

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

Signed: David Matthews **Date:** 29/05/23



**OFFICE OF ENVIRONMENTAL
SUSTAINABILITY**

**INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE
APPLICATION, LICENCE REGISTER NUMBER P1187-01**

TO: DIRECTOR

FROM: JIM JOHNSON

DATE: 29.05.2023

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 22.
Application date:	16 September 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 22 gas engines to provide power to the installation as part of a demand side reduction policy and 21 diesel generators to provide power in the event of an outage from the grid, e.g. due to a blackout, breakdown or maintenance.
Additional information received:	Yes (14 February 2023, 16 March 2023, 18 May 2023, 25 May 2023)
No of submissions received:	1
Environmental Impact Assessment required: Yes	Stage 2 Appropriate Assessment required: No
Environmental Impact Assessment Report submitted (EIAR): Yes 16-Sep-2022 and 14-Feb-2023	
Site visit: not applicable	Site notice check: 18 November 2022

1. Introduction

Microsoft Operations Ireland Limited propose to operate a data storage facility with standby gas generation plant on a 13.07 hectares site in Grange Castle South Business Park, Dublin 22 (Site Layout – Appendix 1). The site comprises lands directly west of the existing MS Ireland data centre campus at Grange Castle International Business Park, Clondalkin, Co Dublin.

The data storage facility will consist of 2 data storage installation buildings: DUB 14 and DUB 15 as well as a central administrative building (CAB). The data storage buildings serve as a centralised computer server system consisting of data halls which host, manage and distribute electronic data. The installation will be operational 24 hours a day, 7 days a week. There will be approximately 70 personnel employed at the installation once fully operational.

During normal operations, the installation is supplied electricity from the national grid. A standby gas generation plant (consisting of 22 gas engines) will be installed and operated when the grid operator requires a reduction in demand on the grid. The gas engines will provide power to DUB 15. There will also be 21 diesel generators that will provide power to DUB 14 in the event of loss or reduction in power supply from the grid. The combined capacity of generators at the installation 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.

2. Description of activity

The installation when fully constructed will consist of two data storage buildings, an administration building, 22 gas engines, Gas Networks Ireland compound, 21 no. diesel generators, a rainwater harvesting tank, water treatment building, sprinkler tanks and pump house, surface drainage and underground attenuation tanks, internal roads, car parking and security fencing.

There will be 22 no. 7.6 MW_{th} (mega watt thermal input capacity) gas engines (167.2 MW_{th} total) associated with DUB 15. It is expected the gas engines could operate up to 8 hours a day, during peak demand periods, 365 days a year.

There will be 21 diesel generators associated with DUB 14 consisting of 20 no. 8.66 MW_{th} generators and 1 no. 2.4 MW_{th} admin generator. These will provide power to the building in the event of a loss of power supply, i.e. power blackout, a breakdown, or due to maintenance. There are no plans to export electricity to the National Grid. Each generator will be supplied with diesel from a double-skinned diesel belly storage tank. The generators will be tested once a month, three at a time between the hours of 9am and 5pm, Monday to Friday only. There will be additionally 2 diesel generators at the installation, both with capacity <1 MW_{th}, one associated with the water treatment plant and a second associated with the administration building.

The data halls will be cooled using outside air, via roof mounted air handling units. External air is drawn across the servers in the data halls and then recirculated or exhausted to atmosphere. During periods of hot weather (<5% of the year), external air is cooled by passing it through media pads saturated with water (evaporative cooling). The water demand will be met by using rainwater collected from the data hall roof areas, which will be filtered, pre-treated (UV treatment) and sterilised with

sodium hypochlorite and stored in a storage tank prior to use. Residual cooling water is discharged to sewer.

Emissions from the activity include noise, emissions to air, sewer emission (foul water and evaporative cooling water) and storm water discharges.

3. Planning Status

A number of planning applications have been made by the applicant for the area within the installation boundary. Details of the relevant planning applications and permissions have been provided in the licence application form. These include the following planning permissions for the activity granted by South Dublin County Council: SD20A/0283 (granted on 10th May 2021) and SD21A/0203 (granted on 20th December 2021).

The applicant has submitted the EIARs associated with planning permissions SD20A/0283 (EIAR dated November 2020) and SD21A/0203 (EIAR dated July 2021). The applicant also submitted an Environmental Impact Statement (EIS) dated September 2014 with the licence application. The EIS was associated with planning permission SD14A/0194 and relates to development outside of the installation boundary. The EIS will be considered by the Agency as part of a separate licence application (Reg. No. P1191-01).

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.*

An EIAR (dated July 2021) associated with Planning Ref SD21A/0203 was submitted to the Agency as part of the licence application on 27 September 2022. An EIAR associated with Planning Ref: SD20A/0283 was requested and this was received on 14 February 2023. 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 all the MCP Regulations and will be in line with the guidance specified in the relevant horizontal BREF Documents as listed above.

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

6. Emissions

6.1 Emissions to Air

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

6.1.1 Channelled Emissions to Air

Channelled emissions to air arise from the combustion of fuels in diesel generators and gas engines at the installation. There will be 21 diesel generators associated with DUB 14 (Table 6.1 below). These will be operated for routine maintenance and testing and when there is an interruption or reduction in power supply from the electricity grid.

DUB 15 will have 22 gas engines which will be used to power the facility as required by the utilities provider under a flexible demand agreement - the engines will be called on to operate during times when supply on the electricity grid is constrained. This could be up to 8 hours a day during peak hours - between 8am and 12pm in the morning and 4pm and 8pm in the evening.

Table 6.1 Channelled emissions to air

Location	Description	No.	Capacity (MW thermal input)	Stack height (above ground level)
DUB 15	Gas engines (A2-1 to A2-22)	22	22 x 7.6 MW _{th}	25 m
DUB 14	Admin generator (A3-1)	1	1 x 2.4 MW _{th}	30.75 m
DUB 14	Data-hall generators (A3-2 to A3-21)	20	20 x 8.66 MW _{th}	30.75 m
Total		43	342.8 MW _{th}	

There will be other emission points to air at the installation, which due to their emission characteristics are not considered environmentally significant and are therefore regarded as minor emissions. These minor emissions are not considered as part of this impact assessment.

Both the gas engines and diesel generators are classified as Medium Combustion Plant (MCP) based on their capacity (>1 and < 50 MW_{th}).

NO_x is the main pollutant of concern from the combustion of natural gas. The applicant has proposed an emission limit value of 95 mg/Nm³ for NO_x for the gas engines, which is consistent with the MCP Regulations.

The diesel generators will be operated for a limited number of hours. Under the MCP Regulations, plant operating less than 500 hours/year are not required to meet emission limit values. The applicant has requested this exemption for the diesel generators on the basis that their limited use meets this criteria.

The diesel generators will 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 emissions from the gas engines and generators at the installation. 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 NO_x emissions from the generators relative to their ambient air quality standards. Therefore, ensuring compliance with the NO₂ air quality standard will ensure compliance for all other pollutants.

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

The modelling was carried out using five years of meteorological data (2017 to 2021 inclusive) from Casement Aerodrome meteorological station, approximately 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 17 µg/m³ was considered representative of the annual average ambient background for NO₂ based on EPA monitoring data from the ambient air monitoring station at Ballyfermot. A short-term (hourly) background of twice the annual (i.e. 34 µg/m³) was used in predicting short term impacts 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).

Emissions from the installation under normal operations include emissions from gas engines and from testing of diesel generators. In a generator scenario (loss or reduction in power from the grid) the diesel generators would be operated for a longer period.

The following emission scenarios were modelled:

1. Normal operations:
 - Gas engines (22 no.): continuous operation
 - Diesel generators (21 no.): testing once a month at 33% load for 15 minutes in triplicate, sequentially, Monday to Friday between 9am to 5pm only.
2. Generator operation:
 - Gas engines (22 no.): continuous operation
 - Diesel generators (21 no.): testing as above and 200 hours continuous operation at full load. It is noted that the 21 generators were all modelled as 8.66 MW_{th} capacity generators, when in fact one is a 2.4 MW_{th} generator. As such the modelling is conservative in this respect.

- Emissions under generator operation were modelled as an average emission concentration rather than a maximum, following Agency guidance on modelling of emissions from generators. The maximum hourly emission rate from the generators was multiplied by a factor 200/8760 (where 8760, is the number of hours in a year), and modelled as continuous emissions over a full year.

Normal operations scenario – Scenario 1

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

Table 6.2 Dispersion Model Results – normal operations scenario

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)	34	63	97	48%	200
	Annual (2020)	17	5	22	55%	40

For the ambient 1-hour limit value (99.8%ile), the maximum predicted environmental NO_2 concentration was 48% of the standard. For the annual mean, emissions from the installation accounted for 55% of the standard at the worst off-site location.

In both cases, the highest concentrations occur close to the boundary of the site and decrease with distance from the installation.

