately 20 µg/m³ to the area in red in Figure 6.5 above which represents 15% of the process contribution (133 µg/m³) and 10% of the air quality standard of 200 µg/m³. For the annual mean cumulative NO₂ concentration, the worst case predicted impact of emissions from the Microsoft installation does not overlap with the area in red in Figure 6.5.

Assessment of impacts on ecosystems

Grand Canal proposed Natural Heritage Area (pNHA) is approximately 650 m to the north. Air dispersion modelling indicates that at the worst case location, the installation could contribute approximately 2 µg/Nm³ NO₂ (Figure 6.2), which equates to 7% of the annual limit value of 30 µg/m³ for NO_x (NO+NO₂), which is specified within EU Directive 2008/50/EC for the protection of ecosystems. The cumulative assessment indicates a predicted concentration of approximately 18 µg/m³ NO₂ at the pNHA.

In terms of nitrogen deposition, the installation alone would contribute less than 0.5 kg/N/ha/year to the load at Grand Canal pNHA. Given that the threshold for impact of habitats at the site would be in the range 10-20 kg/N/ha/year, the contribution from the installation is not significant.

The nearest European Site (Rye Water Valley/Carlton SAC [001398]) is 5 km away. A Screening for Appropriate Assessment was carried out, refer to the Appropriate Assessment section of this report (Section 14).

Recommendation

Notwithstanding the above, given the number and proximity of the generators in the Grange Caste area, particularly across several data storage facilities, there is a potential for an exceedance of both the short- and long-term air quality standards if the generators across several of the data storage facilities are operating simultaneously.

In order to address the potential for an exceedance of both the short- and long-term NO₂ emissions, the Recommended Determination (RD) includes a number of conditions in order to reduce and mitigate the potential impact of channelled emissions to air:

- The RD limits the operation of generators to 200 hours per year, and admin generators to 100 hours per year, with no more than 579.28 MW_{th} operating simultaneously (Schedule A).
- If one or more of the generators is unavailable due to maintenance, then under Schedule A, the applicant 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.
- The RD also restricts the testing of the generators to a maximum of 1 hour each per week, sequentially (Schedule A).

- The hourly restriction in Schedule A is based on an assessment of the generators operating at 100% load. Condition 3.18 allows for an alternative plant loading/hour restriction to be proposed by the applicant, subject to approval by the Agency, such that the mass emission of NO_x is limited to that which was modelled.
- The applicant is required to establish an Ambient Air Quality Monitoring Programme. As part of the ambient air monitoring programme, the applicant will establish trigger levels for relevant monitoring parameters at the monitoring locations. The air dispersion modelling shows the spatial distribution of ambient air concentrations due to emissions from the activity. Based on this data, trigger levels at monitoring points can be used to demonstrate compliance with Air Quality Standards beyond the installation boundary (Condition 3). The condition also requires a response programme containing actions to be taken in the event of an exceedance of trigger levels.
- Condition 2 of the RD requires the applicant to evaluate options for reducing emissions and improving dispersion of emissions from generators during testing, maintenance and operation.
- Schedule C requires the applicant to carry out monitoring of emissions in line with the Medium Combustion Plant Regulations.
- Condition 11 requires the applicant 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 process emissions to surface waters from the installation, other than the evaporative cooling water which is discharged to the storm water drainage network.

6.2.2 Emissions to Sewer

Foul effluent from the data storage installation is discharged to the public foul sewer. The foul sewer from the Grange Castle South Business Park discharges to a regional pumping station before discharging to the Ringsend Municipal Wastewater Treatment Plant (DL0034-01) for treatment.

There is no process effluent discharged to the sewer network on site (domestic foul only). No monitoring of the overall sewer discharge is proposed.

6.3 Storm Water Discharges

Storm water discharges consists of storm water from roofs and hardstanding areas as well as water from the evaporative cooling system.

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, which typically occurs for approximately 5% of the year, incoming air is passed through

media pads saturated with water. Water used for cooling is recirculated in a closed loop system. Residual water is discharged every 72 hours (assuming no requirement for cooling water in the interim) and or where conductivity exceeds 1,000 µs/cm. Under normal operating conditions, the evaporative cooling water is retained in the attenuation tanks and then discharged when there is dilution in the storm water drain. The applicant proposes to use harvested rainwater in the cooling system from 2024 using a water treatment plant on site.

Due to the properties of the evaporative cooling water at peak weather conditions and the dilution in the storm water drainage system, it is considered that the concentration of salts in the storm water discharges from the site is insignificant. The evaporative cooling system is required very infrequently; however, water used within the system at DUB 6, 7, 8, 9, 10, 12 and 13 is flushed from the system periodically to mitigate against legionella risks.

The table below gives details on the installation's storm water discharges to waters.

Table 6.4 Storm water Discharge Point Details

Emission Reference	Drainage areas	Discharging to
SW1	DUB 6, 7 and 8	<i>Griffeen River via Grange Castle Business Park stormwater drainage system and attenuation pond</i>
SW2	Roof of DUB 6	
SW3	Car park east of DUB 6	
SW4	Onsite substation	<i>Griffeen River via a public storm water drain</i>
SW5	Roof of DUB 9	
SW6	DUB 9, 10	
SW7	Roof of DUB 10	<i>Rainwater harvesting system in P1187 and ultimately to Griffeen River via P1187 stormwater drainage system.</i>
SW8	DUB 12, 13	<i>Griffeen River via P1187 stormwater drainage system.</i>

SW1 to SW6 discharge from the site to the Griffeen River (IE_EA_09L012100), and ultimately to the River Liffey and Dublin Bay. Prior to discharge, storm water passes through oil interceptors fitted with oil sensors and control valves linked to the building management system (BMS) which can be activated centrally.

SW7 and SW8 drain to the storm water drainage system in the installation to the west, which is also under the control of the applicant and subject to a licence application (Reg. No. P1187-01). Both SW7 and SW8 have emission monitoring points at the boundary of the P1191-01 installation, prior to entering the P1187-01 installation. Surface water drainage passes through an oil interceptor prior to the discharge point at SW8.

A series of control valves are in place across the site to isolate the storm water network in the event of a fire or major spill. Potentially contaminated storm water (e.g., in the event of a fire) that enters the storm water attenuation tanks and system is tested prior to discharge to the off-site storm water network (River Griffeen). Any storm water of unacceptable quality is pumped out of the attenuation tanks and system and disposed of appropriately.

The rate of discharge to the Griffeen River is controlled either through attenuation tanks on site or the Grange Castle storm water pond. A rainwater harvesting system is already in place at DUB 9, 10, 12 and 13 to permit water reuse in future.

The RD includes a number of conditions in relation to storm water as follows:

- Schedule C of the RD requires that the storm water discharge is visually inspected daily, and monitored weekly for temperature, conductivity, total organic carbon (TOC) and pH, as well as any other parameters required by the Agency.
- Condition 6 requires the establishment of trigger levels for the parameters above.
- Condition 3 requires Class 1 full-retention separators for storm water draining from the generator yard and refuelling areas.
- Condition 3 of the RD specifies that the applicant shall complete a feasibility study to divert evaporative cooling water to sewer.
- Condition 6 requires the applicant to maintain the storm water drainage system.

