



OFFICE OF ENVIRONMENTAL SUSTAINABILITY

INSPECTOR’S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE APPLICATION, LICENCE REGISTER NUMBER P1204-01

TO:	Board of Directors
FROM:	Naoimh O'Regan
DATE:	05 September 2025
APPROVAL:	This Report has been referred to the Board of Directors by David Flynn, Director.
APPLICANT:	Edgeconnex Ireland Limited
CRO NUMBER:	578124
LOCATION/ADDRESS:	Newcastle Road, Lucan, County Dublin
APPLICATION DATE:	24 August 2023
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 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 CID	Commission Implementing Decision (CID) (EU) 2021/2326 of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants (hereafter referred to as LCP CID 2021/2023/EU). All relevant BREF documents are listed in Appendix 4 of this report.
Activity description/background:	Operation of 2 no. data centres and 1 no. energy centre. The energy centre consists of 20 no. gas engines and the data centres consists of a total of 48 no. back-up generators. The gas engines will only operate on natural gas and within the timeframe as instructed by EirGrid. The back-up generators will not operate more than 100 hours annually on gas oil.
Additional information received:	Yes (30 October 2023, 04 December 2023, 11 November 2024, 03 June 2025, 12 June 2025, 18 June 2025, 20 June 2025, 09 July 2025 and 14 July 2025)
No of submissions received:	2

Environmental Impact Assessment required: Yes	Stage 2 Appropriate Assessment required: No
Environmental Impact Assessment Report submitted (EIAR): Yes, <i>EdgeConnex Data Centre (DUB04) dated January 2019 (Attachment 6.3.7), EdgeConnex Data Centre (DUB05) dated February 2021 (Attachment 6.3.8) and Kishoge Substation Gridline Connection (dated August 2022) (Attachment 6.3.9 & 6.3.15).</i>	
Site visit: 13 May 2025	Site notice check: 16 September 2023

1 Introduction

Edgeconnex Ireland Limited hereafter referred to as the applicant, has applied to the Agency for an Industrial Emissions Licence to operate 2 no. data centres and 1 no. energy centre at Newcastle Road, Lucan, County Dublin. The applicant, who is a provider of cloud and data centre services throughout Europe and the USA, also operates 3 no. data centres¹ which are located to the east of the installation. The R120 divides the lands under the control of the applicant, with the installation located the west of the R120 and the existing data centre campus to the east of the R120.

The energy centre (named ESSDUB97) will consist of 20 no. gas engines and the data centres (named EDCDUB04 and EDCDUB05) will have a total of 48 no. back-up generators, each operating for no more than 100 hours per annum on gas oil.

The data centres will be powered by the Gas Insulated Switchgear (GIS) substation located within the site boundary. However, given the applicant has a 'Flexible Demand Offer' with EirGrid, there is a risk the installation may be instructed to reduce their electricity load. In the event of a loss or reduction in power from the grid, or a disruption to the gas network, the data centres will be powered by the energy centre and the 48 no. back-up generators. Operation of the gas engines will be as per instruction from EirGrid.

The installation, which will operate 24 hours a day, 7 days a week, is seeking a licence to operate up to 18 no. of the 20 no. gas engines continuously on natural gas and to operate (outside of testing and maintenance) 48 no. back-up generators no more than 100 hours, per generator, per annum. The gas engines will only operate within the timeframe as instructed by EirGrid.

Given the total combustion of fuel will exceed 20 MW, the installation holds a Greenhouse Gas (GHG) Emissions permit (EPA Ref: IE-GHG-621-01), in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2004, (SI 437/2004).

2 Description of activity

The installation is located on a site with a total area of c. 22.1 hectares (ha) consisting of partially greenfield and brownfield lands separated by hedgerow. The northern portion of the site is occupied by a derelict farmhouse and barns. The installation is bound to the north by the Grand Canal; the R120 to the east and agricultural lands to the west and south. The immediate surroundings are predominantly commercial and industrial, with extensive development in Grange Castle Business Park and Profile Park, located to the south-east of the site. Such developments include pharmaceutical plants, data centres and power plants. Casement Aerodrome is approximately 2.2 km to the south of the installation. The installation is located between the N4 and N7 and is accessible from the Nangor Road and Grange Castle Road. The M50 is approximately 5 km east of the installation. The nearest residential properties are to the east of the site along the R120 at a distance of approximately 50 m from the site boundary. There are also residential dwellings to the north of the site by the Grand Canal at a distance of approximately 130 m from the site boundary, and a halting site some 200 m from the southern boundary.

The overall purpose of the installation is to provide a secure location for data storage. The data centres will house IT and technical hardware to allow clients (i.e. individuals, businesses or organisations) to store their information at an installation off-site. Upon completion of construction, the installation will operate 24 hours a day, 7 days a week with

¹ The existing data centre campus, which includes DUB01, DUB02 and DUB03, do not have an Industrial Emission licence as the total thermal input of the campus is less than 50 MW. However, each of the back-up generators are registered on the Agency's Medium Combustion Plant register.

a total of 100 staff working in three shifts, 08:00-16:00 (40 employees), 16:00-00:00 (40 employees) and 00:00- 08:00 (20 employees).

The installation will be primarily supplied electricity from the national grid. However, the energy centre will act as the alternative source of power for the site when required, and the back-up generators will be used in the event of a loss or reduction in power from the grid, or a disruption to the gas network.

- ESSDUB97 will contain 20 no. 10.3 MW_{th} gas engines (18 no. operational and 2 no. back-up) each with flues of 25 m high. A maximum of 18 no. of the 20 no. gas engines will run simultaneously during a power outage.
- EDCDUB04 will consist of 2 no. single storey data halls with a total of 24 no. 6.9 MW_{th} back-up generators, each with a flue of 15 m high. A maximum of 20 no. back-up generators will run simultaneously during a power outage or a disruption to the gas network, with the remaining 4 no. back-up generators acting as 'catcher' generators. The 'catchers' will operate during a power outage or disruption to the gas network at a reduced load, to ensure they are available to assume full load in the event of a fault or failure of any of the primary generators. All back-up generators will be located in the generator yard to the west of the building, whereas a goods receiving area/store and office area, along with a water tower and sprinkler tank, will be located to the east of the building.
- EDCDUB05 will consist of 2 no. single storey data halls with a total of 24 no. 6.9 MW_{th} back-up generators, each with a flue of 25 m high. A maximum of 20 no. back-up generators will run simultaneously during a power outage or a disruption to the gas network, with the remaining 4 no. back-up generators acting as 'catcher' generators. The 'catchers' will operate during a power outage or disruption to the gas network at a reduced load, to ensure they are available to assume full load in the event of a fault or failure of any of the primary generators. All back-up generators will be located in the generator yard to the east of the building, whereas a goods receiving area/store and office area, along with a water tower and sprinkler tank, will be located to the west of the building.

The 20 no. gas engines in the energy centre are reciprocating internal combustion units turbocharged with 2 stage intercoolers. Each gas engine is housed within a purpose-built precast concrete enclosure ('engine cell') providing acoustic attenuation and designed to meet safety requirements. These engine cells will act as containment bunds and will have leak detection systems in place. Each gas engine will have two dedicated day tanks, one for lubricating oil (c. 400 litres) and another for urea (1m³) and will be fitted with silencers to reduce noise emissions and Selective Catalytic Reduction (SCR) units to reduce exhaust emission gases. The SCR system works by injecting urea into the engine exhaust gas stream, causing a reaction with NO_x to produce nitrogen and water vapor. Each gas engine will be provided with a high temperature closed loop coolant circuit, consisting of a 40% ethylene glycol/water mixture in order to control operating temperatures and allow generated heat to be dissipated through roof mounted air-cooled radiators, two per engine (40 no. in total). Condensate arising from the chilled water system, cooling coils and fan units drain into a dedicated open collection tank, which is contained within each engine cell. The applicant states that the condensate is expected to consist primarily of clean water as it originates from water vapour (humidity) in the air, with only trace constituents, if any. Given the minimal volumes involved (total tank size of 10L), tank levels are monitored through daily visual checks. If a tank reaches a predefined level, or in accordance with scheduled maintenance procedures, the collected condensate is removed by a licenced waste contractor and transported off-site for appropriate disposal.

When constructed, the generator yards for EDCDUB04 and EDCDUB05 will each contain 24 no. 6.9 MW_{th} back-up generators with associated flues (ranging from 15 m to 25 m). These back-up generators will provide the necessary power to ensure the data centres will continue to operate in the event of a temporary failure of electricity supply, or a disruption to the gas network. The back-up generators will be enclosed within specialised containers, which will be bunded and fitted with a leak detection system. Each generator is equipped with double skinned belly tanks, which

store the fuel for the back-up generators. The cooling system for the data centres uses a closed-loop circulation system to transport heat away from the IT equipment. The closed-loop cooling system utilises a fluid with 20 - 35% glycol water solution, which is initially filled during installation and requires only infrequent top-ups thereafter. Condensate arising from the chilled water system, cooling coils and fan units is directed to the site foul sewer system for discharge to a private foul sewer.

All storm water arising within the site will be collected and discharged into a private storm water sewer to the east/northeast of the site following on-site attenuation. Storm water ultimately outfalls to the Griffeen River. Storm water from the bunds at the transformer yard will discharge to a private foul sewer.

Waste water, which comprises of sanitary effluent, condensate from the data centres and storm water from the bunds of the transformers yard, will be collected in an expanded foul drainage network and discharged to the private foul sewer. Given waste water from the installation will ultimately discharge into Ringsend WWTP, emission limit values and monitoring requirements are imposed in the RD (*Schedule B.3 Emissions to Sewer* and *Schedule C.3 Control of Emissions to Sewer*).

The storm water sewer and foul sewer are owned and operated by South Dublin County Council. Connection to SDCC storm water sewer (at SW1), and foul sewer (at SE1 and SE2), has been received and attached as 'EDCDUB Connection Consent to SDCC'.

The main production process is supported by ancillary infrastructure including substation, internal roads, general office areas, canteen, security kiosks and drainage infrastructure. The main emissions from the activity are emissions to air, noise emissions, emission to sewer and storm water discharges.

3 Planning Status

A number of planning applications have been made by the applicant for the area within the installation boundary. Details of these relevant planning applications and permissions have been provided in the application form. The relevant planning permissions within the licence boundary and elements which are related to the licence activity are detailed in Table 3.1.

Table 3.1: Planning permissions for the area within the installation boundary and included in the licenced activity.