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

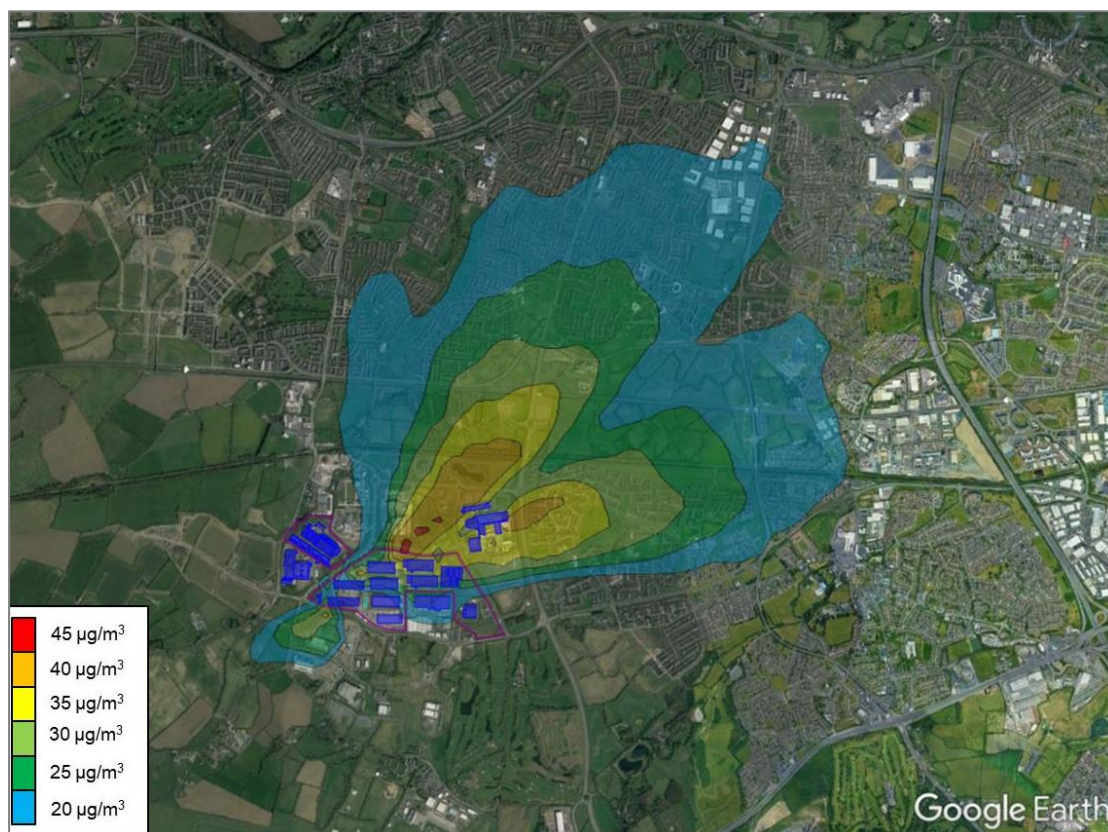


Figure 6.1: Maximum 1-hour NO_2 concentration (process contribution) for the worst-case year (2020) under Normal Operation. [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, July 2022]



Figure 6.2: Maximum annual average concentration (process contribution) for the worst-case year (2020) under Normal Operation. [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, July 2022]

The results indicate that the predicted ambient concentrations are within the relevant air quality standards. 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.

Diesel generator operation scenario – Scenario 2

The table below gives details of the predicted impact of the proposed main channelled emissions to air under the operation of diesel generators for 200 hours/year. The results presented are for the worst case location outside the installation boundary and worst case year.

Table 6.3 Dispersion Model Results – generators operating

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 (2019)	34	80	114	57%	200
	Annual (2017)	17	10	27	67%	40

For the ambient 1-hour limit value (99.8%ile), the maximum predicted environmental NO_2 concentration was 57% of the standard. For the annual mean, emissions from the installation accounted for 67% of the standard at the worst off-site location.

In both cases, the highest concentrations occur close to the boundary of the site and decrease with distance from the installation.

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.

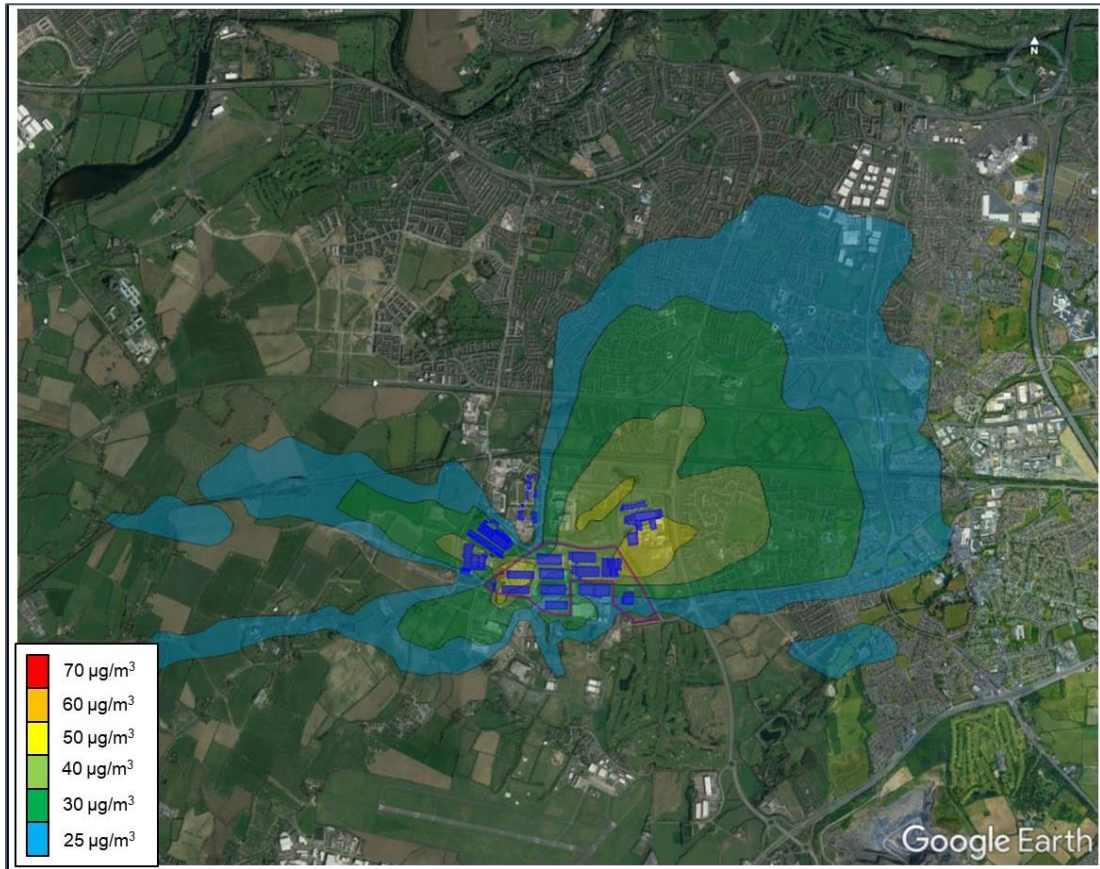


Figure 6.3: Maximum 1-hour NO_2 concentration (process contribution) for the worst-case year (2019) under diesel generator operation. [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, July 2022]



Figure 6.4: Maximum annual average concentration (process contribution) for the worst-case year (2017) under diesel generator operation. [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, July 2022]

The results indicate that the predicted ambient concentrations are within the relevant air quality standards.

3. 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 installations in the area (Figure 6.5). Details of data storage installations were obtained from planning permission applications (Amazon Data Services Ireland Limited (ADSIL), CyrusOne, Google Ireland Limited, Interxion, Edgeconnex and Echelon (Data and Power Hub)), as well as installations owned by the applicant; DUB04, DUB05, DUB06, DUB11, DUB07, DUB08, DUB09, DUB10, DUB12 and DUB13). Emissions from nearby IED licensed sites including Pfizer and Takeda were also included in the cumulative modelling.