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 the Prevention of Accidents section later in this report.

6.4 Noise

The installation is located within an industrial park and the lands surrounding the installation are mainly in commercial and industrial uses. The closest noise sensitive location is a single property located c. 40 m south of the site boundary, on the Nangor Road (R134). There are residential apartments 300 m south of the site boundary on the Nangor Road. There is a substantial residential development 400 m east of the site boundary and clusters of residential dwellings 600 m south/southwest and 500 m northwest of the installation. The Grange Castle Golf Club is located c. 380 m from the site boundary to the south of the installation. 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. (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 NG4 Guidance. A Baseline noise survey was conducted at five locations representative of nearby residential and amenity (Grange Castle Golf Club) sensitive receptors. The predominate source of noise at the locations monitored was local and distant road traffic.

The noise impacts from noise sources at the installation were assessed under three 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 situations 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.
- C. Considers the impact of occasional testing of generators. Typically, only one generation unit will be tested at once.

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

However, under Scenario B (i.e., all generators operating), 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 LAeq)(see Figure 6.6). 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.

Given that the generators could be operated for an extended period it is considered that the standard noise limit values should apply at the noise sensitive locations. Based on the foregoing, the RD requires compliance with the standard noise emission limit values at noise sensitive locations.

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.

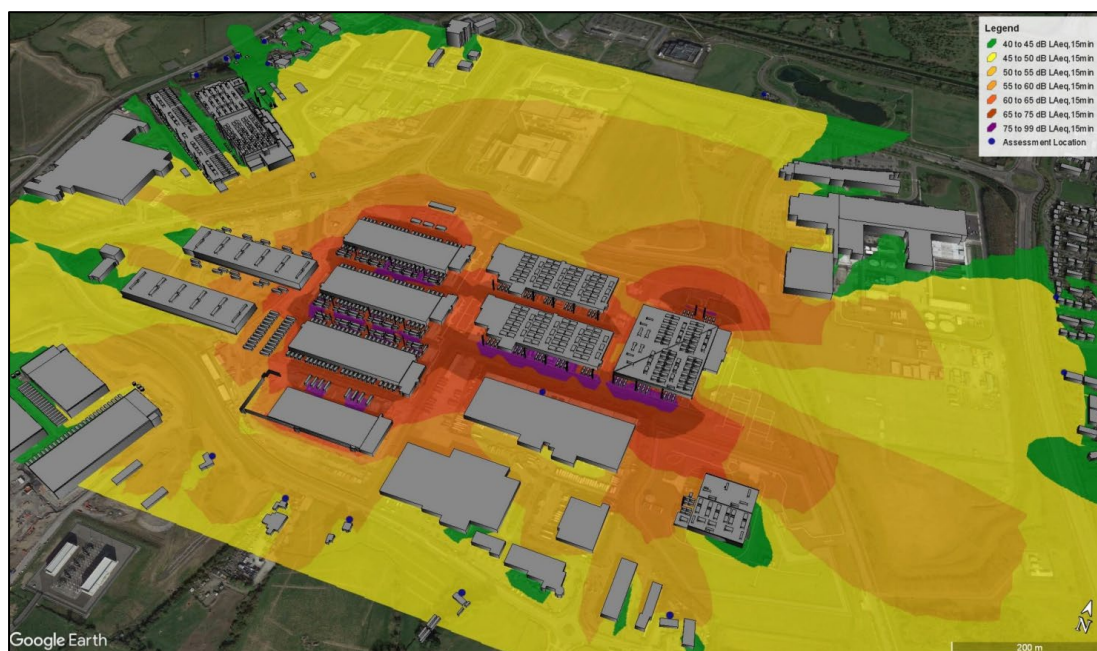


Figure 6.6: Predicted noise levels when generators are in operation (Scenario B).

7 Waste generation

Certain wastes are generated on site as part of the licensable activity. But given the nature of the activity, the amount of waste generated is low.

The categories of waste generated from the activity include general/non-recyclable waste (c. 30 tonnes/annum), dry mixed recyclables (c. 5.6 tonnes/annum), food/organic waste (c. 5.7 tonnes/annum), waste arising from maintenance activities

including filter materials, absorbents, wiping cloths (c. 3.5 tonnes/annum), waste from minor spills (e.g. oil) (11 tonnes/annum), oily water from separators (23 tonnes/annum) and e-waste including miscellaneous parts and equipment (e.g. fans, hard drives, cables, etc.) (1.7 tonnes per annum). A full list of waste streams that generated at the installation, and conditions under which such waste streams 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. Hazardous waste, such as waste oil from the maintenance of the 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/permitted contractor. As outlined 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) and electricity. Table 8.1 below provides estimated maximum quantities of energy and resources used.

Table 8.1: Energy and resource use at the installation

Resource	Quantity per annum
Electricity	894,000 MWh
Gas oil	190 tonnes
Public Water	16,300 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.

Reuse of waste heat within a district heating system has been considered by the applicant but will not be progressed until such point that a district heating network has been developed in the locality.

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 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/EU (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.

As regards Ireland's commitments at EU and International level, this installation is covered by the EU Emissions Trading System (EU ETS) and operates under a GHG permit for its own direct emissions of CO₂ from the generators.

9 Prevention of Accidents

A certain amount of accident risk is associated with the licensable activity. Table 9.1 specifies the risks and associated safety measures relevant to this installation.

Table 9.1 Potential Accidents and Measures for Prevention/Limitations 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 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.	• 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. • 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 a central critical alarm system.

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).
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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 COMAH (formerly Seveso) site as the only substance which would be controlled under the COMAH Regulations (S.I. No. 209 of 2015) is diesel. The total amount of diesel that is stored at the installation is 2,498 tonnes. Under the COMAH Regulations 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.

The applicant has submitted a planning application (SD23A/0039) to notify the local authority that this installation in combination with a separate installation under the control of the applicant, on the western boundary (licence application P1187-01) will exceed the 2,500 tonne threshold and together will be registered as a lower-tier COMAH site with the Health and Safety Authority (HSA). No physical development will take place under this planning permission (if granted) and no changes to the volume of diesel storage have been proposed regarding this installation (P1191-01).

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 mainly for agriculture, with no evidence of other past uses, prior to the construction of the original buildings.

The report refers to soil analysis data from *Geotechnical Report 2013* and *Geotechnical Report 2014*, both prepared by Byrne Looby, to establish a baseline soil and water quality assessment prior to the commencement of any operations onsite.

The soil analyses were undertaken to establish whether the soil onsite met the criteria to be classed as inert and acceptable by the Murphy or KTK landfills sites, to screen for asbestos, and to test for mineral oil, Diesel Range Organics (DRO) and Petrol Range Organics (PRO).

The testing determined that the soil met the classification to be deemed 'inert', that there was no asbestos present, and that Mineral Oil, DRO and PRO levels were below the limit of detection. Slightly elevated levels of selenium were observed in two samples from the 2013 site investigation, one of which also had a high level of sulphate, but the results were not significantly above inert landfill criteria and there was no evidence of residual contamination onsite.