Building Name	Reference Number	Planning permission	Elements included in IEL application
EDCDUB04 & ESSDUB98 (GIS Substation)	SD19A/0042 & ABP. 305948-19 Granted: 05 Oct 2020	- Two single-storey data halls (one single-storey data centre). 32 standby generators (15 m high flues each)^{Note 1} 1 no. temporary gas-powered generation plant (19 no. gas engines). - GIS Substation^{Note 2}	- Two single-storey data halls (one single-storey data centre). 24 no. standby generators (15 m high flues each). - N/A due to grid connection and ESSDUB97 occupies the same footprint. - Operational
	SD22A/0105 Granted: 19 July 2022	Amendments to GIS substation^{Note 2}	Operational
	SD23A/0151 Granted: 02 Oct 2023	Reduction of back-up generators permitted in SD19A/0042 from 32 no. to 24 no. generators.	As above (24 no. standby generators (15 m high flues each)).

EDCDUB05	SD21A/0042 & ABP. 312749-22 ^{Note 3} Granted: 09 Mar 2022	- One single-storey data centre. 24 no. standby generators (25 m high flues each).	- One single-storey data centre. 24 no. standby generators (25 m high flues each).
ESSDUB97		Two-storey gas powered generation plant with 20 no. gas engines (25 m high flues each).	Two-storey gas powered generation plant with 20 no. gas engines (25 m high flues each).
ESSDUB96		Two-storey gas powered generation plant with 20 no. gas engines (25 m high flues each)	Not applicable
ESSDUB95		Two-storey gas powered generation plant with 21 no. gas engines (25 m high flues each).	Not applicable
EDCDUB05 & ESSDUB97	SD22A/0289 & ABP. 314646-22 ^{Note 4} Granted: 10 Feb 2023	Amendments to the wording of Condition 3 associated with SD21A/0042 & ABP 312749-22.	Yes
ESSDUB98	ABP. 314567-22 Granted: 28 Nov 2023	Substation transmission line connections.	Operational
EDCDUB06	SD22A/0333 & ABP. 317802-23 ^{Note 5} Pending	- One single-storey data centre. 24 no. standby generators (25 m high flues each).	Not applicable

Note 1: The number of back-up generators permitted in SD19A/0042 was reduced from 32 no. to 24 no. back-up generators (planning ref: SD23A/0151).

Note 2: Substation owned and operated by EirGrid.

Note 3: Appeal which was lodged to An Bord Pleanála was subsequently withdrawn.

Note 4: Appeal which was lodged to An Bord Pleanála was subsequently declared invalid.

Note 5: This planning application is currently with An Coimisiún Pleanála (formerly An Bord Pleanála) for decision and is not part of the licence application.

The applicant has submitted the EIARs associated with planning permissions SD19A/0042, SD21A/0042 and ABP 314567-22. The Agency has had regard to the reasoned conclusions reached by the planning authority and An Bord Pleanála² in undertaking their environmental impact assessment of the activity.

4 EIA Screening

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

In accordance with the EIA Screening Determination, the Agency has determined that the activity is likely to have a significant effect on the environment, and accordingly is carrying out an assessment for the purposes of EIA.

The activity (located on a site of approximately 22.1 hectares) exceeds the threshold of project type 10(b)(iv) in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended:

² On the 17 June 2025, Part 17 of the Planning and Development Act 2024 was enacted which meant that from the 18 June 2025 An Bord Pleanála officially changed its name to An Coimisiún Pleanála.

10(b)(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.

The activity is below the specified threshold of project type 3(a) in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended:

3(a) Industrial installations for the production of electricity, steam and hot water not included in Part 1 of this Schedule with a heat output of 300 megawatts or more.

Having considered the information provided by the applicant, which satisfies the requirements of Annex II A of the EIA Directive, it has been determined that the activity is likely to give rise to significant effects on the environment by virtue of its nature, size or location. This determination has been made having regard to the following:

- Cumulative effects from air emissions are likely to arise with other existing and/or approved projects.

Three separate EIARs were submitted to the Agency as part of the application on 24 August 2023. The EIARs for *EdgeConnex Data Centre (DUB04)*³ (Attachment 6.3.7 - EIAR Planning -Oct 2020), *EdgeConnex Data Centre (DUB05)*⁴ (Attachment 6.3.8 - EIAR Planning -Mar 2022) and *Kishoge Substation Gridline Connection* (Attachment 6.3.9 - EIAR Planning -Mar 2023) are dealt with in the EIA Section of this report.

5 Best Available Techniques

BAT for the installation was assessed against the BAT conclusions contained in Commission Implementing Decision (CID) (EU) 2021/2326 of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants (hereafter referred to as LCP CID 2021/2326 EU), as well as in the BREF documents specified in Appendix 4 of this report.

A detailed BAT assessment was carried out by the applicant and is included in Attachment 4.7.1 of the licence application. Appendix 5 of this report sets out the applicable BAT Conclusions, the specific techniques employed and the relevant condition/schedule in the RD.

Given that the total capacity at the installation level exceeds the threshold for a licence under Class 2.1 of the EPA Act 1992, as amended, BAT at the installation level was assessed against the LCP BAT conclusions. As the rated thermal input of the individual combustion plants are <50 MW_{th}, and each gas engine and back-up generator will have its own stack, the emission limit values (ELVs), and monitoring requirements as set out in the Medium Combustion Plant (MCP) Regulations 2017, SI 595/2017 (hereafter referred to as the MCP Regulations), would have been applicable to the combustion plants. However, due to the total number of gas engines and back-up generators to be installed, the results from the air dispersion modelling and the hours of operation requested by the applicant, stricter ELVs and monitoring requirements, as permitted under Regulation 11(6) of the MCP Regulations, have been proposed by the applicant and are set out in the RD. In lieu of the ELVs from the MCP Regulations, the stricter BAT associated emission levels (BAT-AELs) and monitoring requirements, as per LCP CID 2021/2326/EU, have been imposed for all parameters aside for CO. As the gas engines are medium combustion plants, in accordance with the MCP Regulations no ELV for CO would have been applied, however given the applicant has proposed and modelled an ELV of 390 mg/m³ and notes that CO emissions will be negligible relative to the ambient air quality standard for CO, the applicant requested that the stricter

³ The proposed development assessed in the EIAR entitled *EdgeConnex Data Centre (DUB04)* included EDCDUB04 (consisting of 32 no. generators) and 1 no. temporary gas powered generation plant (consisting of 19 no. gas engines).

⁴ The proposed development assessed in the EIAR entitled *EdgeConnex Data Centre (DUB05)* included EDCDUB05 (consisting of 24 no. generators) and the phased development of 3 no. gas powered generation plants (totalling 61 no. gas engines); i.e. ESSDUB97, ESSDUB96 and ESSDUB95.

limits for CO were not applied. Taking into consideration the modelling results for CO, the process contribution from the installation and the requirement only for monitoring of CO as per Schedule 3 of the MCP Regs, an ELV of 390 mg/m³ is recommended in the RD. This is discussed further in the 'Emission to Air' section of the report.

BAT associated emission levels (BAT-AELs) as specified in the LCP CID 2021/2326/EU have been included in the RD, and are specified in the emissions sections of this report. The monitoring frequencies of emissions to air have been set out in the RD and are in line with the LCP CID 2021/2326/EU and MCP Regulations, where relevant.

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

6 Emissions

6.1 Emissions to Air

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

6.1.1 Channelled Emissions to Air

The main channelled emissions at the installation arise from the 20 no. gas engines (A2-1 to A2-20) associated with the energy centre (ESSDUB97). Exhaust gases from the combustion process within the gas engines will be discharged to atmosphere via flues, which will each be 25 m above ground level. In addition, there will be 48 no. 6.9 MW_{th} back-up generators (A3-1 to A3-48) associated with the data centres. These back-up generators will be in place to provide power in the event of a loss or reduction in power from the grid, or a disruption to the gas network. The applicant has proposed emission limit values (ELVs) for NO_x, CO, NH₃, formaldehyde and methane (CH₄) based on the continuous operation of 18 no. of the 20 no. gas engines on natural gas. No ELVs have been proposed by the applicant for the operation of the back-up generators on gas oil. Details of the emission concentrations proposed and modelled by the applicant are provided in Table 6.1.

Table 6.1: Emissions to Air

Air emission points				
Emission Reference	Process Description	Parameter	BAT compliance ^{Note 1}	
			LCP CID BAT-AEL (mg/m ³)	ELV in RD (mg/m ³)
A2-1 to A2-20	<i>Continuous operation on natural gas (18 no. of the 20 no. gas engines)</i>	NO _x (daily)	55 - 85	85
		NO _x (annual)	20 - 75	56 ^{Note 2} (modelled)
		CO (annual)	100 in LCP Regulations	390 ^{Note 2} (modelled)
		NH ₃ (annual)	3 - 10	4 ^{Note 2} (modelled)
		Formaldehyde	5 - 15	15
		CH ₄ (Methane)	215 - 500	500 ^{Note 3}
A3-1 to A3-48	<i>48 no. back-up generators running on gas oil for a maximum of 100 hours, per generator, per annum.</i>	N/A	N/A – exemption under Article 13(3) of MCP Regulations, due to generators operating for less than 500 hrs per annum.	N/A – exemption under Article 13(3) of MCP Regulations, due to generators operating for less than 500 hrs per annum.

Note 1: In some cases, emission standards other than those specified in BAT Conclusions may be considered to represent BAT, e.g. ELVs for Medium Combustion Plant (MCP) as set in the MCP Regulations.

Note 2: Modelling undertaken @15% O₂

Note 3: This BAT-AEL is expressed as C at full load operation.

There are other emission points to air at the installation, which, due to their emission characteristics are not considered environmentally significant. These include 2 no. fire sprinkler pumps. However as both fire sprinkler pumps are less than 1MW_{th}, they have been screened out of the modelling assessment.

As part of the application, air dispersion modelling was carried out to predict the ambient pollutant concentrations resulting from all main and minor emissions. The modelling carried out was in accordance with published Agency guidance and was considered sufficiently detailed and conservative to assess the impact of emissions to air.

Concentrations of nitrogen dioxide (NO₂), carbon monoxide (CO), ammonia (NH₃), particulate matter (PM₁₀ and PM_{2.5}) and sulphur dioxide (SO₂) were modelled at a variety of locations beyond the installation boundary. The impact of emissions of NO_x, NH₃, SO₂, and nitrogen and acid deposition from the installation, on European and nationally designated habitat sites within 10 km ^{Footnote 5} of the installation was also assessed. Results relating to potential impacts on human health are addressed in Attachment 7-1-3-2 Air Emissions Impact Assessment-FI-REV 2 (submitted 03 June 2025) and subsequently updated in Unsolicited Information-P1204-01 (submitted 12, 18 and 20 June 2025). Results relating to potential impacts on ecological receptors are addressed in Appendix III of Attachment 6-3-4 AA Screening (submitted 12 June 2025) and subsequently updated in Unsolicited Information-P1204-01 (submitted 18 June 2025).