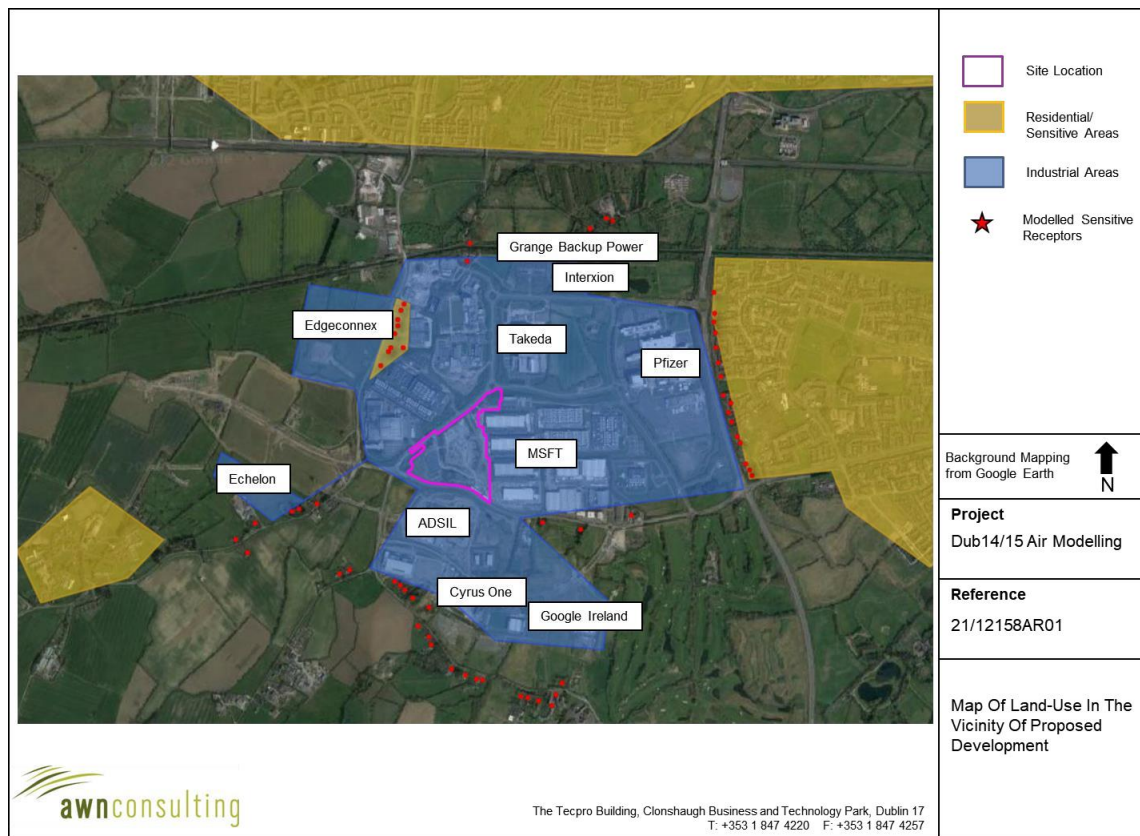


Figure 6.5: Map of licensed installations and data centres in the Grange Castle area [Source: application Attachment-7-1-3-2 Air Emissions Impact Assessment, July 2022]

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 installations, 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 (Microsoft, Data and Power Hub) 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 subject to variation.

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

Table 6.4 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 (2019)	34	112	146	73%	200

	Annual (2017)	17	19	36	91%	40
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In both cases the predicted environmental concentration exceeded 70% of the air quality standard. For the ambient 1-hour limit value (99.8%ile), the maximum predicted environmental NO₂ concentration was 73% of the standard. For the annual mean, emissions from the installation accounted for 91% 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.

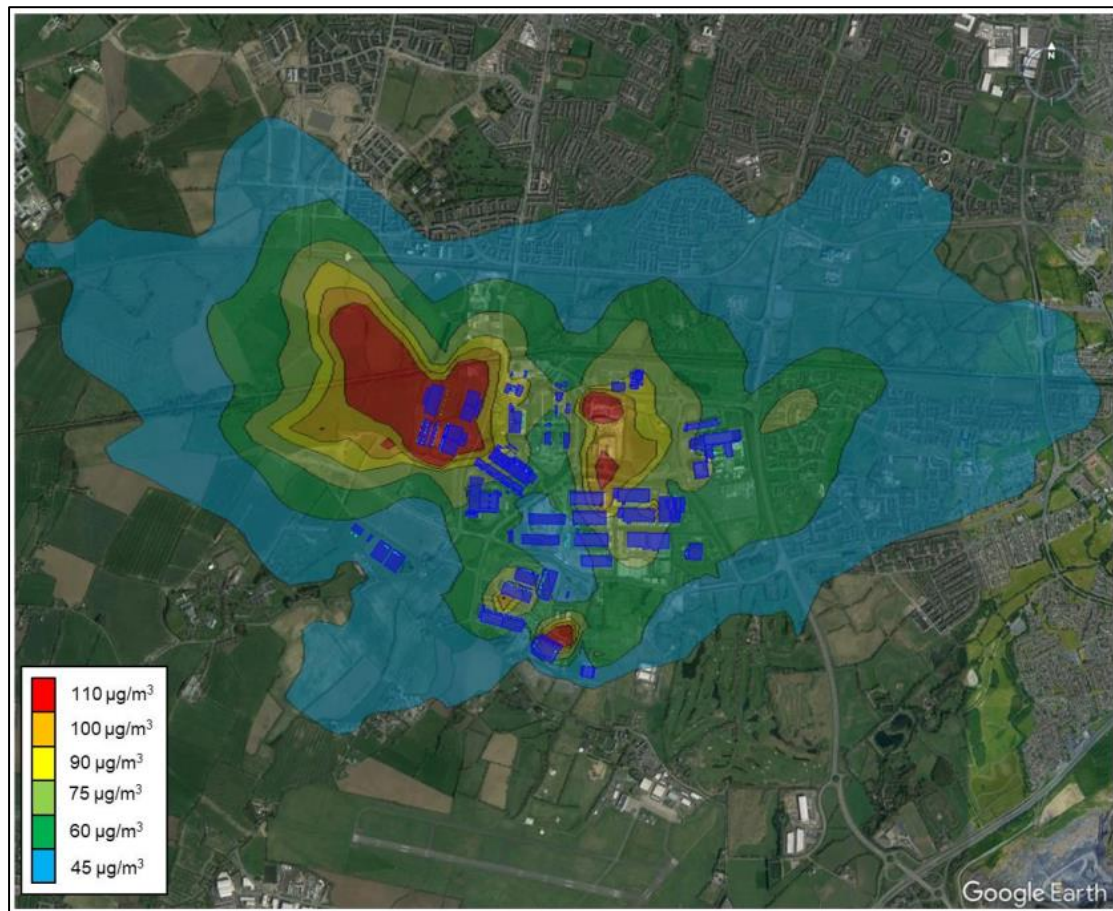


Figure 6.6: Maximum 1-hour NO₂ concentration (process contribution) for the worst-case year (2019) under Cumulative Scenario. [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, July 2022]

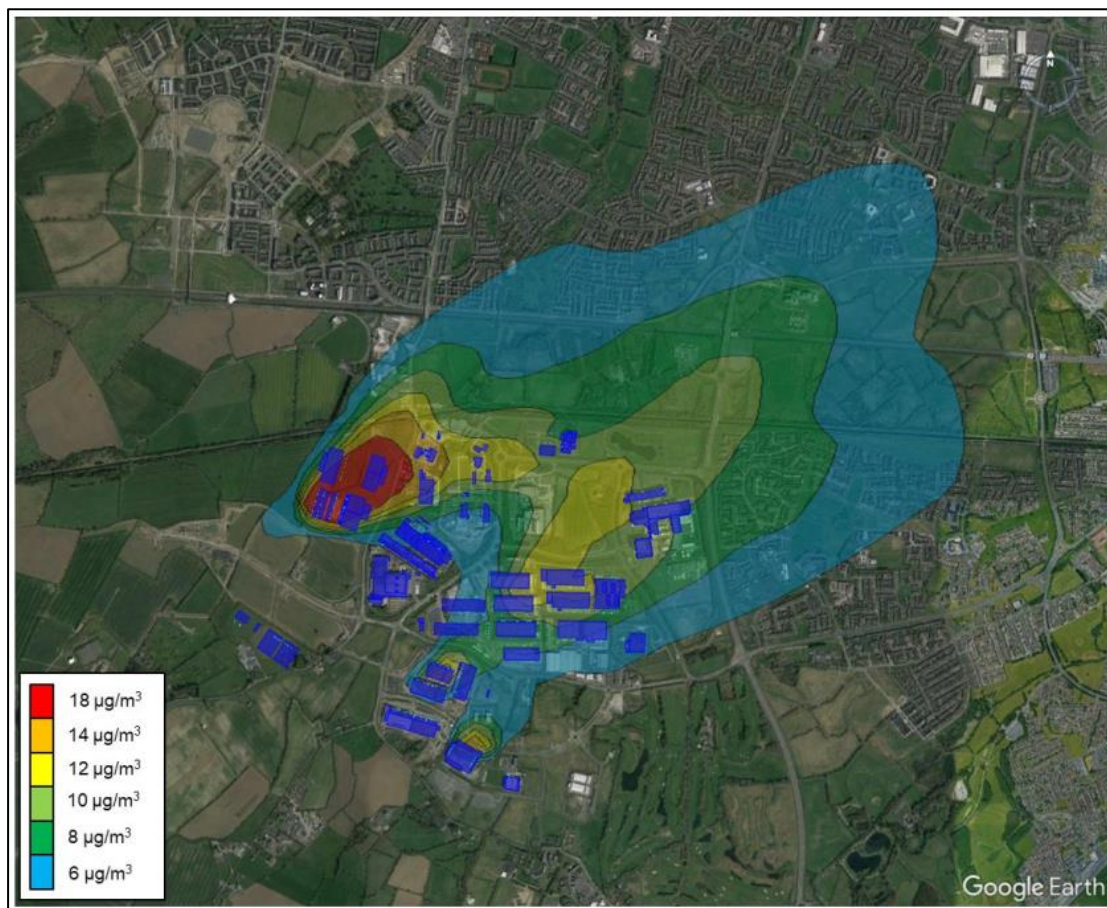


Figure 6.7: Maximum annual average concentration (process contribution) for the worst-case year (2017) under Cumulative Scenario. [Source: Attachment-7-1-3-2-Air Emissions Impact Assessment, July 2022]