Storm water from the installation is diverted to an attenuation tank before discharge via a storm water drain to the River Griffeen (IE_EA_09L012100), a tributary of the River Liffey, which currently has a WFD status of 'poor'. All storm water passes through by-pass oil interceptors with oil sensors prior to discharge. 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'.

The activity will have one relevant hazardous substance – bulk storage of diesel, which is stored and managed within double-skinned belly tanks, 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.

The RD requires that soil and groundwater monitoring for relevant hazardous substances be carried out every five years (groundwater) and ten years (soil) in accordance with IED requirements.

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:	Organisation:	Date received:
Ms. Angela Deegan	Not Here Not Anywhere	08 April 2023
Issues raised: The main issue raised is that the granting of a licence for the operation of fossil fuel infrastructure giving rise to greenhouse gas emissions is not consistent with the Irish Government's climate targets and international agreements regarding the use of fossil fuels and for this reason the application should be rejected. Additional specific points raised are as follows: 1. The application fails to include any renewable forms of energy as a source of energy usage (Attachment 4.6.1 Water and Energy Usage refers). The submission asserts that the applicant should be required to power the installation with renewable forms of energy from either on or off-site sources as well as energy storage. 2. That the application mentions the use of HVO (hydrolysed vegetable oil) as an alternative fuel to diesel but doesn't make a commitment to do so and secondly doesn't specify the sustainability of the feedstock that would be involved in its production. Agency Response: 1. During normal operations, the installation is supplied electricity from the national grid. Government policy in relation to the reduction in greenhouse gas emissions for the electricity sector applies to the electricity supplied to the installation via the grid connection and is subject to sectoral targets under the Climate Action Plan. 2. The installation operates 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 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 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.

3. The Recommended Determination requires the applicant to examine the use of renewable forms of energy and to decrease or offset the use of fossil-fuel based energy at the installation (Condition 7).

13 Consultations

13.1 Cross Office Consultation

I consulted with 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 Rye Water Valley/Carton SAC (Site Code: 001398), Glenasmole Valley SAC (Site Code: 001209), 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) 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 following reasons:

- The installation is located in a business park and is not within a European Site.
- Air dispersion modelling submitted by the applicant demonstrates that European Sites and their qualifying interests will not be adversely affected by air emissions arising at the installation with the closest European Site being approximately 5 kms away (Rye Water Valley/Carton SAC). Emissions to air consist of combustion emissions from the standby diesel generators (95 no.) and emergency diesel fire pump engines and fuel vapour emissions from the diesel storage tank vents.
- European Sites and their qualifying interests are considered to be outside the zone of influence of noise emissions from the installation.
- There are no process emissions to sewer from the installation.
- In addition to storm water runoff from building roofs and hardstanding areas, there is an emission to surface water of excess cooling water used in the Air Handling Units. There is a hydrological connection to the European sites at

Dublin Bay. The surface water is discharged through the storm water drainage system to the Griffeen River (Water Framework Directive Code: IE_EA_09L012100) which ultimately connects to the River Liffey and to Dublin Bay >20km 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.

- 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 Environmental Impact Assessment

15.1 EIA Introduction

This assessment is being undertaken in accordance with the requirements of *Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment*. The licence application was accompanied by five Environmental Impact Statements (EISs) which were the same EISs submitted to the Planning Authority as part of planning refs: 13A/0143, SD13A/0265, SD14A/0194, SD15A/0343 and SD16A/0088. The EISs were submitted to the Planning Authority prior to 15 May 2017. Therefore, this assessment is being undertaken in accordance with the requirements of *Directive 2011/92/EU*. For the purposes of the 'Environmental Impact Assessment' section of this report, the EIS documents are referred to as 'the EIA documentation received from the applicant'.

As part of this environmental impact assessment, I have carried out an examination, analysis and evaluation of all the information provided by the applicant (including the five EISs), any information received through consultations, the documents associated with the assessments carried out by South Dublin County Council and its reasoned conclusions, and the issues that interact with the matters that were considered by that authority and which relate to the activity, written submissions, as well as considering any supplementary information, where appropriate. All of the documentation received was examined and I consider that the EIA documentation complies with the provisions of Article 5 of the 2011 EIA Directive when considered in conjunction with the additional material submitted with the application.

I am satisfied that the environmental effects arising as a consequence of the activity have been satisfactorily identified, described and assessed.

Having specific regard to EIA, this Inspector's report as a whole is intended to identify, describe and assess for the Agency the likely significant direct and indirect effects of the activity on the environment, as respects the matters that come within the functions of the Agency, for each of the following environmental factors: human beings, flora and fauna, soil, water, air and climate, landscape, material assets and cultural heritage.

This Inspector's report addresses the interaction between those effects. The cumulative effects, with other developments in the vicinity of the activities have also been considered, as regards the combined effects of emissions. The mitigation measures proposed to address the range of predicted significant effects arising from the activity have been outlined. This Inspector's report provides conclusions to the Agency in relation to such effects.

A summary of the submission made by a third party has been set out above in the Submissions Section of this report.

I am satisfied that the public have been given early and effective opportunity to participate in the environmental decision-making process.

15.2 Consultation with Planning Authorities in relation to EIA

Consultation was carried out between the Agency and South Dublin County Council under the relevant section of the EPA Act on 19 December 2022. A reminder issued on 15 February 2023. South Dublin County Council did not provide any observations to the Agency on the licence application and EIA documentation received from the applicant.

15.3 Alternatives

The matter of alternatives is addressed in the EIA documentation received from the applicant. The documentation addresses the selection of Ireland as the preferred country, which included the favourable climatic conditions for a data server facility where there is less of a requirement for cooling and air conditioning than hotter countries. It also sets out how a number of sites were assessed to determine their suitability, taking into account environmental, development and infrastructural developments. Grange Castle Business Park was considered to be the preferred site location due to land use zoning, established data centres in the vicinity and suitable access and transport connections. The EIA documentation also notes that following the development of the first phase (DUB 6), that the utilities and infrastructure were in place for the subsequent phases.

The EIA documentation considered alternative building arrangements within the site. A number of iterations of the site layout were considered as part of the planning process during phased development of the seven data centre buildings. The EIA documentation described design and layout considerations including topography, road access, location of drainage infrastructure, and the distance to residential areas. The EIA documentation refers to how alternative processes were considered and revised from the initial phase (DUB 6), with improvements in design and technologies. The EIA documentation also makes reference to the scenario if the data centre development did not proceed and that it was likely that another alternative industry would be established on the site in accordance with the zoning policy of the lands.

In this regard I consider that the matter of the examination of alternatives has been satisfactorily addressed.