The scenarios assessed in the model include Proposed Operation, Cumulative Operation and a Cumulative sensitivity analysis. The details of these scenarios are as follows:

- Proposed Operation involved modelling the continuous operation of 18 no. of the 20 no. gas engines on natural gas, testing and maintenance of the back-up generators (15 minutes per week at 100 % load and 1 hour per quarter at 100 % load) and the operation of 48 no. back-up generators on gas oil up to 100 hours, per generator, per annum.
- Cumulative Operation included the Proposed Operation scenario in combination with emissions from other EPA licensed installations, proposed and operational energy centres and data storage facilities in the area.
- Cumulative sensitivity analysis included the cumulative assessment above, and 65 no. combustion plants (41 no. gas engines associated with SD21A/0042 (ESSDUB95 and ESSDUB96; granted planning permission), and 24 no. back-up generators associated with SD22A/0333 & ABP-317802-23 (EDCDUB06, which is currently with An Coimisiún Pleanála for a decision)). It should be noted that both SD21A/0042 and SD22A/0333 & ABP-317802 are located within the licence boundary.

The modelling was carried out using five years of meteorological data (2020 to 2024 inclusive) from the Casement Aerodrome meteorological station, which is approximately 2.2 km south of the installation. As part of the implementation of the Framework Directive on Air Quality (Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management) four air quality zones have been defined in Ireland for air quality management and assessment purposes. In terms of air monitoring, Dublin is categorised as Zone A. Ambient background concentrations for NO₂, CO, NH₃, PM₁₀, PM_{2.5} and SO₂ were selected based on data from relevant Zone A EPA monitoring stations, and used in the model. The applicant's assessment methodology explains that the worst-case concentration (process contribution) was added to the background concentration to give the worst-case predicted environmental concentration (PEC), except for PM₁₀ 24-hour, SO₂ 1-hour and SO₂ 24-hour, where other relevant

⁵ The applicant concluded that the impacts reported using a 20 km Zone of Influence (as per Attachment 7-1-3-2 Air Impact Assessment-FI submitted 11 October 2024) were reviewed and it was determined that ecological receptors beyond 10 km do not experience ecological impacts greater than those identified for the Glenasmole Valley SAC.

formulae were used. The PEC, represented as a percentage of the Air Quality Standard, has been rounded up to the nearest whole number.

Proposed Operation Scenario

Table 6.2 gives details of the predicted impact of the emissions to air under the Proposed Operation scenario.

Table 6.2: Predicted impact of the channelled emissions to air under the Proposed Operation scenario.

Channelled emissions impact						
Parameter	Averaging Period	Background concentration ($\mu\text{g}/\text{m}^3$)	Process contribution to PEC ($\mu\text{g}/\text{m}^3$)	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines ($\mu\text{g}/\text{m}^3$) ^{Note 1}
Nitrogen oxides (as NO_2)	99.8 %ile hourly (2023)	28	94.9	122.9	61	200
	Annual (2023)	14	18.3	32.3	81	40
	Ecosystems NO_x (Glenasmole Valley SAC) (2021)	3.987	0.128	4.115	14	30
	Ecosystems NO_x (Rye Water Valley/ Carton SAC) (2024)	7.239	0.103	7.342	24	30
	Ecosystems NO_x (Grand Canal pNHA) (2020)	7.6	13.82	21.42	71	30
Carbon monoxide (CO)	Maximum 8-hour (2020)	3,700	1,500	5,200	52	10,000
Ammonia (NH_3)	Annual (2020)	2.5	1.45	3.95	2.2	180 (UK Environmental Guidelines)
	Maximum 1 hour (2020)	5	16.52	21.52	0.9	2,500 (UK Environmental Guidelines)
	Ecosystems NH_3 (Glenasmole Valley SAC) (2021)	1.460	0.0076	1.4676	147	1
	Ecosystems NH_3 (Rye Water	2.308	0.0056	2.314	231	1

Channelled emissions impact						
Parameter	Averaging Period	Background concentration ($\mu\text{g}/\text{m}^3$)	Process contribution to PEC ($\mu\text{g}/\text{m}^3$)	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines ($\mu\text{g}/\text{m}^3$) ^{Note 1}
	Valley/ Carton SAC) (2024)					
	Ecosystems NH_3 (Grand Canal pNHA)(2020)	2.0	0.803	2.803	93	3
PM_{10}	Daily (90.4 %ile) (2023)	22	0.06	22.02 ^{Note 2}	44	50
	Annual (2023)	12	0.02	12.02	30	40
$\text{PM}_{2.5}$	Annual (2023)	8	0.015	8.015	32	25
SO_2	1-hour (99.73 %ile) (2023)	9	3.88	9.30 ^{Note 2}	3	350
	24-hour (99.18 %ile) (2023)	4	1.49	5.49 ^{Note 2}	4	125
	Annual (2023)	2	0.15	2.15	-	N/A
	Ecosystems SO_2 (Glenasmole Valley SAC)(2021)	0.357	0.00064	0.358	2	20
	Ecosystems SO_2 (Rye Water Valley/ Carton SAC)(2024)	0.542	0.00066	0.543	3	20
	Ecosystems SO_2 (Grand Canal pNHA)(2023)	0.6	0.1058	0.7058	4	20

Note 1: Air Quality Standards Regulations 2022, SI 739/2022, unless otherwise stated.

Note 2: The applicant's assessment methodology explains that the worst-case concentration (process contribution) was added to the background concentration to give the worst-case predicted environmental concentration (PEC), except for PM_{10} 24 hour, SO_2 1 hour and SO_2 24 hour where other relevant formulae were used.

6.1.1.1 Human Health – Proposed Operation Scenario

As can be seen from the table above, the predicted environmental concentrations from the Proposed Operations scenario are below the relevant air quality standards or guideline values. The following is noted:

- The concentrations of NO₂ (including background concentrations) in the worst-case year modelled are at most 61% of the 1-hour limit value (as a 99.8th percentile), and 81% of the annual limit value, at the worst-case receptor modelled.
- CO concentrations are in compliance with the relevant ambient air quality standard. In the worst-case year, concentrations of CO (including background) are at most 52% of the maximum 8-hour limit value, at the worst-case receptor modelled. It should be noted that most of the CO is from background concentration, and the process concentration of CO is 15% of the AQS (10,000 µg/m³).
- Ammonia concentrations are in compliance with the applicable air quality standards for the protection of human health. Ambient ammonia concentrations are at most 0.9% of the maximum ambient 1-hour limit value, and 2.2% of the annual limit value at the worst-case receptor.
- Regarding particulate matter, concentrations of PM₁₀ and PM_{2.5} are in compliance with the relevant limit values. Concentrations of PM₁₀ (including background) are 44% of the maximum ambient 24-hour limit value (measured as a 90.4th%ile) and 30% of the annual limit value at the worst-case location, with concentrations of PM_{2.5} reaching at most 32% of the annual mean limit value.
- Modelled concentrations of SO₂ reached at most 3% of the maximum 1-hour limit value (measured as a 99.7th%ile), and 4% of the maximum 24-hour limit value (measured as a 99.2nd%ile) at the worst-case receptor, including background concentrations.

6.1.1.2 Ecological Receptors – Proposed Operation Scenario

According to the applicant's Air Emissions Impact Assessment-FI-REV 2 (Attachment 7-1-3-2, submitted 03 June 2025), the ecological site closest to and most impacted by the installation, and where the highest modelled concentrations are predicted, is the Grand Canal pNHA. Emissions from the installation lead to a NO_x process contribution of 13.82 µg/m³ at this location. This process contribution is equivalent to 46% of the NO_x AQS (30 µg/m³) and including background levels this would be 71% of the AQS. The Natura 2000 designated sites most impacted by the installation are the Glenasmole Valley SAC and the Rye Water Valley/Carton SAC. The modelling assessment predicted a NO_x process contribution of 0.128 µg/m³ at the Glenasmole Valley SAC and 0.103 µg/m³ at the Rye Water Valley/Carton SAC, however when background concentrations are included the most impacted is the Rye Water Valley/Carton SAC which would be 24% of the AQS.

Emissions from the installation lead to an ambient NH₃ concentration (including background), which is at most 93% of the annual limit value at the worst-case location (Grand Canal pNHA). The modelling assessment predicted a NH₃ process contribution of 0.0076 µg/m³ at the Glenasmole Valley SAC and 0.0056 µg/m³ at the Rye Water Valley/Carton SAC, however when background concentrations are included the most impacted is the Rye Water Valley/Carton SAC which would be 231% of the AQS. It should be noted that this exceedance is primarily due to the background concentration being over twice the value of the critical load for NH₃. An annual critical level of 1 µg/m³ for NH₃ has been applied to the Glenasmole Valley SAC and the Rye Water Valley/Carton SAC given the presence of lichens and/or bryophytes, whilst the background concentrations for NH₃ at the Glenasmole Valley SAC and the Rye Water Valley/Carton SAC are 1.460 µg/m³ and 2.308 µg/m³ respectively.

In the case of SO₂, the worst-case ecological receptor predicted process contribution at the Grand Canal pNHA is 0.1058 µg/m³, which is equivalent to 0.5% of the relevant AQS (20 µg/m³), and including background levels is 4% of the AQS. The most impacted Natura 2000 designated site is Rye Water Valley/Carton SAC, the modelling assessment predicted an SO₂ process contribution of 0.00066 µg/m³, and including background levels, this would be 3% of the AQS.

With regard to nitrogen deposition at ecological receptors, the nitrogen deposition flux for the worst-case year (2020) is 11.182 kg/ha/yr at the Grand Canal pNHA, 7.573 kg/ha/yr at the Glenasmole Valley SAC and 6.764 kg/ha/yr at the Rye Water Valley/Carton SAC. These results are within the critical load range of 5 - 15 kg/ha/yr for the habitat types '*Semi-dry Perennial calcareous grassland (basic meadow steppe)*' (Grand Canal pNHA) and the critical load range of 5 - 10 kg/ha/yr for the habitat type '*Petrifying springs with tufa formation (Cratoneurion)*' (Glenasmole Valley SAC and

the Rye Water Valley/Carton SAC). As the nitrogen deposition results for the Grand Canal pNHA are within the critical load and the process contribution from the installation to nitrogen deposition at the Glenasmole Valley SAC and Rye Water Valley/Carton SAC are 0.050 kg/ha/yr and 0.042 kg/ha/yr, respectively, the effect of nitrogen deposition on these ecological receptors is not significant.