In both cases (annual mean, 1-hour), the highest predicted concentrations occur near another data storage facility to the northwest of the Microsoft installation. An examination of the emissions from diesel generator operation (Scenario 2) at the Microsoft installation (Figures 6.3 and 6.4 above) indicate that emissions from the installation do not make a large contribution to the maxima observed in Figures 6.6 and Figure 6.7.

For the 1-hour concentration, emissions from the Microsoft installation (Figure 6.3) contribute at most about $40 \mu\text{g}/\text{Nm}^3$ to the areas in red in Figure 6.6, which is 36% of the cumulative process contribution ($112 \mu\text{g}/\text{Nm}^3$) and 20% of the AQS ($200 \mu\text{g}/\text{Nm}^3$). For the annual mean concentration the impact of emissions from the Microsoft installation (Figure 6.4) do not overlap with the area in red in Figure 6.7 above.

Assessment of impacts on ecosystems

Grand Canal proposed Natural Heritage Area (pNHA) is approximately 800m from the installation. At the worst case location, the installation could contribute up to $3 \mu\text{g}/\text{Nm}^3$ NO_2 ($3.3 \mu\text{g}/\text{Nm}^3$ NO_x as NO_2) to the pNHA under the generator operation scenario. This is 11% of the annual limit value of $30 \mu\text{g}/\text{m}^3$ for $\text{NO}_x(\text{NO}+\text{NO}_2)$ as specified within EU Directive 2008/50/EC for the protection of ecosystems. However, it should be considered that this is a conservative estimate, based on the assumptions in the model, e.g. that testing takes place on a weekly basis, continuous operation of the gas generators, and operation of diesel generators for 200 hours per year. In practice the contribution is likely to be much lower.

In terms of nitrogen deposition, the contribution from the installation would be just under 0.5 kg N/ha/year at the worst case location of the Grand Canal pNHA. Habitats along the pNHA include hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The threshold for impact for grasslands and woodland are in the range of 10-20 kg N/ha/year¹. As such, the contribution from the installation can be considered not significant.

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

Recommendation

The air dispersion modelling assessment indicates that under Normal Operations, emissions from the installation will not give rise to impacts on air quality standards.

- The RD applies emission limit values and monitoring for the gas engines (A2-1 to A2-22) based on the requirements of the MCP Regulations. The RD requires monitoring of emissions from gas engines at least once every three years and from diesel generators at least once five years in line with the MCP Regulations.

Given the number and proximity of the generators in the Grange Castle area, particularly across several data storage facilities, there is a potential for an exceedance of both the short-term and long-term air quality standards for NO₂, if the generators across several of the data storage facilities are operating simultaneously.

Therefore, to address the potential for an exceedance of both the short-term and long-term NO₂ air quality standards, 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 diesel generators to 200 hours per year, with no more than 181.86 MW_{th} operating simultaneously based on the modelling above of 21 diesel generators (21 x 8.66 MW_{th}) (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 once a month at 33% load for 15 minutes three at a time, sequentially (Schedule A).
- The applicant is required to establish an Ambient Air 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.

¹ <https://www.apis.ac.uk/> accessed 14 March 2023

- 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 MCP 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 from the proposed activity. Fluorinated gases will be used at the installation which will be controlled by the F-gas Regulations (EU No. 517/2014).

6.2 Emissions to Water/Sewer

6.2.1 Emissions to Surface Waters

There will be no direct process emissions to surface waters from the installation. Storm water discharged from the installation will include some storm water draining from an adjacent installation under the control of the applicant and which may contain residual cooling water from that installation. This is discussed further in the storm water below.

6.2.1 Emissions to Sewer

Foul effluent and evaporative cooling water from the data storage installation will be discharged to the public foul sewer (at Emission Point SE1). 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 (D0034-01) for treatment.

The air handling units at the installation provide conditioned air to the data centre buildings in order to maintain temperature, relative humidity and pressurisation in the data halls. The evaporative cooling system for the data halls operates in two modes; free cooling and evaporative cooling. Under the free cooling mode, conditioned air, at ambient air temperature is passed across the IT servers located in the data halls, and this air is either recirculated or exhausted to atmosphere. Under the evaporative cooling mode, which typically occurs for approximately 5% of a typical year, harvested rainwater is used as the cooling media to cool the ambient air that is introduced into the data halls. The majority of the harvested rainwater that is used as cooling water, with a back-up of mains water supply, is evaporated in the process. The rainwater captured from the data hall roof areas will be filtered, pre-treated (UV treatment) and sterilised with sodium hypochlorite (to mitigate against legionella, dosed to a level between 0.2 ppm and 0.5 ppm) before being fed into the raw water storage tank located in the water treatment plant room area. When water is used for cooling, it is recirculated in a closed loop system. When a conductivity set point of 1,000 $\mu\text{S}/\text{cm}$ is reached, the cooling water is discharged to the foul sewer network serving the installation at ambient temperature (peak discharge 0.76 l/s).

The average annual water consumption for the cooling system is approximately 1000 m^3 . Between 500 m^3 and 800 m^3 of this is evaporated and up to a maximum 500 m^3 is discharged to the foul drainage system on the site annually. The water use, and discharge is monitored by the Building Management System (BMS) that independently tracks water use for both internal and external accountability.

The Section 99E consent notification for SE1 was received on the 18th of November, 2022 from Úisce Éireann specifying conditions and emission limit values to be set in Schedule B of the Recommended Determination. The RD specifies conditions and emission limit values in Schedule B, that align with the Section 99E Consent Notification received from Úisce Éireann.

6.3 Storm water discharges

Storm water is discharged to the storm water network located to the west of the site. Storm water discharge consists of storm water from roofs and hardstanding areas as well as some storm water from the adjacent installation (subject to licence application Reg. No. P1191) which is under the control of the applicant. Residual water from the evaporative cooling system at P1191 is discharged to storm water and as such may drain into P1187. Storm water from P1191 is monitored at two discharge monitoring points prior to entering the P1187 installation. Due to the properties of the evaporative cooling water at peak weather conditions and the dilution in the storm water drainage system and attenuation tanks within the P1187 installation, it is considered that the concentration of salts in the storm water discharges from the site is insignificant.

The storm water is passed through Class I full retention hydrocarbon interceptors to capture any diesel spillages outside of the bulk storage bunds, as well as fuels from vehicles using the internal road network, prior to being discharged to one of three attenuation tanks located on site (total capacity 5,619 m³). The attenuation tanks discharge at Emission Point SW1. The interceptors will be equipped with hydrocarbon level detectors that connect to a central critical alarm. The storm water discharges offsite at 1 no. Emission Point (SW1), via a hydrobrake (21.6 l/s) when there is adequate rainfall for discharge to occur, to the Griffeen River (IE_EA_09_242) to the southwest of the site, which ultimately connects to the River Liffey and Dublin Bay.

Table 6.5 below gives details on the installation's storm water discharges to waters; the sources of potential contamination of these discharges, the type of on-site abatement, as well as details of the receiving water.

Table 6.5 Storm water Discharge Point Details

Emission Reference	Monitored parameters (monitoring frequency)	Abatement	Drainage areas	Discharging to	Trigger levels established (Y/N)
SW1	Visual (daily); pH, TOC, conductivity, temperature (weekly)	Class I full retention separators with hydrocarbon detectors and lockdown valves linked to the Building Management System.	Buildings, site roads and walkways, car parks in P1187 and P1191.	Griffeen River via a public storm water drain	N Required by RD.
Automatic diversion in place:	Yes				

The RD requires the applicant to maintain the storm water drainage system. The RD also requires that the storm water discharge is visually inspected daily, and monitored for pH, total organic carbon (TOC), temperature and conductivity weekly and any other parameters as required by the Agency, in accordance with *Schedule C.2.3 Monitoring of Storm Water Discharges*.