15.4 Likely Significant Direct and Indirect Effects

The likely significant direct and indirect effects of the activities on the following factors as set out in Article 3 of the EIA Directive are considered in this section:

- (a) *human beings, flora and fauna;*
- (b) *soil, water, air and climate and landscape;*
- (c) *material assets, cultural heritage;*
- (d) *the interaction between the factors referred to in points (a), (b) and (c).*

15.4.1 Human Beings

Identification, Description and Assessment of Effects

Human beings is addressed in the EIA documentation received from the applicant. The installation is located in an industrial park, comprising of industrial and commercial businesses. Along the western boundary is another Microsoft data centre site where two buildings DUB 14 and 15 are under construction (IE application P1187-01). The closest residential property is c. 40 m south of the installation boundary on the Nangor Road (R134). There are other residential dwellings 300 m south on the Nangor Road, 400 m to the east, 500 m northwest and 600 m southwest of the installation. The Grange Castle Golf Club is c. 380 m south of the installation.

The potential direct and indirect effects on human beings that come within the functions of the Agency, are associated with emissions to air, noise emissions, emissions to water, and accidental emissions. Should emissions cause an exceedance of environmental quality standards this could have implications for human beings.

The emissions from the installation are emissions to air from the generators, noise emissions, and storm water discharges. There are emissions to air (NO₂, CO, SO₂ and particulate matter) from the generator stacks when in operation (which occurs in the circumstances outlined earlier in this report). The primary sources of noise are the installation's building service plant and operation of the generators. Storm water runoff and residual cooling water associated with the evaporative cooling process are directed to the storm water system, from where they ultimately discharge to the Griffeen River (a tributary of the River Liffey). Refer also to the Water sections of this report. It is not considered that these storm water discharges are likely to have a significant effect on the receiving water.

Air dispersion modelling submitted by the applicant assessed potential effects on air quality arising from the installation alone and as part of a cumulative assessment. It is considered that there is a potential for a significant cumulative effect on air quality as described below. There is also the potential for significant effects on human beings in relation to noise for the scenario where all generators in operation, taking into account that the nearest residential property is c. 40 m south of the installation boundary. The effects identified and described above have been assessed in the following section of this report: Emissions to Air, Noise.

There is the potential for accidental emissions to the environment, due to fire, explosion, leaks or spillages etc. Accidental emissions to air, water or ground could occur in the event of a diesel spill, fire or explosion causing air pollution, soil, groundwater, and/or surface water contamination. Accidental noise emissions could arise due to plant malfunction causing an exceedances of noise limits. These are addressed in the Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to human beings have been assessed. There is a potential for an exceedance of air quality standards for human health if generators across several of the data storage installations in the vicinity are operating simultaneously. Therefore, there is a potential for a significant cumulative effect on air quality from the activity and other activities/developments. In addition to imposing operating restrictions on the on-site generators; the RD requires an Ambient Air Quality Monitoring Programme, establishing ambient air quality trigger levels and an associated response programme to ensure compliance with Air Quality Standards. There is also a potential for a significant cumulative effect in relation to noise emissions from the activity and other noise sources in the area. The RD requires the applicant to

prepare a noise management plan with actions to ensure compliance with noise limits set out in the RD (which specifies day, evening and night-time limits of 55dB, 50dB and 45dB) to be met at noise sensitive locations. Therefore, it is considered that there is a potential for a significant cumulative effect from the activity and other activities/developments.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to human beings are detailed in the following sections of this report: Emissions to Air, Noise, Storm Water Discharges and Prevention of Accidents.

Conclusions

I have examined all the information on human beings, provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of human beings.

15.4.2 Flora and Fauna

Identification, Description and Assessment of Effects

Flora and Fauna are addressed in the EIA documentation received from the applicant. The installation is existing and is operating as a data centre within an industrial park. The seven data centre buildings (DUB 6, 7, 8, 9, 10, 12 & 13) were constructed on a 30 hectare greenfield site (agricultural land) in 3 phases since approximately 2014.

The site area comprises of buildings, infrastructure and hardstanding areas. The EIA documentation describes the habitats and species at the site and in the vicinity prior to construction of the individual buildings. The installation area is described as having low ecological value. The habitat types were identified as improved agricultural grassland, hedgerows, treeline/broadleaved woodland, upland rivers and drainage ditches, bare ground and building. No rare or protected habitats were recorded. Surveys prior to construction indicated bat activity in the area and planning conditions required bat sensitive lighting. Planning conditions also required an Ecology Plan to be implemented.

The Grand Canal proposed Natural Heritage Area (pNHA) is approximately 650 m north of the installation. The closest European Site is approximately 5 kms away (Rye Water Valley/Carton SAC). The applicant submitted four Appropriate Assessment Screening Reports. Refer to the Appropriate Assessment section of this report in relation to European Sites.

The potential direct and indirect effects are related to effects on flora and fauna and their habitats due to air emissions (including NO_x), effects on aquatic flora and fauna and their habitats due to effects on water quality, and disturbance to fauna (such as mammals and birds) due to noise emissions from operation of the activity. The effects on flora and fauna identified and described above have been assessed here and in the following sections of this report: Emissions to Air, Noise, Storm Water Discharges, Prevention of Accidents and Appropriate Assessment.

Emissions to air arise from the combustion of fuel (diesel) by the generators. The Emissions to Air section provides details on air dispersion modelling including an assessment of potential impacts on vegetation. Air dispersion modelling indicates that the installation alone could contribute 7% of the air quality standard for vegetation/protection of ecosystems (annual mean $30 \mu\text{g}/\text{m}^3$ for NO_x ($\text{NO} + \text{NO}_2$)). The cumulative assessment indicates a predicted concentration of approximately $18 \mu\text{g}/\text{m}^3$ NO_2 at the pNHA (60% of the air quality standard).

Noise emissions associated with operation of the activity are assessed in the Noise section of this report. It is considered that there is no potential for significant effects on fauna (such as mammals and birds) due to noise emissions.

The River Griffeen runs west of the installation to join the River Liffey in Lucan. Storm water from the installation is discharged to the storm water drainage network and ultimately to the River Griffeen (IE_EA_09L012100). Residual cooling water associated with the evaporative cooling process is also discharged to the storm water system as described in the Storm Water Discharges section. It is considered that the storm water discharges (including evaporative cooling water) are not likely to have a significant effect on the receiving water. Refer also to the Storm Water section of this report.

There is also the potential for accidental emissions to the environment, due to fire, explosion, leaks or spillages. Accidental emissions to air, water or ground could occur in the event of a spill of chemicals, fuels, oils or lubricants, or due to a fire or explosion causing air pollution, soil, groundwater, and/or surface water contamination. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to flora and fauna have been assessed. There is a potential for an exceedance of air quality standards relevant to flora and fauna if generators across several of the data storage installations in the vicinity are operating simultaneously. In addition to imposing operating restrictions on the on-site generators; the RD requires an Ambient Air Quality Monitoring Programme, establishing ambient air quality trigger levels and an associated response programme to ensure compliance with air quality standards. Therefore, it is considered that there is a potential for a significant cumulative effect from the activity and other activities/developments.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to flora and fauna are detailed in the following sections of this report: Emissions to Air, Noise, Storm Water Discharges and Prevention of Accidents.

Conclusions

I have examined all the information on flora and fauna, provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of flora and fauna.