Cumulative Operation Scenario

A cumulative air dispersion modelling assessment was carried out to assess the impact of emissions from the installation in combination with emissions from other EPA licensed installations, proposed and operational energy centres and data storage facilities in the area. The other installations included in the cumulative modelling were: Greener Ideas Ltd (P1196-01), Microsoft (DUB06), Microsoft (DUB07), Microsoft (DUB08), Microsoft (DUB09), Microsoft (DUB10), Microsoft (DUB11), Microsoft (DUB12), Microsoft (DUB13), Microsoft (DB07 & DB08 Admin Generators), Microsoft (DB09 & DB10 Admin Generators), Microsoft (DB12 Admin Generator), Microsoft (DB13 Admin Generator), Microsoft (DB03), Microsoft (DB04), Microsoft (DB05), Microsoft (DB04 & DB05 Admin Generators), Microsoft (DUB14), Microsoft (DUB15), ADSIL (P1170-01) Building A, B & C Generators, ADSIL (P1184-01), Data And Power Hub Services Limited (P1165-01) Gas Engines and Generators, Edgeconnex (DUB01), Edgeconnex (DUB02), Edgeconnex (DUB03), Google Ireland (P1189-01), Interxion (DUB03), Interxion (DUB04), Digital Realty Trust (DUB13), Digital Realty Trust (DUB14), Digital Realty Trust (DUB15), Digital Realty Trust (DUB16), Vantage (DUB11), Vantage (DUB12), Vantage (Gas plant), Equinix (DB8), CyrusOne (Building B), Pfizer (P0652-02), Takeda (P0693-03) and Grange Backup Power Limited (P1033-02). The cumulative assessment involved modelling the continuous operation of 18 no. of the 20 no. gas engines on natural gas, testing and maintenance of the back-up generators (15 minutes per week at 100% load and 1 hour per quarter at 100% load) and the operation of 48 no. back-up generators on gas oil up to 100 hours, per generator, per annum with the main air emissions from the other EPA licensed installations, proposed and operational energy centres and data storage facilities listed above.

Carbon monoxide was screened out of the cumulative assessment, as the CO emissions are likely to be negligible relative to the CO ambient air quality standard.

Table 6.3 gives details of the predicted impact of the proposed channelled emissions to air under the cumulative operation scenario.

Table 6.3: Predicted impact of the channelled emissions to air under the cumulative operation scenario.

Channelled emissions impact						
Parameter	Averaging Period	Background concentration ($\mu\text{g}/\text{m}^3$)	Process contribution to PEC ($\mu\text{g}/\text{m}^3$)	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines ($\mu\text{g}/\text{m}^3$) ^{Note 1}
Nitrogen oxides (as NO_2)	99.8 %ile hourly (2022)	28	122.5	150.5	75	200
	Annual (2024)	14	24.6	38.6	97	40
	Ecosystems NO_x (Glenasmole Valley SAC) (2021)	3.987	0.858	4.845	16	30
	Ecosystems NO_x (Rye Water	7.239	0.596	7.835	26	30

Channelled emissions impact						
Parameter	Averaging Period	Background concentration (µg/m³)	Process contribution to PEC (µg/m³)	Predicted Environmental Concentration (PEC) (µg/m³)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines (µg/m³) ^{Note 1}
	Valley/ Carton SAC) (2022)					
	Ecosystems NO _x (Grand Canal pNHA) (2022)	7.6	19.64	27.24	91	30
Ammonia (NH ₃)	Annual (2020)	2.5	5.4	7.9	4	180 (UK Environmental Guidelines)
	Maximum 1 hour (2024)	5	79.4	84.4	3	2,500 (UK Environmental Guidelines)
	Ecosystems NH ₃ (Glenasmole Valley SAC) (2021)	1.460	0.039	1.499	150	1
	Ecosystems NH ₃ (Rye Water Valley/ Carton SAC) (2022)	2.308	0.021	2.329	233	1
	Ecosystems NH ₃ (Grand Canal pNHA)(2020)	2.0	1.02	3.02	101	3
PM ₁₀	Daily (90.4 %ile) (2020)	22	0.60	22.18 ^{Note 2}	44	50
	Annual (2020)	12	0.18	12.18	30	40
PM _{2.5}	Annual (2020)	8	0.138	8.138	33	25
SO ₂	1-hour (99.73 %ile) (2023)	9	28.06	32.06 ^{Note 2}	9	350
	24-hour (99.18 %ile) (2024)	4	10.21	14.21 ^{Note 2}	11	125
	Annual (2022)	2	0.98	2.98	-	N/A
	Ecosystems SO ₂ (Glenasmole	0.357	0.012	0.369	2	20

Channelled emissions impact						
Parameter	Averaging Period	Background concentration ($\mu\text{g}/\text{m}^3$)	Process contribution to PEC ($\mu\text{g}/\text{m}^3$)	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines ($\mu\text{g}/\text{m}^3$) ^{Note 1}
	Valley SAC(2021)					
	Ecosystems SO ₂ (Rye Water Valley/ Carton SAC)(2022)	0.542	0.009	0.551	3	20
	Ecosystems SO ₂ (Grand Canal pNHA)(2020)	0.600	0.545	1.145	6	20

Note 1: Air Quality Standards Regulations 2022, SI 739/2022, unless otherwise stated.

Note 2: The applicant's assessment methodology explains that the worst-case concentration (process contribution) was added to the background concentration to give the worst-case predicted environmental concentration (PEC), except for PM₁₀ 24 hour, SO₂ 1 hour and SO₂ 24 hour where other relevant formulae were used.

6.1.1.3 Human Health – Cumulative Operation

Cumulative emissions lead to an ambient NO₂ concentration (including background) which is 75% of the maximum ambient 1-hour limit value (measured as a 99.8th percentile) at the worst-case receptor for the worst-case year (2022), and 97% of the annual limit value at the worst-case receptor for the worst-case year (2024). The NH₃, SO₂, PM₁₀ and PM_{2.5} modelling results at the worst-case receptor indicate that the ambient ground level concentrations are in compliance with the relevant air quality standards for each parameter.

Cumulative emissions lead to an ambient NH₃ concentration (including background) which is 3% of the maximum ambient 1-hour limit value, and 4% of the annual limit value at the worst-case receptor. Regarding particulate matter, concentrations of PM₁₀ (including background) are 44% of the maximum ambient 24-hour limit value (measured as a 90.4th%ile) and 30% of the annual limit value at the worst-case location, with concentrations of PM_{2.5} reaching at most 33% of the annual mean limit value. Cumulative emissions lead to an ambient SO₂ concentration (including background) which is 9% of the maximum 1-hour limit value (measured as a 99.7th%ile), and 11% of the maximum 24-hour limit value (measured as a 99.2nd%ile) at the worst-case receptor.

Figures 6.1 and 6.2 show the extent and direction of the plume and the worst-case receptor for NO₂.

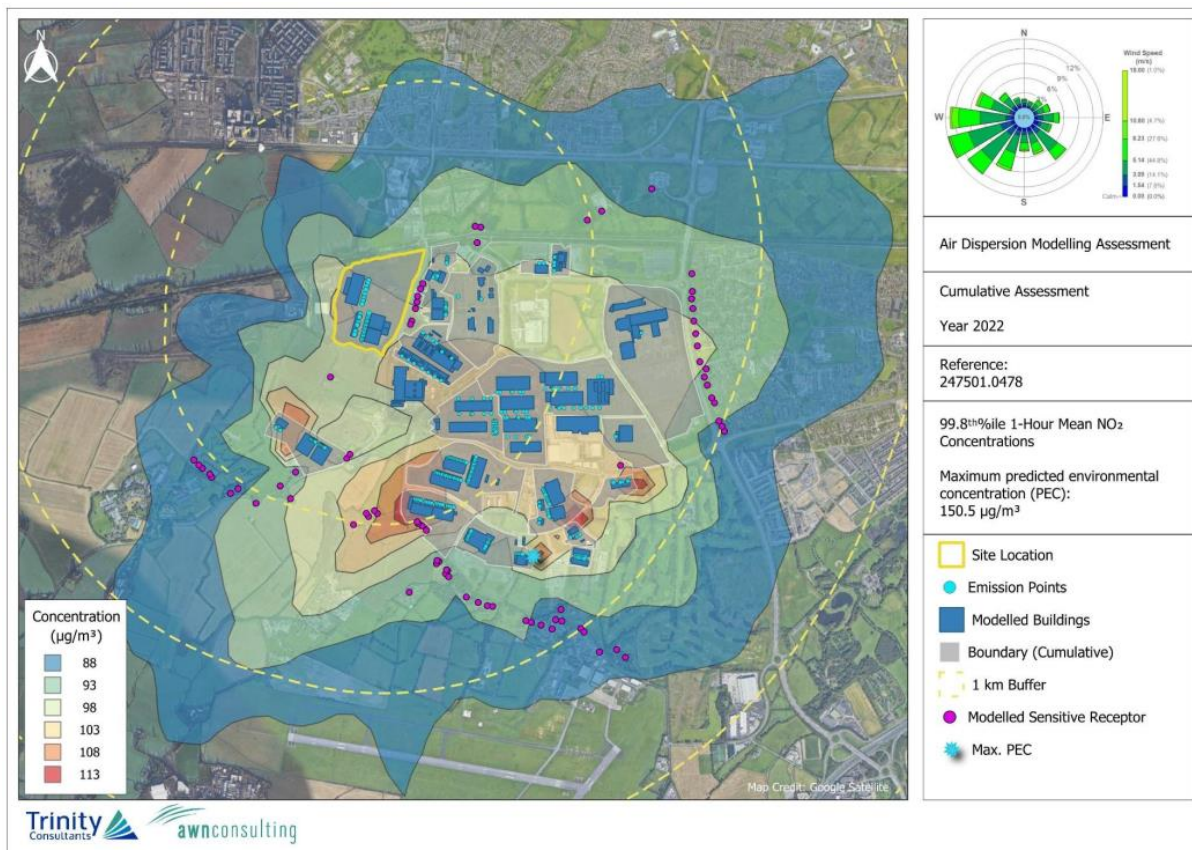


Figure 6.1: Cumulative Assessment - Maximum 1-Hour NO_2 concentrations (as 99.8th%ile) ($\mu\text{g}/\text{m}^3$) (including background concentrations)

Figure 6.1 shows, based on the site boundary used in the model, that the maximum PEC for maximum 1-hour NO_2 (99.8th%ile) of 150.5 $\mu\text{g}/\text{m}^3$ is predicted to occur between Google Data Centre (P1189-01) and Digital Realty Trust, within the boundary of Profile Park. This worst -case receptor, which is illustrated on the map as a blue star, is greater than the concentration values ($\mu\text{g}/\text{m}^3$) provided in the legend.