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 site is bounded to the south by the Nangor Road, the Grange Castle access road to the west, and by Microsoft Data centres DUB09 – DUB13 to the east. There is a cluster of residential dwellings 450 m northwest of the site boundary (at the closest point) and a cluster of residential dwellings 490 m southwest of the installation. The Grange Castle Golf Club is located c. 830 m south east of the site boundary. There are two residential dwellings 190 m and 460 m to the east/southeast of the installation. The applicant has indicated that these are no longer noise sensitive receptors and there are a number of planning permissions or applications for the sites in question which indicate that these dwellings are to be demolished and it is intended to expand the industrial park into this area.

The primary source of noise is expected to arise from the installation's building service plant (i.e. the air handling unit (AHU) air intake and the AHU air exhaust) as well as the operation of the generators during testing and operation.

In support of its licence application, the applicant has submitted a noise assessment in accordance with Agency's NG4² Guidance. A baseline noise survey was conducted at five locations; two at the site boundary and three representative of noise sensitive receptors. The predominate source of noise at the locations monitored was road traffic.

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,
- B. Normal operations, with gas generation, and
- C. Representative of a situation whereby all gas and diesel generators are in operation.

The assessment considered the proposed installation and potential cumulative impacts associated with the installation and existing/permitted Microsoft data centres in the area (DUB03 - DUB13 inclusive).

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

However, under the worst case scenario, Scenario C (all diesel generators and gas engines 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)(see Figure 6.8). 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.

² Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016

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 (up to 200 hours per annum) it is considered that the standard noise limit values should apply at the noise-sensitive locations.

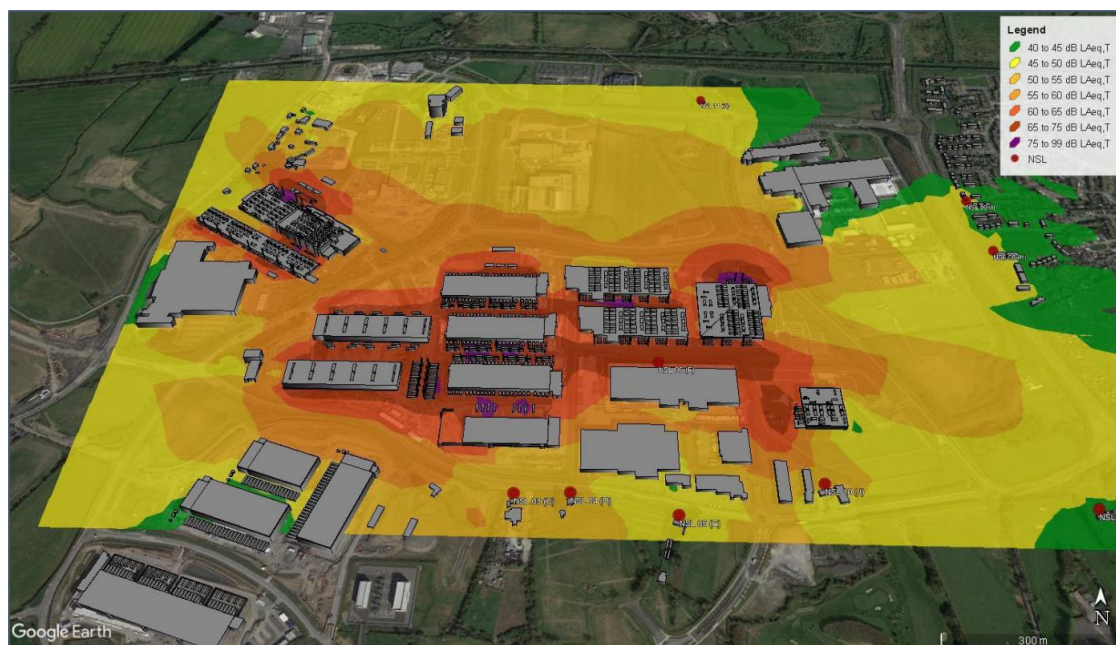


Figure 6.8: Predicted noise levels when generators are in operation (Scenario C).

Furthermore, as the noise levels under Scenario C (the worst-case scenario of all generators and gas 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 commencement of the activity.

7. Waste generation

Certain wastes will be generated on site as part of the licensable activity but given the nature of the activity it is expected that waste generation will be minimal.

The categories of waste that will be generated from the proposed activity will include metals (c. 16.5 tonnes/annum), general waste (c. 12.6 tonnes/annum), plastic bales (c. 3.5 tonnes/annum), dry mixed recyclables (c. 2.4 tonnes/annum), food/organic waste (c. 1 tonnes/annum), oily water (from separators) (c. 70 tonnes/annum), air filters (c. 10.8 tonnes/annum), and e-waste including miscellaneous parts and equipment (e.g. fans, hard drives, cables, etc.) (1.9 tonnes per annum). A full list of waste streams that will be generated at the installation 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 will be kept

in a self-bunded area until they are disposed of off-site by a licenced/permited contractor.

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

8. Energy Efficiency and Resource Use

The operation of the installation involves the consumption of fuel (primarily gas) and electricity. Table 8.1 below provides the applicant's estimate of the maximum quantities of energy and resources that will be used.

Table 8.1: Energy and resource use at the installation

Resource	Quantity per annum
Electricity	605,435 MWh
Natural Gas	26,500,000 m ³
Gas oil (diesel)	50 m ³
Water (public supply and rainwater capture)	9,003 m ³

The applicant will employ 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.

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

In the application of BAT, Condition 7 of the RD 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 RD.

The Climate Action Plan³ sets out a proposed pathway to meet the emission reduction target for the energy sector through a more rapid build out of renewables (wind and solar power), increased storage and the deployment of zero-emissions gas. In the case of the electricity generation sector, the Climate Action Plan sets a target to reduce CO₂-eq. emissions from the sector by between 2 to 4 Mt CO₂-eq. by 2030, which is to be largely facilitated by increasing the share of renewable energy generation up to 80% by 2030.

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

³ Climate Action Plan 2023, Changing Ireland for the Better.

decarbonisation and energy efficiency. Condition 7 of the RD would further support National policy to reduce the emissions from the energy sector by requiring the applicant to carry out a feasibility study of opportunities to increase the use of solar power, sustainable biofuels and other renewable energy options including energy storage. The Energy Efficiency Directive 2012/27 (EED) mandates that large organisations complete energy audits. The SEAI manages and oversees compliance with Ireland's obligations under Article 8 of the EED. However, Condition 7 of the RD requires the applicant to carry out an audit of energy use and the energy efficiency of the site within one year of the date of commencement of the activity and repeat the audit at intervals as required by the Agency.

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

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/Limitation of Consequences

Potential accidents & measures for prevention/limitation of consequences	
Potential for an accident or hazardous/ emergency situation to arise from activities at the installation.	• Potential for fire, due to large quantities of 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

Potential accidents & measures for prevention/limitation of consequences	
	automatically shutoff drainage from these sumps if diesel is detected in the sump. • Drainage from the diesel tank farm and transformer areas will be equipped with a Class 1 full retention hydrocarbon interceptor. • All interceptors at the installation will be 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).

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 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 will be stored at the installation will be 696 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. Therefore, the quantity of diesel stored at the site does not exceed the thresholds of the COMAH Regulations.

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 P1191) will exceed the 2,500 tonne threshold and together will be registered as a lower-tier COMAH site with the HSA. No physical development will take place under this planning and no changes to the volume of diesel storage have been proposed regarding the P1187-01 installation.

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 9-1-1 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 western part of the site has always been undeveloped and used for agriculture only and that the eastern part of the site was used as a pitch and putt golf course prior to the current development.

The report refers to data from a 2019 site investigation. Analyses of soil samples from the site indicated that there is no evidence of any residual contamination beneath the site. No LNAPL or DNAPL layers were observed or sampled during the site investigation. No asbestos was detected in any of the soil samples.

Storm water from the installation is diverted to an attenuation tank prior to discharge. The attenuation tank discharges to a storm water sewer, and then to the River Griffeen (IE_EA_09L012100), which currently has a WFD status of 'poor'. 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 will be stored and managed within a bunded area. This bunded area will be subject to routine integrity testing and is 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 will be 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

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. Anna Pringle	Not Here Not Anywhere	03 February 2023
Issues raised: 1. The development of a gas-fired power plant is not consistent with Ireland's national and international climate targets and it should be rejected on that basis. 2. That the development is not consisted with the EU's Emissions Trading System goals of reducing net greenhouse gas emissions by at least 55% by 2030 3. That the gas-fired plant will have a negative effect on climate and Ireland's ecology – due to emissions and indirectly from methane leaked through the production and distribution of natural gas. The submission further states that the annual CO₂ emissions from the proposed installation would be 56,725.77 tonnes at a time when large decreases in CO₂ emissions are required. 4. That the cumulative impact of the installation in combination with potential other new gas fired plants as well as diesel combustion plant associated with data centres must be considered. 5. The submission questions how and where the natural gas to supply the plant will be sourced, and in the event of shortages, how gas supply will be prioritised. 6. That Ireland's energy security is being threatened by the energy demand of data centres which is growing rapidly. The submission requests the EPA <i>"be cognisant of data centre growth in Ireland when considering Ireland's energy demand, and to prioritise climate targets and commitments over the continued expansion of fossil fuel infrastructure to service the data centre"</i>		

industry” and further argues that data centre energy needs should be met through renewable forms of energy.