15.4.3 Land and Soil

Identification, Description and Assessment of Effects

Land and soil are addressed in the EIA documentation received from the applicant. A description of the area, land use, soils and geology is provided. Information is also provided on ground investigations from 2013-2014. Ground conditions were described as typically comprising topsoil overlying soft to firm becoming stiff at depth, sandy gravelly clay. The topography of the site is slight slope from c. 74m AOD in the southeast to c. 67m AOD to the northwest). The Groundwater Body (GWB) underlying the site is the Dublin GWB (Code: IE_EA_G_008). EPA data (2016-2021) classifies it as having 'Good Status'. The applicant states that local groundwater flow is expected to be to the North towards the River Liffey.

The installation is an existing data centre, and the land was previously agricultural. It is stated in the application that the soil and perched groundwater beneath the site encountered during the site investigations indicate the site is uncontaminated. Refer also to the Cessation of Activity section regarding the Baseline Report.

The potential direct and indirect effects on land and soil are associated with emissions to air, emissions to water, accidental emissions and any historical soil/groundwater contamination. Should emissions cause an exceedance of environmental quality standards this could have implications for land and soil. The effects identified and described above have been assessed in the following section of this report: Storm Water Discharges, Prevention of Accidents and Cessation of the Activity.

There is also the potential for accidental emissions to the environment due to fire, explosion, leaks or spillages. Accidental emissions to air, water or ground could occur in the event of a spill of chemicals, fuels, oils or lubricants, or due to a fire or explosion causing air pollution, soil, groundwater, and/or surface water contamination. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to land and soil have been assessed and is considered that there is not likely to be a significant cumulative effect from the activity and other activities/developments. There are no likely significant direct, indirect or cumulative effects identified.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to land and soil are detailed in the following sections of this report: Storm Water Discharges, Prevention of Accidents and Cessation of the Activity.

Conclusion

I have examined all the information on land and soil, provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects on land and soil.

15.4.4 Water (including Waste Water, Emissions to Sewer, Storm Water, Emissions to Ground)

Identification, Description and Assessment of Effects

Water is addressed in the EIA documentation received from the applicant. The installation is located in the catchment of the Griffeen River (IE_EA_09L012100), which

flows north to the River Liffey at Lucan and then to Dublin Bay >20km downstream. The Griffeen River has a WFD status of 'Poor' for 2016-2021 and 'Urban run-off' is identified by the EPA as a pressure on the waterbody, <https://gis.epa.ie/EPAMaps/Water>.

Storm water runoff from the east of the site (DUB 6, 7 and 8) discharges to the industrial park storm water system and is directed northerly to the Grange Castle attenuation pond, which ultimately joins the Griffeen River. Storm water runoff from DUB 9 & DUB 10 discharges to the Griffeen River to the west. Stormwater from the remaining areas (DUB 12 & DUB 13) discharges to the stormwater drainage system of the adjacent installation P1187-01 as described in the Storm Water Discharges section.

Residual cooling water associated with the evaporative cooling process is also discharged to the storm water system as described in the Storm Water Discharges section. The evaporative cooling mode would typically occur for 5% of the year. The storm water and residual cooling water is collected and attenuated before discharge to the Griffeen River or to Grange Castle attenuation pond. It is considered that the storm water discharges (including evaporative cooling water) are not likely to have a significant effect on the receiving water.

There is no process effluent discharge to sewer from the installation. There are no direct emissions to ground or groundwater. The Dublin Groundwater Body which underlies the site is classified as having 'Good Status'. In the application it refers to site investigations and a review of available soil and water quality and that this confirms that there is no evidence of any residual contamination beneath the site. Refer to Section on Cessation of Activity.

The potential direct and indirect effects on water relate to discharge of residual cooling water and storm water to surface water and accidental emissions. Should discharges or emissions cause an exceedance of Water Quality Standards in the receiving water, this could have potential effects on water quality, aquatic flora and fauna and human health. The effects identified and described above have been assessed in the following section of this report: Storm Water Discharges, Prevention of Accidents and Land and Soil.

There is also the potential for accidental emissions to water or groundwater in the event of a fuel or chemical spill, or fire or explosion, with the potential to cause groundwater, and/or surface water contamination, affect water quality as well as aquatic habitats and species. However, the likelihood of accidental emissions to water is considered low in light of the measures outlined in the Prevention of Accidents section and in light of the conditions in the RD. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to water have been assessed and is considered that there is not likely to be a significant cumulative effect from the activity and other activities/developments. Therefore, there are no likely significant direct, indirect or cumulative effects identified.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to water are detailed in the following sections of this report: Emissions to Water/Sewer/Ground, Waste Generation, Prevention of Accidents, Cessation of Activity.

Conclusions

I have examined all the information on water (including Waste Water, Emissions to Sewer, Storm Water, Emissions to Ground etc) provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects on water.

15.4.5 Noise and Vibration

Identification, Description and Assessment of Effects

Noise and vibration are addressed in the EIA documentation received from the applicant. The installation is located in an industrial park. The closest residential property is c. 40 m south of the installation boundary on the Nangor Road (R134). There are other residential dwellings 300 m south on the Nangor Road, 400 m to the east, 500 m northwest and 600 m southwest of the installation. The applicant submitted a noise assessment, and the existing noise environment was dominated by local road traffic noise.

The potential direct and indirect effects of noise associated with the operation of the activity are the building service plant (air handling units) and the generators. Noise arising from the installation could have the potential to cause nuisance for those living near the activity or to affect noise sensitive species.

The application states that the installation has been designed to minimise noise emissions, that low noise equipment has been selected where practical and that noise attenuation has been incorporated into the design of the containerised generators. However, as described below 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 6.6).

Noise impacts were assessed for a number of scenarios related to operation of the installation. The assessment indicated that the applicant could not comply with evening and night-time limits (50 dB and 45 dB respectively) at the installation boundary under Scenario B (all generators in operation at one time). Therefore, there is the potential for significant effects, noting that the nearest residential property is c. 40 m south of the installation boundary. The RD requires the applicant to prepare and submit a noise management plan with actions to ensure compliance with noise limits set out in the RD (which specifies day, evening and night-time limits of 55dB, 50dB and 45dB) to be met at noise sensitive locations. The effects have been assessed in the Noise section of this report. Vibration due to operation of the activity is considered not likely to have a significant effect.

There is the potential for accidental noise and vibration emissions due to a fuel related explosion causing loud noise and vibration or noise due to plant malfunction. These is addressed in Prevention of Accidents section of this report.

In relation to cumulative effects of the activity regarding noise, the applicant has provided information on background noise from other sources including traffic, which has been taken into account in the noise modelling. As there is the potential for

significant effects from the activity alone it is considered that there is also the potential for significant cumulative effects when the generators are in operation at the same time as other noise sources in the vicinity.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to noise are detailed in the Noise section of this report.

Conclusions

I have examined all the information on noise and vibration provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of noise and vibration.