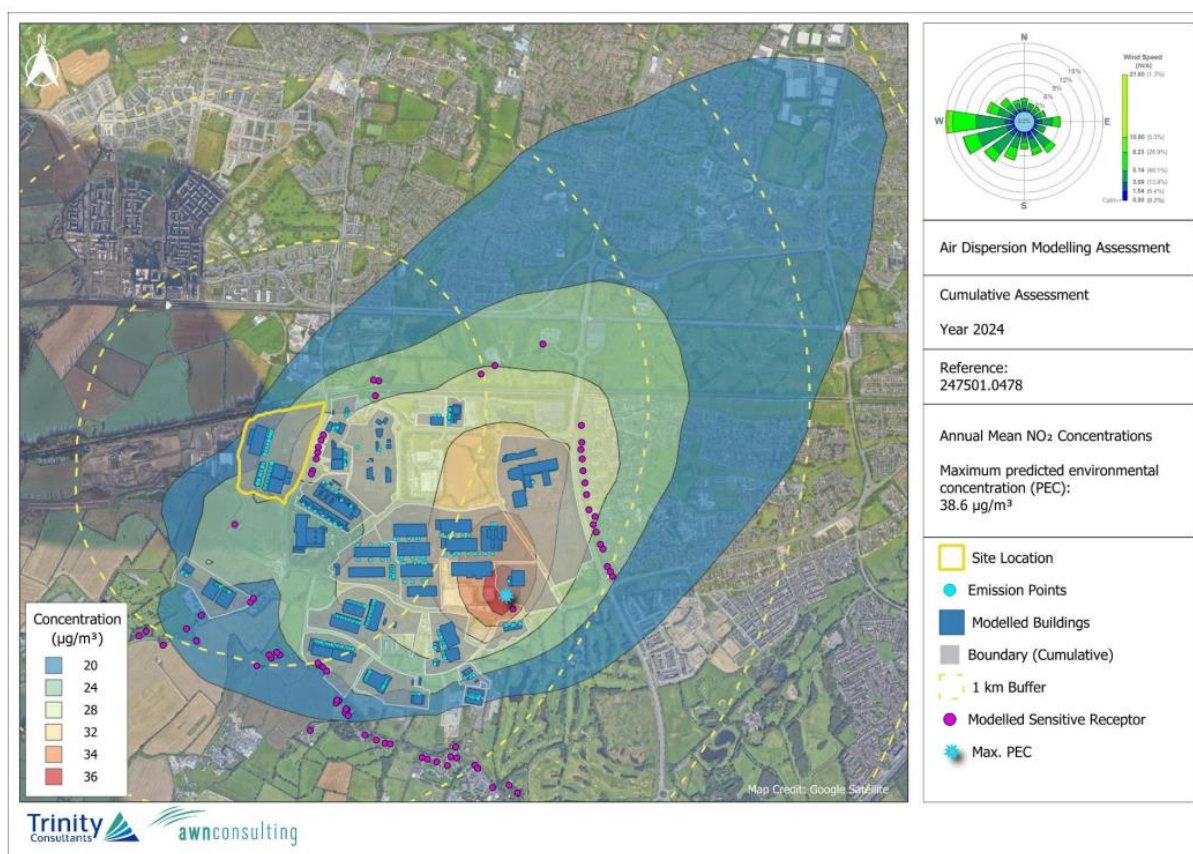


Figure 6.2: Cumulative Assessment – Annual mean NO₂ Concentrations (µg/m³) (including background concentrations)

Figure 6.2 shows, based on the site boundary used in the model, that the maximum PEC for annual mean NO₂ concentrations value of 38.6 µg/m³ is predicted to occur north of AQ43 which is located close to or within the site of Circle K Grange Castle on the Nangor Road/ New Nangor Road. This worst -case receptor, which is illustrated on the map as a blue star, is greater than the concentration values (ug/m³) provided in the legend.

6.1.1.4 Ecological Receptors – Cumulative Operation

The ecological site closest to and most impacted in the cumulative operation scenario is the Grand Canal pNHA. Cumulative emissions lead to a NO_x concentration (including background) which is at most 91% of the annual limit value at the worst-case location (Grand Canal pNHA). The Natura 2000 designated sites most impacted by cumulative emissions include the Glenasmole Valley SAC and the Rye Water Valley/Carton SAC. The modelling assessment predicted a cumulative NO_x process contribution of 0.858 µg/m³ at the Glenasmole Valley SAC and 0.596 µg/m³ at the Rye Water Valley/Carton SAC, however when background is included the most impacted is the Rye Water Valley/Carton SAC which would be 26% of the AQS.

Emissions from the installation and cumulative sites lead to an ambient NH₃ concentration (including background), which is at most 101% of the annual limit value at the worst-case location (Grand Canal pNHA). The modelling assessment predicted a cumulative NH₃ process contribution of 0.039 µg/m³ at the Glenasmole Valley SAC and 0.021 µg/m³ at the Rye Water Valley/Carton SAC, however when background is included the most impacted is the Rye Water Valley/Carton SAC which would be 233% of the AQS. As previously mentioned, the background concentration at the SACs exceeds the critical load for NH₃.

In the case of SO₂, the worst-case ecological receptor predicted process contribution from the installation and cumulative sites at the Grand Canal pNHA is 0.545 µg/m³, which is equivalent to 3% of the relevant AQS (20 µg/m³), and including background levels is 6% of the AQS. The modelling assessment predicted a cumulative SO₂ process contribution of 0.012 µg/m³ at the Glenasmole Valley SAC and 0.009 µg/m³ at the Rye Water Valley/Carton SAC,

however when background is included the most impacted is the Rye Water Valley/Carton SAC which would be 3% of the AQS.

With regard to nitrogen deposition flux in the cumulative operation scenario, the results for the worst-case year (2020) is 13.210 kg/ha/yr at the Grand Canal pNHA, 7.805 kg/ha/yr at the Glenasmole Valley SAC and 6.906 kg/ha/yr at the Rye Water Valley/Carton SAC. Given results are within the critical load range of 5 - 15 kg/ha/yr for the habitat types '*Semi-dry Perennial calcareous grassland (basic meadow steppe)*' (Grand Canal pNHA) and the critical load range of 5-10 kg/ha/yr for the habitat type '*Petrifying springs with tufa formation (Cratoneurion)*' (Glenasmole Valley SAC and the Rye Water Valley/Carton SAC), the effect of nitrogen deposition on these ecological receptors is not significant.

Cumulative sensitivity analysis (including 41 no. gas engines and 24 gas generators)

The applicant completed further worst-case modelling, which considered the cumulative operation scenario, as above, and the remaining gas engines (41 no.) associated with SD21A/0042 (ESSDUB95 and ESSDUB96; granted planning permission), and 24 no. back-up generators associated with SD22A/0333 & ABP-317802-23, (currently with An Coimisiún Pleanála for a decision).

Table 6.4 gives details of the predicted impact of the proposed channelled emissions to air under the cumulative sensitivity scenario.

Table 6.4: Cumulative sensitivity scenario (including 41 no. gas engines and 24 no. back-up generators).

Channelled emissions impact						
Parameter	Averaging Period	Background concentration ($\mu\text{g}/\text{m}^3$)	Process contribution to PEC ($\mu\text{g}/\text{m}^3$)	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines ($\mu\text{g}/\text{m}^3$) ^{Note 1}
Nitrogen oxides (as NO_2)	99.8 %ile hourly (2022)	28	122.5	150.5	75	200
	Annual (2024)	14	28.3	42.3	106	40
	Ecosystems NO_x (Glenasmole Valley SAC) (2021)	3.987	0.964	4.951	17	30
	Ecosystems NO_x (Rye Water Valley/ Carton SAC) (2024)	7.239	0.715	7.954	27	30
	Ecosystems NO_x (Grand Canal pNHA) (2022)	7.6	37.39	44.98	150	30
Ammonia (NH_3)	Ecosystems NH_3 (Glenasmole Valley SAC) (2021)	1.460	0.046	1.506	151	1
	Ecosystems NH_3 (Rye Water	2.308	0.038	2.346	235	1

Channelled emissions impact						
Parameter	Averaging Period	Background concentration (µg/m³)	Process contribution to PEC (µg/m³)	Predicted Environmental Concentration (PEC) (µg/m³)	PEC as % of Air Quality Standard	Air Quality Standards/ Guidelines (µg/m³) ^{Note 1}
	Valley/ Carton SAC) (2024)					
	Ecosystems NH ₃ (Grand Canal pNHA)(2020)	2.0	4.007	6.007	200	3
SO ₂	Ecosystems SO ₂ (Glenasmole Valley SAC)(2021)	0.357	0.012	0.369	2	20
	Ecosystems SO ₂ (Rye Water Valley/ Carton SAC)(2022)	0.542	0.009	0.551	3	20
	Ecosystems SO ₂ (Grand Canal pNHA)(2020)	0.600	0.545	1.145	6	20

Note 1: Air Quality Standards Regulations 2022, SI 739/2022, unless otherwise stated.

6.1.1.5 Human Health – Cumulative Sensitivity Analysis

For nitrogen oxides (as NO₂), Table 6.4 shows that the predicted environmental concentrations from the modelled scenario exceeds the relevant air quality standard for annual mean, 106%, and reaches 75% of the AQS for 99.8%ile hourly value. While 2024 is the worst-case year for annual mean, the information submitted within Attachment 7-1-3-2 Air Emissions Impact Assessment-FI-REV 2 (submitted 03 June 2025) shows that the annual mean is exceeded every year.

Figures 6.3 and 6.4 show the extent and direction of the plume and the worst-case receptor for NO₂.