Agency Response:

1. During normal operations, the installation will be supplied electricity from the national grid. Government policy in relation to the reduction in greenhouse gas emissions for the electricity sector will apply to the electricity supplied to the installation via the grid connection.
2. Emissions from gas engines and diesel generators will be subject to a ghg emissions trading scheme. The installation will be required to operate 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. In addition, the Recommended Determination requires the licensee to examine the use of renewable forms of energy and to decrease or offset the use of fossil-fuel based energy at the installation.
3. The impacts of greenhouse gas emissions from the activity are addressed in Point 1 above. The emissions of methane from the production and distribution of natural gas are outside the scope of the licence.
4. The cumulative impact of emissions from the installation as well as from other data centres on air quality has been assessed as part of the licence application. In terms of greenhouse gas emissions – data centres with capacity of 20 MW thermal input or more are required to operate under a Greenhouse Gas Emissions Permit as part of the ETS. The wider policy around energy supply to other data centres is outside the scope of the licence.
5. Points 5 and 6 around security of natural gas supply and energy supply are outside the scope of the licence. Security of energy supply and gas supply is a policy matter for the Department of the Environment, Climate and Communications and is outside the scope of the licence.

13. Consultations

13.1 Cross Office Consultation

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

13.1 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 are outside of the zone of influence of air emissions arising at the installation with the closest European Site being > 5kms away (Rye Water Valley/Carton SAC). Emissions to air consist of emissions from the standby gas generation plant (comprising 22 natural gas generators), standby diesel generators (21 no.), breather and pressure relief vents.
- European Sites and their qualifying interests are considered to be outside the zone of influence of noise emissions from the installation.
- Emissions to sewer (other than sanitary effluent) consist of spent cooling water. This effluent is discharged to sewer and ultimately treated in the EPA licensed Ringsend WWTP (Register Number D0034-01) which is designed to provide secondary treatment with a plant capacity of approximately 1,640,000 population equivalent which is currently exceeded at the plant. Treated effluent from the Ringsend WWTP is discharged to the Liffey Estuary Lower. According to EPA Maps, the coastal water quality for Dublin Bay has a reported status of unpolluted for the period 2018-2020. Taking into account the nature of the discharge from the installation, it will not indirectly have a significant effect on European Sites in the vicinity of the WWTP Discharge in Dublin Bay.
- There are no direct process emissions to surface water, 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 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment*. The application was accompanied by two EIARs (dated November 2020 and July 2021).

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 EIARs), any information received through consultation, 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 EIAR complies with the provisions of Article 5 of the 2014 EIA Directive when considered in conjunction with the additional material submitted with the application.

I am satisfied that the information contained in the EIAR has been prepared by competent experts and 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: population and human health, biodiversity, land, soil, water, air and climate, the 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. In addition, the vulnerability of the activity to risks of major accidents and/or disasters has been considered. 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 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

The Agency consulted South Dublin County Council under the relevant section of the EPA Act on 27 September 2022. A reminder was sent on 25 November 2022. South Dublin County Council did not provide any observations to the Agency on the licence application and EIAR.

15.3 Alternatives

The matter of alternatives is addressed in the EIARs. The documentation addresses the selection of Grange Castle Business Park as the preferred site location on account of the established data centre installations in the vicinity of the site and suitable access and transport connections. It considered alternative building arrangements within the site and alternative processes. In relation to power supply, the evaluation of the options concluded that a standby gas generation plant was the preferred option for power supply to meet the requirements of the utilities provider flexible demand agreement.

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) population and human health;*
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- (c) land, soil, water, air and climate;*
- (d) material assets, cultural heritage and the landscape;*
- (e) the interaction between the factors referred to in points (a) to (d).*

15.4.1 Population & Human Health

Identification, Description and Assessment of Effects

Population and human health are addressed in the EIARs submitted by the applicant. The installation is located in an industrial park, comprising of industrial and commercial units. Along the eastern boundary is another Microsoft data centre installation comprising seven data centre buildings (IE application P1191-01). There are relatively few residential properties in the immediate vicinity of the application site. The nearest occupied properties are approximately 500m to the north-west along the Newcastle Road (R120) and approximately 600m to the south-east along the New Nangor Road (R134). The Grange Castle Golf Club is located c. 830 m southeast of the site boundary.

The main emissions from the installation are emissions to air from the gas generation plant and the diesel generators, noise emissions, storm water discharges and emissions to sewer of residual cooling water. There are emissions to air (NO_x/NO₂, CO, SO₂ and particulate matter) from the gas engines and diesel generator stacks when operational. The primary sources of noise are the installation's building service plant and operation of the gas engines and generators. Storm water discharges will consist of rainfall from hardstanding areas and may also include residual cooling water from the adjacent installation (licence application ref. no. P1191). As discussed in 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. Residual cooling water associated with Air Handling Units at the installation itself is directed to the sewer system, from where it is directed to the EPA Licensed Ringsend Municipal Wastewater Treatment Plant (D0034-01) for treatment. Taking into account the nature of the discharge from the installation, it will not indirectly have a significant effect on human health in the vicinity of the WWTP Discharge in Dublin Bay. See also the 'Emissions to Sewer' section of this report.

The potential direct and indirect effects on population and human health that come within the functions of the Agency, are primarily associated with emissions to air and noise emissions. Should emissions cause an exceedance of environmental quality standards this could have implications for human health. 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. The effects identified and described above have been assessed in the following section of this report: Emissions to Air and Noise.

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 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 exceedance of noise limits. These are addressed in the Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to population and human health have been assessed. There is a potential for an exceedance of air quality standards for human health if generators across several of data storage installations in the vicinity are operating simultaneously with the installation's own generators and gas generation plant. In addition to imposing emission limit values (ELVs) on the gas engines and 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 potential for significant effects in relation to noise as detailed in the noise sections of this report. Therefore, it is considered that there is a potential for a significant cumulative effect from the activity and other activities/developments on population and human health.

Mitigation and Monitoring

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

Conclusions

I have examined all the information on population and human health, 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 population and human health.

15.4.2 Biodiversity

Identification, Description and Assessment of Effects

Biodiversity is addressed in the EIARs which describe the habitats and species at and in the vicinity of the installation. The installation is located in an Industrial Park and is currently under construction (two data centre buildings known as Dub 14 & Dub 15, gas generation plant, diesel generator plant and associated infrastructure). It is directly adjacent to another currently operational data centre (to the east) operated by the same applicant (licence application ref. no. P1191). Prior to construction commencing, the area comprised of recolonised improved grassland with pockets of mixed woodland and scrub of relatively low local ecological value according to the applicant. No rare or protected habitats were recorded. There were no rare or endangered species of bird recorded breeding within the installation boundary nor were bat roosts, badgers or otters recorded during surveys.

The Grand Canal proposed Natural Heritage Area (pNHA) is approximately 800m north of the installation. The closest European Site is approximately 5kms away (Rye Water

Valley/Carlton SAC). The applicant also submitted an Appropriate Assessment Screening Report (Refer to the Appropriate Assessment section of this report).

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

Emissions to air arise from the combustion of gas in the gas generation plant and the combustion of diesel in the generators. The Emissions to Air section provides details on air dispersion modelling including assessment of potential impacts on vegetation. Air dispersion modelling indicates that the installation could contribute at the worst case up to 3 µg/Nm³ NO₂ (3.3 µg/Nm³ NO_x as NO₂) to the pNHA under the generator operation scenario. This is 11% of the annual limit value of 30 µg/m³ for NO_x (NO+NO₂) as specified within EU Directive 2008/50/EC for the protection of ecosystems. However, it should be considered that this is a conservative estimate based on the assumptions in the model, e.g. that testing takes place on a weekly basis, continuous operation of the gas generators and operation of diesel generators for 200 hours per year. In practice the contribution is likely to be much lower and therefore is not likely to have a significant effect on biodiversity in its own. Cumulative effects of air emissions from the activity in relation to biodiversity have been assessed. There is a potential for an exceedance of air quality standards relevant to biodiversity if generators across several of the data storage installations in the vicinity are operating simultaneously with the installation's own generators and gas generation plant. See the Emissions to Air section of this report. In addition to imposing emission limit values on the gas engines and operating restrictions on the on-site diesel generation plant; 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.