15.4.6 Air (including Dust and Odour)

Identification, Description and Assessment of Effects

Air is addressed in the EIA documentation received from the applicant. The potential direct and indirect effects on air are associated with emissions to air (NO₂, CO, SO₂ and particulate matter) from the generator stacks due to combustion of diesel. There is also the potential for indirect effects on habitats due to nitrogen deposition as a result of NO_x emissions to air.

Should emissions cause an exceedance of Air Quality Standards this could have implications for air quality, human beings and flora and fauna within and beyond the installation boundary. It is considered that there is a potential for a significant cumulative effect from the activity and other activities/developments due to NO_x emissions. General site dust and odour emissions have the potential to impact human health and cause nuisance however, the activity will not be a significant source of odour or dust.

The applicant carried out air dispersion modelling to predict the impact of emissions from the generation plant on ambient air concentrations. The dispersion modelling submitted assessed potential effects on air quality arising from the installation alone and as part of a cumulative assessment. The modelling was considered sufficiently detailed and conservative to assess the impact of the main emissions to air. The results were compared to relevant air quality standards for the protection of human health and for the protection of vegetation/habitats. It is considered that there is the potential for a significant cumulative effect from the activity and other activities/developments. The effects identified and described above have been assessed in the Air section of this report

There is also the potential for accidental air emissions to the environment. Accidental emissions to air could occur in the event of a fire or explosion causing air pollution including dust and odour. This is addressed in the Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to air have been assessed. There is a potential for an exceedance of air quality standards if generators across several of the data storage installations in the vicinity are operating simultaneously. See the

Emissions to Air section of this report. In addition to imposing operating restrictions on the on-site generators; the RD requires an Ambient Air Quality Monitoring Programme, establishing ambient air quality trigger levels and an associated response programme to ensure there is no exceedance of Air Quality Standards. Therefore, it is considered that there is a potential for a significant cumulative effect from the activity and other activities/developments.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to air are detailed in the Emissions to Air section of this report.

Conclusions

I have examined all the information on Air (including Dust and Odour) provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of Air (including Dust and Odour).

15.4.7 Climate

Identification, Description and Assessment of Effects

The EIA documentation received from the applicant addresses Climatic Factors. Climate change is a significant global issue which affects weather and environmental conditions (air, water, land and soil) which consequently affects population and human health, material assets, cultural heritage, the landscape and biodiversity. Climate change is caused by warming of the climate system by enhanced levels of atmospheric greenhouse gases (GHG) due to human activities. GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃) and sulphur hexafluoride (SF₆).

The Climate Action and Low Carbon Development (Amendment) Act 2021, set legally binding targets of a 51% reduction of greenhouse gas emissions by 2030 compared to 2018 levels, and net-zero emissions by 2050. The Climate Action Plan 2023¹ 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 electricity storage, and the deployment of zero-emissions gas. It states that in the short- and medium-term, new demand growth from large energy users, such as data centres, will have to be moderated to protect security of supply and ensure consistency with the carbon budget programme. Furthermore, the Government Statement on the Role of Data Centres² 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. The RD requires the applicant to carry

¹ Climate Action Plan 2023, Changing Ireland for the Better. ([9942d689-2490-4ccf-9dc8-f50166bab0e7.pdf](https://www.gov.ie/en/publications-and-resources/publication/9942d689-2490-4ccf-9dc8-f50166bab0e7.pdf) (www.gov.ie)).

² Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy, July 2022.

out a feasibility study of opportunities to decarbonise as detailed further down in this section of the report.

The potential direct effects on climate from the activity are from emissions from the combustion of diesel in the generators at the installation. Some F-gases are also used on site as refrigerants in the air-cooling systems. F-gases are controlled under the F-Gas regulations (F-Gas Regulation (EU) No 517/2014) and are not addressed in the RD. The potential indirect effects on climate are from the emissions associated with the generation of electricity taken from the national grid.

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 a GHG permit issued by the EPA (IE-GHG179-10502-4), required by the EU Emissions Trading Scheme (ETS). The EU ETS covers emissions of CO₂ from power and heat generation. GHG Permit IE-GHG179-10502-4, which was issued on 25 June 2021 is for *Dublin Data Centre DB 3-4-5-6-7-8-9-10-11-12-13*. Seven buildings DUB 6-10, and 12-13 relate to P1191-01 while three buildings DUB 3, 4 and 5 relate to a separate IE licence application P1190-01.

In the GHG Permit the Estimated Annual Emissions is 1,100 tonnes CO₂(e). The estimate is based on 2019 emissions of 550 tonnes CO₂ related to 6 buildings (3,4,5,6,7,8). With the addition of DUB 09,10,11, 12 and 13 in 2020 and 2021, the conservative estimated emissions were 1100 tonnes CO₂. Based on the thermal input of the generators for each site the proportion of 1,100 tonnes CO₂ associated with P1191-01 would be approximately 814 tonnes CO₂ per annum.

Verified CO₂ emissions for this permit (which relates to ten data centre buildings) were 558 tCO₂, 604 tCO₂ and 1062 tCO₂ respectively in 2019, 2020 and 2021. Further details of historical CO₂ emissions 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 200 hours (and admin generators to 100 hours per year) 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.

Emissions of CO₂ from the installation (DUB 6-10 & 12-13) are approximately 603 tCO₂ per annum (calculated based on the applicant's stated diesel usage of 190 tonnes 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. In the application the proposed electricity consumption figure is provided as 894,000 MW hours of electricity per year. This equates to 310,933 tonnes of CO₂ per annum, based on an emission factor of 347.8g CO₂/kwh (SEAI 2021⁴), which is considered significant.

³Ireland'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).

The Energy Efficiency and Resource Use section of this report and the applicant's application documents provides information on the applicant's proposals in relation to energy efficiency.

The activity will result in a net increase in Ireland's CO₂ emissions and the impact of these direct and indirect emissions from the installation will contribute to climate change and therefore are considered significant. Furthermore, in relation to cumulative effects, it cannot be concluded that the combined greenhouse gas emissions from the installation and other sources will not have significant cumulative effects on climate.

It is considered that the likelihood of accidental emissions occurring which could affect climate is low in light of the measures outlined in the "Prevention of Accidents" section above and the proposed conditions in the RD.

The effects of emissions from the activity on climate will be mitigated as follows:

- The activity is required to operate under a greenhouse gas permit under the EU Emissions Trading System (EU ETS) Directive in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012, (S.I. 490 of 2012 and amendments). The installation operates under a GHG Emissions Permit (IE-GHG179-10502-4), although it should be noted that the permit includes additional buildings outside the installation boundary relating to licence application P1190-01. The GHG permit does not cover emissions of gases other than carbon dioxide. 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 on reducing greenhouse gas emissions. As this site is part of the EU ETS, the impact of carbon dioxide emissions is 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 Recommended Determination.
- The RD limits the operation of generators to 200 hours per year, and admin generators to 100 hours per year, and includes restrictions on testing of the generators.
- Whilst the activity requires a GHG permit, specific conditions on energy efficiency and a requirement for an energy audit within one year of the date of grant of the licence and periodically thereafter are included in Condition 7 of the RD.
- Any leakage of F-gases will be monitored and controlled under the F-Gas regulations (F-Gas Regulation (EU) No 517/2014).
- Indirect emissions arising from the use of electricity from the national grid in the installation are also covered under the EU ETS Directive. These emissions are covered under the EU ETS at the electricity generating plant, but the applicant is also required to address electricity usage as part of energy efficiency management and report on the quantity of electricity used annually.
- The RD requires the applicant to address electricity usage as part of energy efficiency management under the Schedule of Environmental Objectives and Targets (Condition 2).