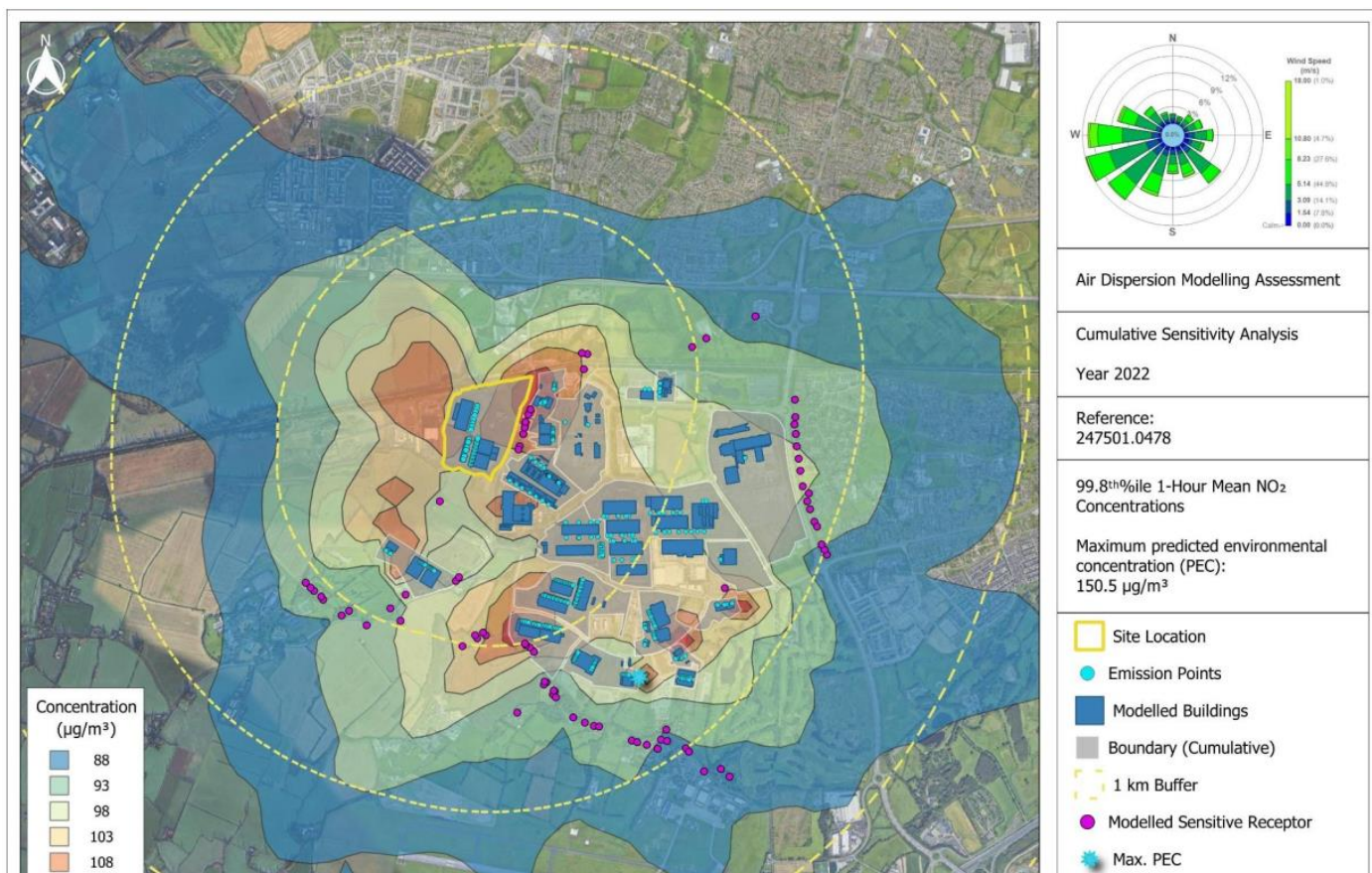


Figure 6.3: Cumulative Sensitivity Assessment - Maximum 1-Hour NO₂ concentrations (as 99.8th%ile) (µg/m³) (including background concentrations)

Figure 6.3 shows, based on the site boundary used in the model, that the maximum PEC for maximum 1-hour NO₂ (99.8th%ile) value of 150.5 µg/m³ is predicted to occur between Google Data Centre (P1189-01) and Digital Realty Trust, within the boundary of Profile Park. This worst -case receptor, which is illustrated on the map as a blue star, is greater than the concentration values (ug/m³) provided in the legend.

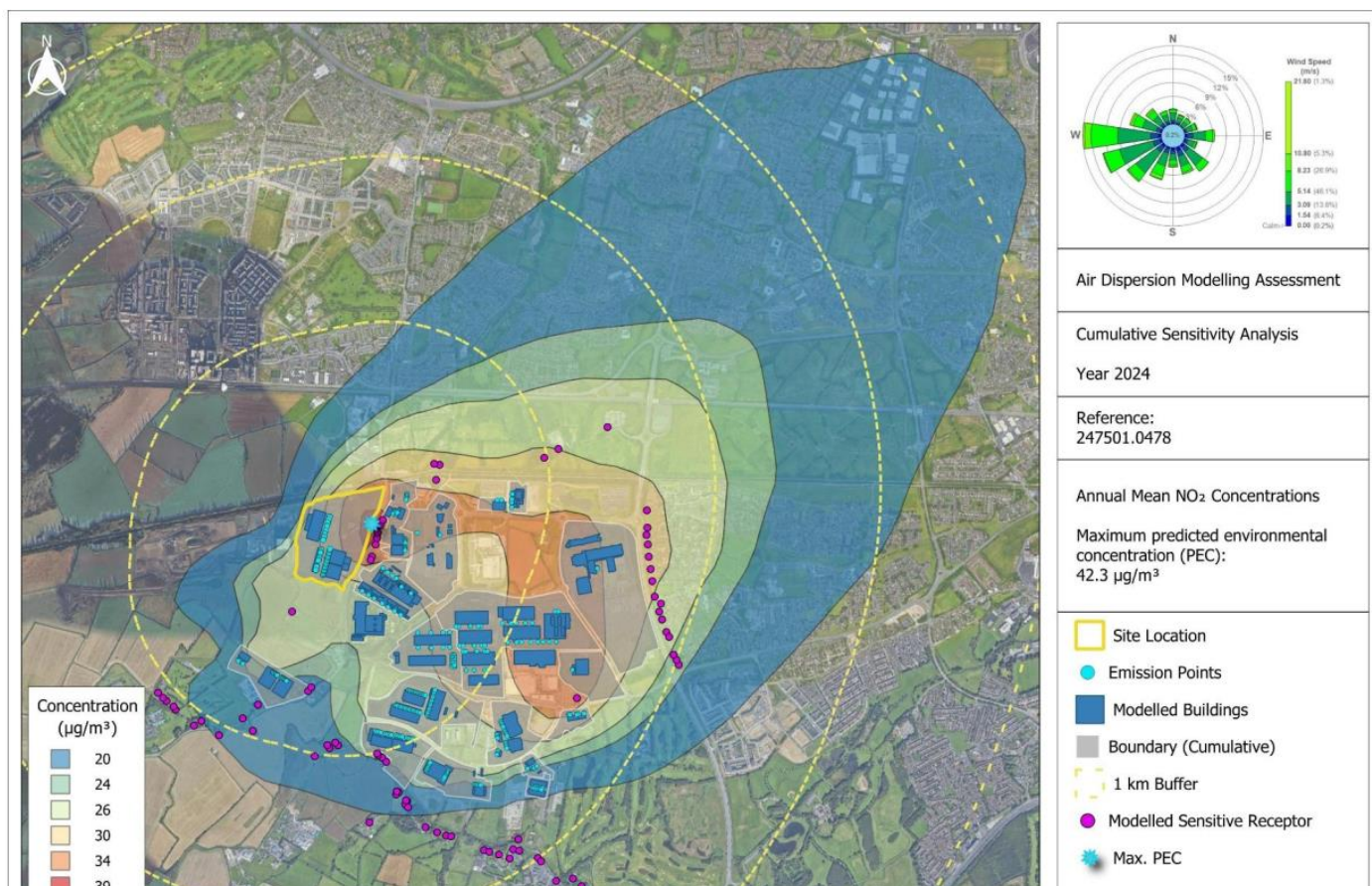


Figure 6.4: Cumulative Sensitivity Assessment – Annual mean NO₂ Concentrations (µg/m³) (including background concentrations)

Figure 6.4 shows, based on the site boundary used in the model, that the maximum PEC for annual mean NO₂ concentrations value of 42.3 µg/m³ (106% of AQS) is predicted to occur at Adamstown Road/Adamstown Avenue along the licence application boundary. This worst -case receptor, which is illustrated on the map as a blue star, is greater than the concentration values (ug/m³) provided in the legend.

6.1.1.1 Ecological Receptors – Cumulative Sensitivity Analysis

The ecological site closest to and most impacted in the cumulative sensitivity scenario is the Grand Canal pNHA. Emissions arising from this scenario will lead to a NO_x process contribution of 37.39 µg/m³ at this location, which is equivalent to 125% of the NO_x AQS (30 µg/m³). The Natura 2000 designated sites most impacted by cumulative sensitivity emissions include the Glenasmole Valley SAC and the Rye Water Valley/Carlton SAC. The modelling assessment predicted a cumulative sensitivity NO_x process contribution of 0.964 µg/m³ at the Glenasmole Valley SAC and 0.715 µg/m³ at the Rye Water Valley/Carlton SAC, however when background concentrations are included the most impacted is the Rye Water Valley/Carlton SAC which would be 27% of the AQS.

Emissions from the cumulative sensitivity scenario lead to an ambient NH₃ concentration (including background), which is at most 200% of the annual limit value at the worst-case location (Grand Canal pNHA). The modelling assessment predicted a NH₃ process contribution of 0.046 µg/m³ at the Glenasmole Valley SAC and 0.038 µg/m³ at the Rye Water Valley/Carlton SAC, however when background is included the most impacted is the Rye Water Valley/Carlton SAC which would be 235% of the AQS. As previously mentioned, the background concentration at the SACs exceeds the critical load for NH₃.

In the case of SO₂, the results from the cumulative sensitivity analysis are the same as the modelling results for the cumulative operation scenario.

With regard to nitrogen deposition flux in the cumulative sensitivity scenario, the result for the worst-case year (2022) is 29.368 kg/ha/yr at the Grand Canal pNHA. This result exceeds the critical load range of 5 - 15 kg/ha/yr for the habitat types '*Semi-dry Perennial calcareous grassland (basic meadow steppe)*' (Grand Canal pNHA). It is acknowledged that results under the cumulative sensitivity analysis scenario indicate an exceedance of the annual limit value for NO_x and the critical load range for nitrogen deposition at the Grand Canal pNHA, however this scenario is theoretical and in the event of such a scenario occurring the applicant will be required to submit a licence review application.

The nitrogen deposition flux at the Glenasmole Valley SAC and the Rye Water Valley/Carnton SAC is 7.843 kg/ha/yr and 7.012 kg/ha/yr respectively. These results are within the critical load range of 5-10 kg/ha/yr for the habitat type '*Petrifying springs with tufa formation (Cratoneurion)*' (Glenasmole Valley SAC and the Rye Water Valley/Carnton SAC), therefore the effect of nitrogen deposition on the SACs is not significant.

Recommendation

As previously mentioned, the emission limit values and monitoring requirements, as set out in the MCP Regulations, would have been applicable to the combustion plants, given the rated thermal input of each gas engine and back-up generator. However, taking into consideration the number of combustion plants and their proximity to each other within Grange Castle, there is the potential for an exceedance of air quality standards for NO_x, especially if generators across several of the data storage facilities operate simultaneously with each other and with the installation. In order to address the potential for an exceedance of NO_x and NH₃ emissions and to protect human health and ecosystems, the Recommended Determination (RD) includes a number of stricter emissions limit values and conditions, than those set out in the MCP Regulations, in order to reduce and mitigate the potential impact of channelled emissions to air.

The NO_x, NH₃, formaldehyde and methane (CH₄) emissions from the 20 no. gas engines are required to comply with the requirements of the LCP CID 2021/2326/EU.

As per the LCP CID 2021/2326/EU, BAT-associated emission level (BAT-AEL) for NO_x emissions from gas engines when running on natural gas range from 20 – 75 mg/m³ (yearly average) and 55 – 85 mg/m³ (daily average). However, as the applicant has modelled and proposed a lower yearly ELV for NO_x of 56 mg/m³, this is the ELV proposed in *Schedule B.1 Emission to Air* of the RD. A daily average of 85 mg/m³ for NO_x emissions is also proposed in the RD.