Noise emissions associated with operation of the activity are assessed in the Noise section of this report. There were no noise sensitive species recorded within the installation boundary during the applicant's surveys and it is considered that there is no potential for significant effects on mammals and birds due to noise emissions. The River Griffeen runs along the north-west boundary of the installation to join the River Liffey in Lucan. Storm water from the installation (and part of the neighbouring installation licence application ref. no. P1191) is discharged to the storm water drainage network and ultimately to the River Griffeen (IE_EA_09L012100). Storm water discharges will consist of rainfall from hardstanding areas and may also include residual cooling water from the adjacent installation (licence application ref. no. P1191). As discussed in 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.

Residual cooling water from the data storage installation (P1187) will be discharged to the public foul sewer to be treated at the EPA Licensed Ringsend Municipal Wastewater Treatment Plant (D0034-01). The RD sets a maximum volume to be emitted in any one day to 20m³. Taking into account the nature and volume of the discharge from the installation, it will not indirectly have a significant effect on biodiversity in the

vicinity of the WWTP Discharge in Dublin Bay. See also the 'Emissions to Sewer' 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.

Mitigation and Monitoring

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

Conclusions

I have examined all the information on biodiversity, 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 biodiversity.

15.4.3 Land and Soil

Identification, Description and Assessment of Effects

Land and soil are addressed in the EIARs received from the applicant. A description of the area, land use, soils and geology is provided. Information is also provided on ground investigations carried out in 2019 and 2021. 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 a slight slope from c60.00m OD on the south east corner to c.66m OD on the northern boundary. 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 currently under construction and was previously a greenfield site. A baseline report was submitted with the application and analyses of soil samples from the site indicated that there is no evidence of any residual contamination beneath the site. 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 accidental emissions. There is 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. 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: Prevention of Accidents.

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: 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 EIARs 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.

Storm water runoff (rainfall) from hardstanding areas is attenuated on site prior to discharge to the Griffeen River. As discussed above in the storm water discharges section, storm water discharged from the installation will include some storm water draining from an adjacent installation (licence application ref. no. P1191) which is under the control of the applicant and which may contain residual cooling water from that installation. As discussed, it is not considered that these storm water discharges are likely to have a significant effect on the receiving water.

There are no direct process emissions to ground or groundwater from the installation. 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.

Emissions to sewer (other than sanitary effluent) consist of evaporative cooling water. This is discharged to sewer and ultimately treated in the EPA licensed Ringsend WWTP (Register Number D0034-01). Taking into account the nature of the discharge from the installation, it will not indirectly have a significant effect on the environment in the vicinity of the WWTP Discharge in Dublin Bay.

The potential direct and indirect effects on water relate to accidental emissions. There is 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. Should emissions cause an exceedance of water quality standards in the receiving water, this could have potential effects on water quality, aquatic biodiversity and human health. The effects identified and described above have been assessed in

the following section of this report: Emissions to Water/Sewer, Prevention of Accidents and Land and Soil.

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 Sewer, Storm Water Discharges, 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) 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 EIARs submitted by the applicant. The applicant utilised a computer-based noise model to prepare noise prediction calculations at noise sensitive receptors. The installation is located in an Industrial Park and is currently under construction. It is directly adjacent to another operational data centre (to the east) operated by the same applicant. To the north and south is further industrial development with agricultural land to the south-west. The site and surrounding topography are relatively flat. There are relatively few residential properties in the immediate vicinity of the application site. The nearest occupied properties are approximately 450m to the north-west along the Newcastle Road (R120) and approximately 600m to the south-east along the New Nangor Road (R134). The applicant submitted a noise assessment, and the existing noise environment was dominated by local road traffic noise and other existing industry plant noise in the surrounding area. 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 plant design.

The potential direct and indirect effects of noise associated with the operation of the activity are the building service plant (air handling units) and operation of the gas engines and 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. 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 (50dB and 45dB respectively) at the installation boundary in the scenario where all of the diesel generators and gas engines are running. Therefore, there is the potential for significant effects. 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.

There is no source of vibration associated with the activity that is likely to have significant effects on the environment.

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

Information relating to the cumulative effects of the activity in relation to noise have been provided by the applicant. As there is the potential for significant effects from the activity alone it is considered that there is also potential for significant cumulative effects in the event that the generators are operational 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 EIARs received from the applicant. The potential direct and indirect effects on air are associated with emissions to air (NO_x/NO₂, CO, SO₂ and particulate matter) from gas engines stacks due to the combustion of natural gas and from the diesel 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 health and biodiversity within and beyond the installation boundary. 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 gas engines and diesel generation plant on ambient air concentrations during two emission scenarios as set out in the Air section of this report. 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 a 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 with the installation's own generators and gas generation plant. See the Emissions to Air section of this report. In addition to imposing emission limit values on the gas engines and operating restrictions on the on-site diesel generation plant; 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.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to air are detailed in the 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 EIARs received from the applicant address 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. GHG's 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 2023⁴ 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 Centres⁵ 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 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 natural gas in the gas engines and combustion of diesel in the generators at the installation. Some F-gases will also be 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 natural gas in the gas engines and diesel in the generators at the installation. During normal operations, it is intended that the installation will be supplied electricity from the national grid. However, building DUB 15 will be supported by 22 gas engines which will be used to power the facility as required by the utilities provider under a flexible demand agreement - the engines will be called on to operate during times when supply on the electricity grid is constrained. This could be up to 8 hours a day during peak hours - between 8am and 12pm in the morning and 4pm and 8pm in the evening. The 21 no. diesel generators will provide power to the other building DUB 14 in the event of loss of power from the grid. The installation is not yet operational. The applicant will be required under the EU Emissions Trading Scheme (ETS) to obtain/amend a GHG permit to cover the carbon dioxide (CO₂) emissions from these sources. The EU ETS covers emissions of CO₂ from power and heat generation. The applicant already holds GHG Permit IE-GHG179-10502-4, which was issued on 25 June 2021 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 a separate IE licence application P1191-01 while three buildings DUB 3, 4 and 5 relate to a separate IE licence application P1190-01.

Emissions of CO₂ from the diesel generators would be approximately 137 tCO₂ per annum (calculated based on the applicant's estimated diesel usage of 43 tonnes per annum). Emissions of CO₂ from the gas engines are approximately 52,216 tCO₂ per annum (calculated based on the applicant's estimated gas usage of 26,500,000m³ per

⁴ Climate Action Plan 2023, Changing Ireland for the Better. ([Error! Hyperlink reference not valid.](#))

⁵ Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy, July 2022.

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, 2022⁶).

Indirect emissions of CO₂ may arise due to the use of electricity from the national grid, if it is generated from fossil fuels, which will contribute to climate change. In the application the proposed electricity purchased figure is provided as 498,000 MW hours of electricity per year. This equates to 173,204 tonnes of CO₂ per annum, based on an emission factor of 347.8g CO₂/kwh (SEAI 2021⁷), which is considered significant.

The Energy Efficiency and Resource Use section of this report and the applicant's application documents provide 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 will be required to operate under a Greenhouse Gas Permit (GHG) 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 GHG permit will 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 will be 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 total operation hours of generators 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 the date of commencement of the activity 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).

⁶Ireland'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).

⁷ [Conversion Factors](#) | [SEAI Statistics](#) | [SEAI](#) (SEAI, 2022).

- 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 licensee 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 commencement of the activity.

Furthermore, it is noted that the planning permission ref. SD20A- 0283 includes conditions relating to waste heat recovery and utilisation at the installation to facilitate the use of excess heat in existing and future development and the development of sustainable energy provision.

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 and gas engines 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 EIARs which include information on utilities and natural resources, traffic and waste management.

The potential direct and indirect effects on material assets are the consumption of natural resources in particular natural gas, diesel and water. The quantities to be used are provided in the 'Energy Efficiency and Resource Use' section of this report. The standby gas generation plant will operate on natural gas and the generators will operate solely on diesel, which is stored onsite. The circumstances that lead to the operation of these generators and gas engines are outlined earlier in this report and their usage will be dictated by the frequency of occurrence of these circumstances. 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, traffic and built services 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.

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.

The planning authority - South Dublin County Council has also identified, described and assessed the likely significant direct and indirect effects of the development on material assets considering the effects to be acceptable. It has provided detailed conclusions on material assets including on traffic and transportation, telecommunications and waste management in its report for SD20A/0283 and SD21A/0203.

15.4.8.2 Cultural Heritage

Identification, Description and Assessment of Effects

Cultural Heritage is addressed in the EIARs which set out the archaeological features in the area. The installation is located in an Industrial Park and is currently under construction. The documentation states that The Grange Castle and associated features are the sole visible archaeological features in the area. Grange Castle is located approximately 800 metres to the north-east of the installation. The installation is located in an Industrial Park and is currently under construction.