- Condition 7 further requires 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 and submit a report to the Agency within six months of the date of grant of the licence.

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 are being put in place 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 it is up to the electricity market to achieve these through the use of renewables and decarbonisation of the sector in accordance with the Climate Action Plan.

Mitigation and Monitoring

As listed in bullet points above the main mitigation measures and monitoring in relation to the effect of direct emissions on climate will be covered in the GHG permit for this installation. In addition, mitigation measures set out in the following sections of this report will also have a mitigating effect on both direct and indirect emissions: Emissions to Air, Prevention of Accidents; and Energy Efficiency and Resource Use.

Conclusions

I have examined all the information on climatic factors provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable effects in terms of climatic factors.

15.4.8 Material Assets, Cultural Heritage and the Landscape

15.4.8.1 Material Assets (including resource use and waste generation)

Identification, Description and Assessment of Effects

Material Assets is addressed in the EIA documentation received from the applicant. It includes information on utilities, natural resources such as electricity and water, traffic and transportation and waste management.

The potential direct and indirect effects on material assets are the consumption of natural resources in particular diesel and water. The quantities of electricity, diesel and water used are provided in the 'Energy Efficiency and Resource Use' section of this report. The generators will operate solely on diesel and only during the circumstances outlined earlier in this report (i.e. during testing and outside of normal operating conditions), and the diesel is stored onsite. Usage will be dictated by the frequency of occurrence of these scenarios. The activity will also generate a certain amount of waste material and the potential amounts generated are listed in the licence application.

The use of natural resources by the activity and the generation of wastes will not have significant effects in terms of material assets. The effects identified and described above have been assessed in the following section of this report: Waste Generation, Energy Efficiency and Resource Use; and Prevention of Accidents.

Material Assets such as roads and traffic and built services are dealt with in the decisions of the Planning Authority (South Dublin County Council) to grant permission for the development. The Planning Authority has considered the effect to be acceptable. They state that the developments would be 'in accordance with the proper planning and sustainable development of the area'. Planning conditions related to requiring the applicant to submit details on energy use including proposals for the re-use of waste heat.

No significant cumulative effects on material assets have been identified. Therefore, there are no likely significant direct, indirect or cumulative effects identified.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to material assets are detailed in the following sections of the licence assessment part of this report: Waste Generation, Energy Efficiency and Resource Use, and Prevention of Accidents.

Material Assets Conclusions

I have examined all the information on Material Assets provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of Material Assets.

Material Assets are also dealt with in the decisions of the Planning Authority to grant permission for the development and the Planning Authority has considered the effects to be acceptable.

15.4.8.2 Cultural Heritage

Identification, Description and Assessment of Effects

Cultural Heritage is addressed in the EIA documentation received from the applicant, which provides information on potential direct and indirect effects on cultural heritage. Any loss of archaeological or architectural heritage could impact negatively on human beings.

The installation is an existing data centre, with buildings, infrastructure and hardstanding areas. The site, which is located within an established industrial park was previously agricultural land. The EIA documentation refers to a number of monument types identified in the industrial park and in the wider area. It also refers to archaeological excavations in the vicinity, which revealed the remains of previously unrecorded monuments. There were requirements in planning conditions for archaeological monitoring during construction of the phases of development.

It is very difficult to envisage any pathway by which emissions from the operation of the activity could impact any feature which might be present.

No significant cumulative effects on the cultural heritage have been identified. Therefore, there are no likely significant direct, indirect or cumulative effects identified.

Mitigation and Monitoring

There are no specific mitigation measures or monitoring proposed in the RD in relation to cultural heritage.

Cultural Heritage Conclusions

The planning authority has identified, described and assessed the likely significant direct and indirect effects of the development on cultural heritage. They considered that the site displayed potential for underground archaeological remains and that a condition was attached requiring excavation and monitoring to be undertaken. These matters are dealt with in the decisions of the planning authority to grant planning permission for the developments on site and the planning authority has considered the effects to be acceptable.

15.4.8.3 The Landscape

Identification, Description and Assessment of Effects

The Landscape is addressed in the EIA documentation received from the applicant. The potential direct and indirect effects on the landscape are visual impact of the seven data centre buildings, generator stacks, fuel storage and associated infrastructure.

The installation is located in an industrial park, with agricultural land to the west. The site and surrounding topography are relatively flat. The seven data centre buildings, which are single story, were developed in three phases. A number of iterations of site layout were considered during planning process during phases of the development, which included redesign to minimise visual impact.

The Planning Authority states in relation to SD15A/0343 that 'The visual impact of the proposal is considered acceptable'. In relation to visual impact for SD16A/0088 it states that 'large structures on landscaped grounds are evident throughout Grange Castle, therefore the proposed development is characteristic of the business park and is acceptable'. Planning conditions also included the requirement for a Landscape Plan.

Any disturbance of the landscape has the potential to impact on human beings and their enjoyment of the surrounding area due to visual impacts. These matters are dealt with in the decision of the planning authority to grant planning permission for the developments on site and it has considered the effects to be acceptable.

Emissions from the operation of the activity will not affect the landscape of the area. No significant cumulative effects on the landscape have been identified. Therefore, there are no likely significant direct, indirect or cumulative effects identified.

Mitigation and Monitoring

There are no specific mitigation measures or monitoring proposed in the RD.

The Landscape Conclusions

These matters are dealt with in the decision of the planning authority to grant planning permission for the developments on site and it has considered the effects to be acceptable.

The Recommended Determination does not propose to include any additional mitigation measures in relation to landscape.

Overall Conclusions for Material Assets, Cultural Heritage and the Landscape

I have examined all the information on material assets, cultural heritage and the landscape provided by the applicant, any information received through consultations and written submissions, as well as considering any supplementary information, where

appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of Material Assets, Cultural Heritage and the Landscape.

15.4.9 Interactions Between Environmental Factors

Interactions of effects are considered in the EIA documentation received from the applicant. The most significant interactions between the factors as a result of the activity are summarised below:

Interaction between Human Beings, Flora and Fauna and Air Quality, Water, Soil, Material Assets and Climate: the activity will generate air pollutants that could have an effect on human health, flora and fauna including habitats and vegetation and all interrelated factors.

Interaction between Human Beings, Flora and Fauna and Noise: the activity has the potential to generate noise that could disturb fauna and have adverse impacts on human beings.

Interaction between Climate and all the other environmental factors: the activity will generate GHGs as discussed in the 'Climate' section of this report. The cumulative effects of GHG emissions from the installation will contribute to climate change which in turn will have significant effects on all interrelated environmental factors. Such effects are addressed in the 'climate' section of this report.