The BAT-AEL for emissions of NH₃ to air from the use of Selective Catalytic Reduction (SCR) abatement is < 3–10 mg/Nm³, as a yearly average. The applicant has modelled and proposed an ELV of 4 mg/m³ for NH₃, which is at the lower end of the range, and this is the ELV that is recommended in the RD.

The BAT-AELs for formaldehyde and methane (CH₄) emissions from spark-ignited lean-burn gas engines range from 5 – 15 mg/m³ and 215 – 500 mg/m³, respectively. The applicant did not model for formaldehyde and CH₄ emissions but confirmed that the gas engines will comply with the upper limits. The upper limit of 15 mg/m³ for formaldehyde, and 500 mg/m³ for methane, is recommended in the RD.

As previously mentioned, the gas engines are medium combustion plants and in accordance with the MCP Regulations no ELV for CO would have been applied. However the applicant has modelled and proposed an ELV of 390 mg/m³ for CO. The applicant notes that given CO emissions from the gas engines will be of a similar magnitude to NO_x emissions, CO emissions will be negligible relative to the ambient air quality standard for CO, which is 10,000 ug/m³ compared to the ambient air quality standard for NO_x which is 200 ug/m³. Therefore, the applicant requested that the stricter limits were not applied. Taking into consideration the modelling results for CO, the process contribution from the installation and the requirement only for monitoring of CO as per Schedule 3 of the MCP Regs, an ELV of 390 mg/m³ is recommended in the RD.

The applicant has not proposed ELVs for the back-up generators. Given the back-up generators are medium combustion plants and will not operate for more than 100 hours per annum; Regulation 13(3) of the MCP Regs applies, which states that new medium combustion plants, which do not operate for more than 500 operating hours per year,

shall not be required to comply with the emission limit values set out in Part 2 of Schedule 2. Therefore no ELVs have been set for the back-up generators, however, as per Schedule 3 of the MCP Regs, measurements of NO_x, CO and flow and the operational hours (Condition 11) for each back -up generator are to be recorded.

In relation to the gas engines (A2-1 to A2-20), the applicant proposes to carry out continuous monitoring of NO_x, CO, and NH₃, and annual monitoring of SO₃, formaldehyde and methane as per the requirements of BAT 4 of the LCP CID 2021/2326/EU. The applicant has also proposed to continuously monitor flow, oxygen content, temperature and pressure. Monitoring requirements are reflected in *Schedule C.1: Control of Emissions to Air* of the RD.

The applicant is required to establish an Ambient Air Quality Monitoring Programme. As part of the ambient air quality monitoring programme, the applicant will establish trigger levels for relevant monitoring parameters at 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. The condition also requires a management programme to ensure that when the installation is operational, the activity and the cumulative operation of nearby installations must not exceed the ambient air quality standards. The RD requires the applicant to consult with EirGrid as part of the establishment and implementation of the Ambient Air Quality Monitoring Programme.

The RD limits the operation of up to 18 no. of the 20 no. gas engines (A2 – 1 to A2 – 20) to run simultaneously on natural gas and the gas engines can only operate within the defined timeframe as instructed by EirGrid.

The RD limits the operation of the 48 no. back-up generators (A3 - 1 to A3 - 48) up to 100 hours per generator, per annum, excluding testing and maintenance.

6.1.2 Fugitive Emissions

Gases will be used on site which are subject to the F-gas Regulations (EU No 573/2024).

Condition 6 of the RD requires the applicant to prepare and implement a programme for the identification and reduction of any fugitive emissions using an appropriate combination of best available techniques.

6.1.3 Dust

There will be no dust emissions associated with the activity.

6.1.4 Odour

There will be no odour emissions associated with the activity.

6.2 Emissions to Water/Ground/Sewer

6.2.1 Emissions to Surface Waters

There will be no process effluent discharged to surface water.

6.2.2 Emissions to ground/groundwater

There will be no process effluent discharged to ground water.

6.2.3 Emissions to Sewer

Emission to sewer will comprise of domestic effluent from welfare facilities, condensate from the chilled water system, cooling coils and fan units associated with EDCDUB04 and EDCDUB05, and storm water from the bunds at the transformer yard. Emissions will discharge from the on-site foul sewer into South Dublin County Council's (SDCC) private foul sewer, which is located to the east of the site, at SE1 and SE2.

Condensate from EDCDUB04 and sanitary waste from the sprinkler tank and pump house will discharge to SDCC foul sewer at SE2. Condensate from EDCDUB05 and sanitary waste from the rest of the site will discharge at SE1. Storm water from the bunds at the transformer yard is directed through a Class I full retention oil interceptor before discharging at SE1 into SDCC foul sewer.

Waste water from the private foul sewer ultimately discharges into Ringsend Wastewater Treatment Plant (WWTP) which is designed to provide secondary treatment. 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.

While Uisce Éireann are required to comply with their Waste Water Discharge Authorisation (D0034-02) for Ringsend WWTP, the responsibility for the emissions into Ringsend WWTP lies with South Dublin County Council, the owners of the foul sewer within the industrial estate, into which the installation will emit. The applicant has a contractual agreement with South Dublin County Council to emit to the foul sewer within the industrial estate. Therefore, it is in the remit of South Dublin County Council to regularise issues in relation to the installation's emission to the Uisce Éireann treatment plant.

Uisce Éireann, under section 99E of the EPA Act, gave its consent for the discharges from the installation, specifying certain ELVs, as well as certain other conditions and monitoring requirements for emission point SE1. These ELVs and monitoring requirements have been incorporated into *Schedule B.3 Emissions to Sewer* and *Schedule C.3 Control of Emissions to Sewer* of the RD. Given only condensate and sanitary effluent will discharge via SE2 into the foul sewer no ELVs or monitoring is required at SE2.

6.2.4 Other emissions to ground/groundwater

There will be no other emissions to ground or groundwater from the installation.

The applicant has stated that there is no known existing or historical soil or groundwater contamination. The Baseline Report, which is discussed in the 'Cessation of Activity' section of this report, provides a summary in relation to soil and groundwater contamination by hazardous substances at the installation.

6.3 Storm water discharges

Rainwater from building roofs, yards and the road network, will be discharged to SDCC's storm water sewer within the R120 (Newcastle Road) to the north-east of the site at emission point SW1. Storm water ultimately discharges to the Griffeen River (EPA code: IE_EA_09L012100).

Drainage from EDCDUB04 and ESSDUB97, including roof areas, roads, oil tanks and fuel delivery areas, passes through Class I full retention interceptors, before entering Attenuation Pond no. 2. Drainage from EDCDUB05 and the GIS substation (excluding storm water from the bunds at the transformer yard) will pass through Class I full retention interceptors, bioswales, rain gardens and weirs before entering Attenuation Pond no. 1. The discharge of storm water from the attenuation ponds into the private storm water sewer is controlled by a hydrobrake and restricted to a greenfield run-off rate. All interceptors will be fitted with oil level alarms which alert when the interceptor is at oil storage capacity.

Table 6.5 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 details

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, Total Organic Carbon (TOC), conductivity (weekly)	Class I full retention interceptors, attenuation ponds, bioswales, rain gardens, silt traps	All hardstanding areas, including car park, fuel unloading areas.	Griffeen River	No. Required by RD
Automatic diversion in place:	No. The RD requires that in the event of fire, or a spillage to storm water, that the storm water collection system must provide for the automatic diversion of storm water for collection and appropriate management.				

The RD requires the applicant to maintain the storm water drainage system and to have interceptors and silt traps in place. Condition 6 of the RD also requires the applicant to establish trigger values for various parameters in storm water discharge, in accordance with EPA guidance. The RD requires that the storm water discharge is visually inspected (daily) and monitored for pH, TOC and conductivity (weekly), in accordance with *Schedule B.5 Storm Water Discharge Monitoring* of the RD.

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 of this report.

6.4 Noise

The site is located within the townland of Ballymakailly to the west of Adamstown Road (R120), South Dublin. The nearest residential noise sensitive locations (NSLs) are to the east of the development along the west site of the R120 at a distance of approximately 50 m from the site boundary. There are also residential dwellings to the north of the site by the Grand Canal at a distance of approximately 130 m from the site boundary, and a halting site some 200 m from the southern boundary. In addition, there are a number of commercial and industrial operations located on lands along the east side of the R120.

The main sources of noise at the installation include the gas engines, condensers, chillers, air handling units and back-up generators. The back-up generators will be enclosed in acoustic containers, while the gas engines will be housed within a specially designed acoustic enclosure or 'engine cell'. The engine cells are constructed using specialised sound-absorbing materials that dampen noise, ensuring that noise levels are kept at acceptable limits. Acoustic louvres will be installed to allow airflow while minimising the transmission of noise which will be contained and reduced before reaching the surrounding environment.

Baseline noise monitoring, which was carried out at five representative locations, demonstrated that the site is not a 'quiet area' or in an area of 'low background noise' as per the Agency's NG4⁶ guidance. The existing noise environment is dominated by traffic noise associated with the R120. The baseline noise monitoring locations for surveys undertaken

⁶ *Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to Scheduled Activities* (NG4) (2016), as maybe amended or replaced by the Agency.

in 2016 (S01, S02 and S03) and 2020 (S04 and S05) are shown in Figure 6.3. The noise sensitive locations are shown in Figure 6.4.



Figure 6.3: Baseline noise monitoring locations [Source: Figure 3, Noise monitoring Locations, Attachment 7-1-3-2 Noise Impact Assessment-FI-Rev]



Figure 6.4: Noise Assessment Locations [Source: Figure 6, Noise Assessment Locations, Attachment 7-1-3-2 Noise Impact Assessment-FI-Rev]⁷

Noise modelling has been used by the applicant to predict the worst-case impacts of noise sources from the installation at nearby NSLs. Noise modelling was undertaken for six different operational scenarios; such as:

- Scenario A: EDCDUB04 and EDCDUB05 running. No back-generators running.
- Scenario A1: EDCDUB04 and EDCDUB05 running, along with ESSDUB97, 18 no. gas engines at full load.
- Scenario B: EDCDUB04 and EDCDUB05 running along with all 48 no. back-generators at full load.
- Scenario B1: Scenario B but with the addition of ESSDUB97, 18 no. gas engines at full load.
- Scenario C: EDCDUB04 and EDCDUB05 running. Two back-up generators being tested simultaneously at full load, one at EDCDUB04 and one at EDCDUB05. All other back-up generators off.
- Scenario C1: Scenario C but with the addition of ESSDUB97, 18 no. gas engines at full load.

⁷ R02 is shown in Figure 6.4 for consistency with the Noise Chapter in the EIARs, however this property has subsequently been demolished and therefore excluded from the noise assessment completed for the licence application.