The potential direct and indirect effects on cultural heritage are in relation to population and human health. Any loss of archaeological or architectural heritage could impact negatively on population and human health. These matters are dealt with in the decision of the planning authority to grant planning permission for the developments on site and the planning authority has considered the effect to be acceptable.

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.

Cultural Heritage Conclusions

The planning authority - South Dublin County Council has identified, described and assessed the likely significant direct and indirect effects of the development on cultural heritage. It has considered the effects to be acceptable concluding that '*There will be no impact on archaeological remains.*'

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

15.4.8.3 The Landscape

Identification, Description and Assessment of Effects

Landscape is addressed in the EIARs. The potential direct and indirect effects on the landscape are visual impact of the data centre buildings (DUB 14 & DUB 15), gas generation plant and stacks, diesel generator plant and stacks, fuel storage and other associated infrastructure. The installation is located in an Industrial Park and is currently under construction. It is directly adjacent to another operational data centre (to the east) operated by the same applicant. To the north and south is further industrial development with agricultural land to the south-west. The site and surrounding topography are relatively flat.

The potential direct and indirect effects on the landscape are in relation to population and human health. Any disturbance of the landscape has the potential to impact on population and human health 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

The planning authority - South Dublin County Council has identified, described and assessed the likely significant direct and indirect effects of the development on the landscape and considered the effects to be acceptable. South Dublin County Council (SD21A/0203) did however have significant concerns regarding effects on the landscape and biodiversity. Further information was requested, and conditions imposed in relation to the 'Landscape Plan' for the development.

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 EIARs. The most significant interactions between the factors as a result of the activity are summarised below:

Interaction between Population and Human Health, Biodiversity, Air Quality, Water, Land, 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 Population and Human Health, Biodiversity and Noise: the activity has the potential to generate noise that could have adverse impacts on population and human health and disturb fauna.

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 population and human health, biodiversity, land, 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.

15.4.10 Vulnerability of the Project to Risks of Major Accidents and or Disasters

The EIARs describes the expected effects deriving from the vulnerability of the activity to risks of major accidents and/or disasters that are relevant to the activity. Major accidents and/or disasters assessed by the applicant include: external natural disasters such as landslides, seismic activity, volcanic activity and sea level rise / flood risk. The potential for major accidents to occur at the data storage installation has also been considered by the applicant with reference to Seveso Directive (2012/18/EU) and the Chemical Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. 209 of 2015) (COMAH). Fire and fuel spills have also been addressed in the documentation.

External natural disasters such as those listed above are not likely to occur at the installation due to the topography and location. The applicant states that a Site Specific Flood Risk Assessment was carried out and it was concluded that the development is not at risk of flooding, nor is it expected that the installation would adversely impact on flood risk for other neighbouring properties.

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. Therefore, the quantity of diesel proposed to be stored (696 tonnes) at the site does not exceed the thresholds of the COMAH Regulations. However, a planning application (SD23A/0039) has been submitted to the Planning Authority that relates to the total quantum of fuel oil to be stored within the applicant's existing and permitted tanks across the existing and permitted buildings (licence application ref. P1187 and P1191). If these buildings are being assessed jointly, this will result in an exceedance of the threshold of the COMAH Regulations. The Regulations lay down rules for the prevention of major accidents which involve dangerous substances, and the limitation of their consequences for human health and the environment, with a view to providing a high level of protection in a consistent and effective manner.

The Inspector's assessment is dealt with in the 'Prevention of Accidents' section of this report.

Mitigation and Monitoring

The mitigation and monitoring measures in relation to the vulnerability of the project to risks of major accidents and disasters specified in the RD are outlined in the 'Prevention of Accidents' section of this report.

Conclusions

I have examined all the information on major accidents and/or disasters 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 as a result of major accidents and/or disasters.

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 submissions from third parties 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 the gas engines and generators through combustion of natural gas and diesel respectively;
- 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;
- Emissions to sewer of evaporative cooling water; 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 emission limit values on the gas engines and 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, a response programme to address exceedances, and visual inspection of storm water drains;
- Emissions to sewer will be mitigated by imposing emission limit values and implementing other monitoring, maintenance and control measures; 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 €5,446, which reflects the anticipated enforcement effort required and the cost of monitoring.

17. Recommendation

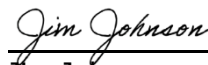
The Agency, in considering an application for a licence or the review of a licence, shall have regard to Section 83 of the EPA Act. The Agency shall not grant a licence or revised licence unless it is satisfied that emissions comply with relevant emission limit values and standards prescribed under regulation. 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, and has regard to the submission made.

This report was prepared by Jim Johnson, Rachel Neeson, 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



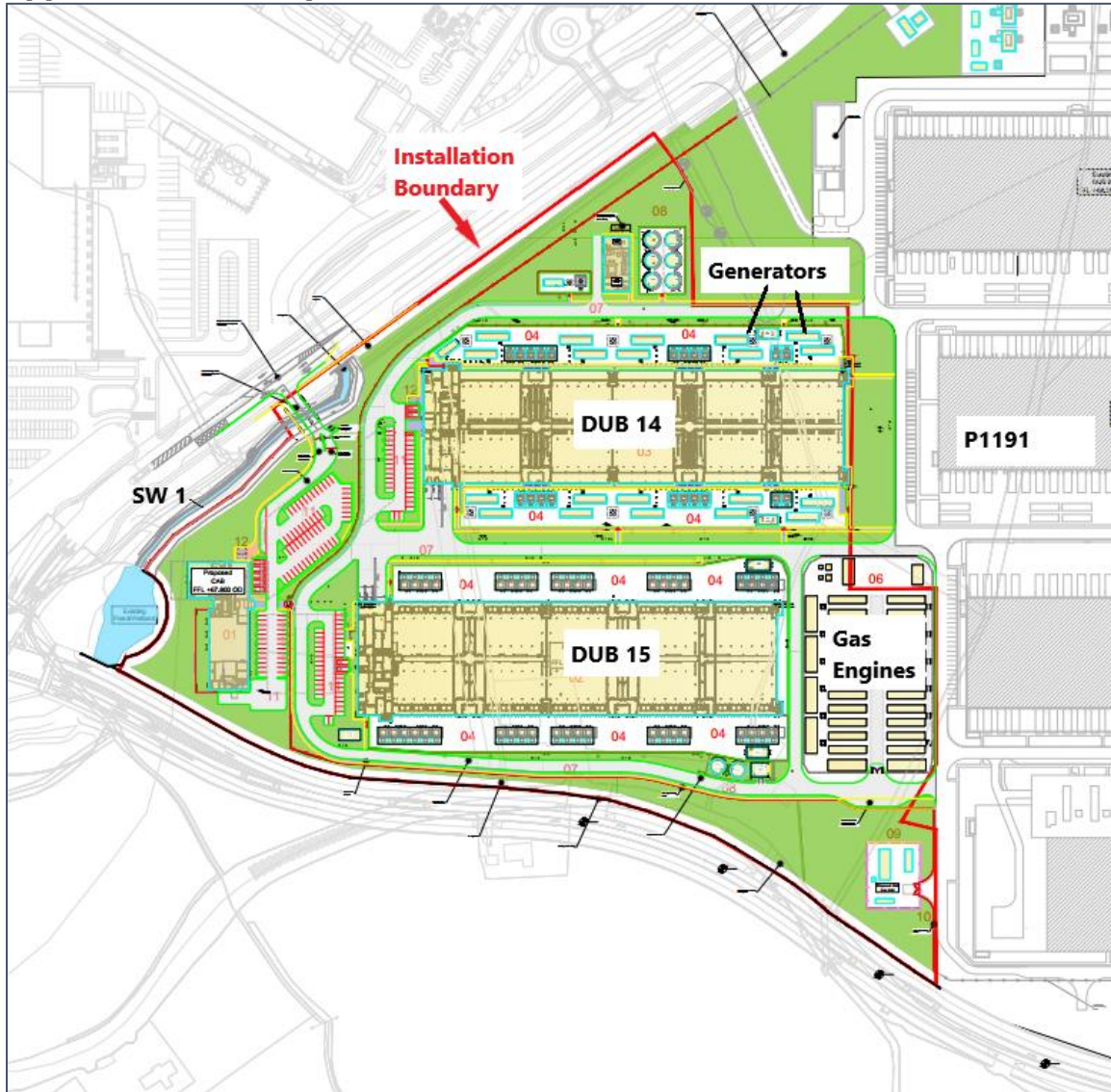
Jim Johnson

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



Adapted from licence application drawing titled 'Site Layout Plan' submitted - 25 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>)	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
		A149 Dunlin (<i>Calidris alpina</i>) A137 Ringed Plover (<i>Charadrius hiaticula</i>) A194 Arctic Tern (<i>Sterna paradisaea</i>) A192 Roseate Tern (<i>Sterna dougallii</i>) A143 Knot (<i>Calidris canutus</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A144 Sanderling (<i>Calidris alba</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) Habitats Wetlands	
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)