As demonstrated such effects are not considered to be unacceptable.

Conclusions

I have considered the interaction between human beings, flora and fauna, soil, water, air, climate, landscape, material assets, cultural heritage and the interaction of the likely effects identified throughout this report. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of the interaction between the foregoing environmental factors.

15.5 Reasoned Conclusion on the significant effects

Having regard to the examination of environmental information contained above, and in particular to the content of the EIA documentation received from the applicant and supplementary information provided by the applicant, and the submission from a third party in the course of the application, it is considered that the potential significant direct and indirect effects of the activity on the environment are as follows:

- Effects on air quality due to emissions to air from generators through combustion of diesel;
- Noise emissions associated with operation of the installation;
- Accidental emissions to air, surface water, ground or groundwater from fire, explosion, leaks or spillages;
- Storm water discharges (including evaporative cooling water) to the Griffeen River; and

- Effects on climate due to the release of CO₂ emissions to air.

Having assessed those potential effects, I have concluded as follows:

- Emissions to air will be mitigated by imposing operating restrictions on the generators; through the requirement to establish an Ambient Air Quality Monitoring Programme, which includes establishing ambient air quality trigger levels and an associated response programme to ensure compliance with Air Quality Standards, and implementing other monitoring, maintenance and control measures;
- Noise emissions will be mitigated by imposing daytime, evening and night-time noise limits at noise sensitive locations, the requirement to prepare and implement a Noise Management Plan, and monitoring, maintenance and control measures;
- Accidental emissions to air, surface water, ground or groundwater from fire, explosion, leaks or spillages will be prevented and mitigated through accident and emergency requirements, tank, container and drum storage requirements, and inspection and integrity testing of pipes, tanks and bunds;
- Storm water discharges (including evaporative cooling water) to the Griffeen River will be mitigated through the requirement for oil separators and silt traps, establishment and maintenance of trigger levels and a response programme to address exceedances and visual inspection of storm water drains; and
- Effects on climate due to release of CO₂ emissions will be mitigated through the limitations on the generators, which includes an operating hour restriction, through conditions relating to energy efficiency and alternative energy sources, and through the requirement to participate in the EU Emissions Trading System (ETS).

Having regard to the effects (and interactions) identified, described and assessed throughout this report, I consider that the monitoring, mitigation and preventative measures proposed will enable the activity to operate without causing environmental pollution, subject to compliance with the Recommended Determination. The conditions of the RD and the mitigation measures proposed will significantly reduce the likelihood of accidental emissions occurring and limit the environmental consequences of an accidental emission should one occur.

16 EPA Charges

The annual enforcement charge recommended in the RD is €5,466, which reflects the anticipated enforcement effort required and the cost of monitoring.

17 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 Acts 2015 as amended.

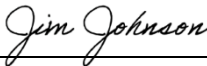
The RD specifies the necessary measures to provide that the installation shall be operated in accordance with the requirements of Section 83(5) of the EPA Act, and has regard to the AA Screening and EIA. The assessment is consistent with Section 15

of the Climate Action and Low Carbon Development Plan 2015 as amended. The RD gives effect to the requirements of the EPA Act.

This report was prepared by Jim Johnson, Marian Doyle, Niamh Connolly and Philip Stack.

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

Signed



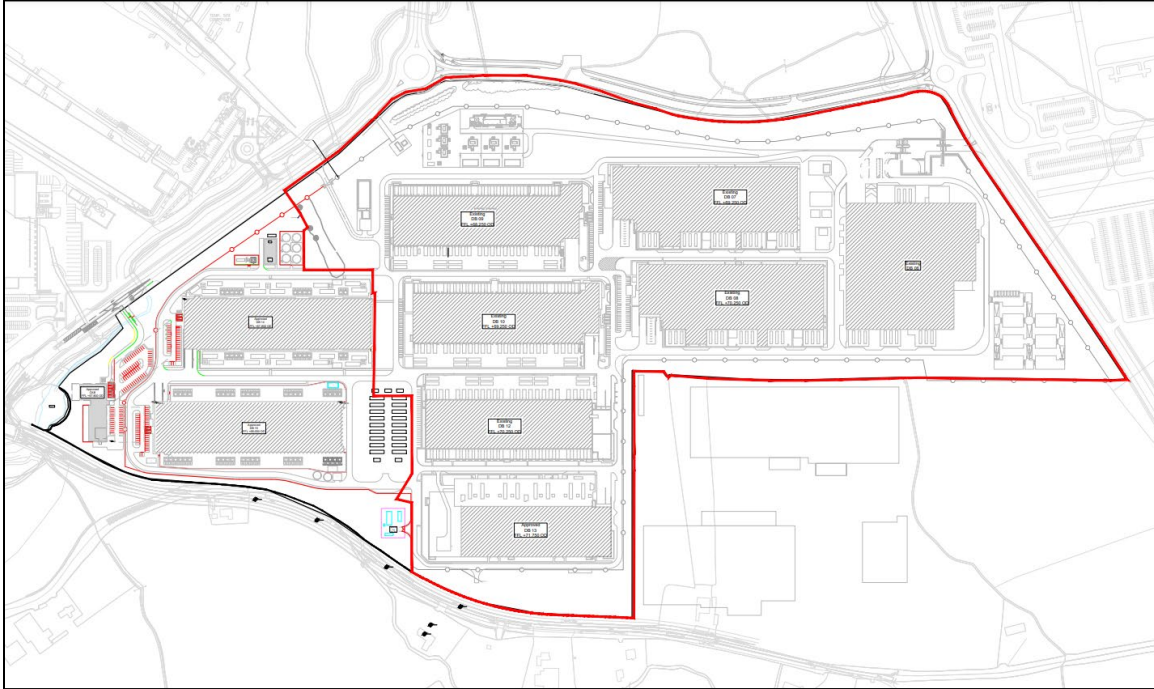
Jim Johnson

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 Plan', submitted as part of the licence application on 18 May 2023.

Appendix 2: Appropriate Assessment

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

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
001398	Rye Water Valley/Carton SAC	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/Carton SAC 001398. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
001209	Glenasmole Valley SAC	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)*	NPWS (2021) Conservation Objectives: Glenasmole Valley SAC 001209. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
000210	South 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 2110 Embryonic shifting dunes	NPWS (2013) Conservation Objectives: South Dublin Bay SAC 000210. Version 1.0. 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 (Glaucopuccinellietalia maritimae) 1410 Mediterranean salt meadows (Juncetalia maritimi) 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 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
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 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
		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	
004006	North Bull Island SPA	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 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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)
Seveso Directive (2012/18/EU)
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)

Appendix 4: Acknowledgement and Attribution:

This report uses maps submitted as part of the application and map imagery as set out in **Table 1** below.

Map Source	Link to Source	Data Provider Note 1	Usage Licence	Attribution Statement	Location in Report
OpenStreetMap (EPA Maps)	Figure 1.1 https://gis.epa.ie/EPAMaps/default	Open Street Map	https://www.openstreetmap.org/copyright	Map Data: © OpenStreetMap contributors	1. Introduction