Given Scenario B1 is reflective of the licence application; i.e. continuous operation of 18 no. gas engines and operation of 48 no. back-up generators for no more than 100 hours, per generator, per annum, this is the scenario which has been considered in this report. Noise modelling results indicate an exceedance of the evening (50 dB(A)) and nighttime noise limits (45 dB(A)) at all NSLs apart from R03 and R05. Even though the applicant applied a noise criterion of 55 dB(A) for Scenario B1 as per Section 4.4.1 of NG4⁸, given the back-up generators could be operated for an extended period (up to 100 hours, per generator, per annum), it is considered that the standard noise limit values should apply at the NSLs. The nearest ecological receptor is the Grand Canal pNHA (002104) which lies directly north of the installation. Noise modelling results indicate that the noise levels at the Grand Canal pNHA are of the order of 55 dB (A). Given the nearest European Site, Rye Water Valley/Carlton SAC (001398), is approximately 4 km north-west of the site, there will be no significant adverse impact in relation to noise on the SAC.

In regard to cumulative noise emissions, the applicant considered the potential noise impacts the installation and two other developments would have on the NSLs under each of the six scenarios mentioned above. Noise modelling results indicate an exceedance of the evening (50 dB(A)) and nighttime noise limits (45 dB(A)) at all NSLs under Scenario B1.

Based on the potential for noise exceedances, the RD includes a requirement on the applicant to prepare a Noise Management Plan (Condition 6). The RD requires that the Noise Management Plan be implemented within six months of date of grant of the licence.

Noise conditions and emission limit values, which apply at the noise-sensitive locations, have been included in the RD.

7 Waste generation

The amount of waste generated on site from the activity is expected to be low, due to the nature of the operation. The categories of waste that will be generated include dry mixed recyclables (primarily generated from canteens and offices), mixed municipal waste, miscellaneous parts and equipment (incl. fans, cables, connectors) and wastes arising from site maintenance works, such as used oil, oily water from separators, and spent SCR catalysts. The total quantity expected to be generated will be approximately 154 tonnes per annum. A full list of waste streams that will be generated at the installation, and conditions under which such waste streams will arise, has been provided in Attachment 8-1 Waste (Generated)-FI-REV of the application form.

All waste materials will be segregated, classified, labelled and stored in bins or other suitable receptacles in designated areas. The hazardous wastes posing the highest potential for impact are waste oils, oily rags, used filters, oily water from separators, and Waste Electrical and Electronic Equipment (WEEE). An external contractor will be responsible for collecting and transporting waste oils, oily rags, and used filters off-site. All hazardous waste generated on the site will be appropriately labelled, covered when necessary, and stored in designated areas before being collected by permitted hazardous waste contractors. Non-hazardous waste streams including dry mixed recyclables, mixed municipal waste, and food waste. Confidential waste and metals will be segregated and stored in dedicated 240 L and 1,100 L wheelie bins before being removed from site by authorised waste management contractors for off-site reuse, recovery or disposal.

Oil accumulated in hydrocarbon interceptors will remain in the tanks until removal by a specialist contractor. Using a vacuum tanker, the contractor will extract the oily water during scheduled interceptor cleaning. The collected waste will then be transported off-site for appropriate recovery or disposal. It is expected that the total quantity of waste to be generated will be approximately 15 tonnes per annum.

The applicant will employ a number of measures at the installation for the prevention and/or minimisation of waste. An Operational Waste Management Plan (OWMP) will be prepared for the installation prior to operation. This will

⁸ *Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to Scheduled Activities* (NG4) (2016), as maybe amended or replaced by the Agency.

ensure the proper management and recycling of wastes generated at the site. Effective segregation and careful management of hazardous waste will be implemented to prevent any significant impacts on downstream facilities.

As outlined in Attachment 8.2.1 Waste Hierarchy-FI-Rev of the licence application, 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, water and electricity. The estimated quantities to be used are specified in Attachment 4.6.1 Water Energy Usage-FI-REV and Attachment 4.6.2 Raw Material Interim Products-FI 1 of the application, and are given below. These quantities are based on the continuous operation of 18 no. gas engines on natural gas, the testing and maintenance of the 48 no. back-up generators on gas oil (17 hours) and the emergency operation of the 48 no. back-up generators on gas oil for less than 100 hours, per generator, per annum.

Table 8.1: Resource Use Details

Resource	Quantity per annum
Electricity (purchased)	358,300 MWH
Natural Gas	170,551,132 Nm ³ (if operating continuously)
Gas oil	3,192 tonnes (117 hours of operation)
Water (public supply)	2,712 m ³

Energy efficiency at the installation will primarily depend on the electrical efficiency of the gas engines. The applicant has indicated that the electrical efficiency of the gas engines is estimated to be 42.85%, however taking into consideration the expected degradation over time, the net electrical efficiency of the gas engines will not fall below 39.5%⁹.

An Energy Efficiency Management System (EnEMS) will be developed and implemented at the installation. The EnEMS, which will form part of the site's Environmental Management System, will include the features listed in BAT 1 of the Reference Document on Best Available Techniques for Energy Efficiency.

In the application of LCP CID (BAT 2), 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 applicant has outlined that there are no plans to abstract groundwater for use on the installation.

9 Prevention of Accidents

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

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

⁹ Unsolicited Additional Information-P1204-01-Unsolicited Information (18 June 2025).

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 incidents resulting from stored fuel quantities leading to air, water, or soil emissions. • Potential for gas fire/explosion. • Potential for leaks and spillages of fuel, oil and other liquid chemicals during storage, use or delivery. • Potential failure of the hydrobrake on the attenuation pond or hydrocarbon interceptors causing discharge of contaminated water.
Preventative/Mitigation measures to reduce the likelihood of accidents and mitigate the effects of the consequences of an accident at the installation	• An Emergency Response Plan (ERP), and Accident Prevention Procedure (APP), based on a comprehensive risk assessment will be prepared to address all aspects of the installation's operation. • Fire/smoke detection sensors (both thermal and optical type) will be integrated into each gas engine as well as smoke exiting the engine cell. Each engine cell has been designed with steel frames and precast concrete housing materials to achieve a 90 minute fire rating. • Gas detection sensors will also be installed and connected to the engine control system in order to provide gas pre-alarm and alarm outputs based on detection of 10% and 20% of the Lower Explosive Limit (LEL) threshold, respectively. ESSDUB97 will incorporate an automatic gaseous fire suppression system, which has been designed to provide individual protection to all 20 no. engine cells as well as to the switch room. • Each data centre will be equipped with a comprehensive fire detection, alarm, and suppression technologies to swiftly detect any signs of fire. In the event of a fire, the system will activate audio/visual alarms. • All gas engines will be contained within an engine cell, which will be bunded and have a leak detection system. The bulk tanks storing lubricating oil (2 x 10 m³), waste oil (2 x 10 m³), and urea (2 x 9.4 m³), will be double-skinned and have leak detection and high-level alarms installed. The oil day tanks (20 x 400 l) for the gas engines will be double-skinned and have level alarms fitted. The urea day tanks (20 x 1 m³) will be double skinned. • Each back-up generator will be located in a generator yard which will be bunded and have leak detection installed. Each back-up generator will have a double-skinned belly tank with level alarms fitted. • Fire sprinkler pumps will be equipped with a double-skinned fuel storage tank with leak detection and high-level alarms fitted. Loading and unloading activities will only occur in designated hardstanding areas with hydrocarbon interceptors. • All hydrocarbon interceptors, for both foul and storm water, will be fitted with high level alarms. • The installation will incorporate an automated Building Management System (BMS), which will be responsible for controlling, monitoring, collecting data, and reporting on all aspects of the site's processes and conditions, both electrical and mechanical systems.

Potential accidents & measures for prevention/limitation of consequences	
Additional measures provided for in the RD	• Accident prevention and emergency response requirements (Condition 9). • Integrity assessments required every 3 years and maintenance carried out as required (Condition 6). • Daily and weekly monitoring requirements of storm water discharge point (Condition 6 and <i>Schedule B.5 Storm Water Discharge Monitoring</i>). • Firewater retention risk assessment (Condition 3). • Drainage from bunded areas to be treated as contaminated unless it can be demonstrated otherwise with contaminated material to be diverted for collection and safe disposal (Condition 3). • All pump sumps, storage tanks, attenuation tank or other treatment plant chambers from which spillage of environmentally significant materials might occur will be fitted with high liquid level alarms (Condition 3).

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 Health and Safety Authority is the Central Competent Authority for The Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (SI 209/2015, hereafter referred to as the COMAH Regulations 2015). Under the COMAH Regulations 2015 the quantity of gas oil which qualifies a given site for the application of lower-tier and upper-tier requirements is 2,500 tonnes and 25,000 tonnes respectively. The total quantity of gas oil stored on site will be c. 1,300 tonnes, which is below the lower-tier threshold level.

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 main risk is to soil and groundwater contamination through spills or leaks of fuels, oils or other liquid chemicals used or stored on site.

The applicant has provided a list of measures to be taken in the event of site closure/cessation of activity. These measures are outlined in Attachment 9-2-3 Site Closure Plan. 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 screening assessment was undertaken by the applicant, in accordance with Stages 1 to 3 of European Commission Guidance¹⁰. Even though the screening assessment concluded that the risk of contamination to soil and groundwater is low, the applicant determined that due to the volume of gas oil to be used, stored and transported to

¹⁰ European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions.

site, a complete baseline report was required (Stages 4 to 8). A baseline report was submitted with the application as Attachment 4-8-3 Complete Baseline Report 13.

The scope of the work undertaken for this assessment included the following:

- a desktop review of regional and site geology and hydrogeology,
- review of available soil and groundwater quality data, and
- review of bulk liquid storage at the site and assessment in terms of likely impact to receiving waters.

A review of historic maps undertaken for the baseline report indicate the majority of the site was historically agricultural lands of various plot sizes, typical of a rural setting prior to the construction of the Grange Castle Industrial Estate sites. Lands surrounding the site in the wider Grange Castle area were under agricultural use or lying fallow until c. 2000 when development in the north and eastern part of the Grange Castle area commenced. Significant expansion of commercial development in the northern part of Grange Castle area is evident in the 2013 maps onwards. The subject site remained undeveloped until the present day. The historic maps indicate that only agricultural development existed at the subject location, with the exception of a historical limestone quarry located in the north west portion of the site. The quarry was active up until the mid-20th century and has since been infilled.

A review of the hydrogeology and geology in the surrounding region indicates that there are no sensitive receptors in respect of groundwater-fed wetlands, council water supplies, group water schemes, or geological heritage sites, within the immediate vicinity of the installation. There were no illegal landfills identified in the immediate surrounding area. The bedrock aquifer underlying the site according to the GSI (www.gsi.ie/mapping) National Draft Bedrock Aquifer Map is classified as a Locally Important Bedrock Aquifer (LI), which is described by the GSI as being 'moderately productive only in local zones'. The site is underlain by the Dublin Groundwater Body (EU code: IE_EA_G_008) which has been investigated by the GSI and is described as having a groundwater flow regime of 'PP' which is poorly productive bedrock aquifer. The GSI presently classifies the aquifer in the region of the site as 'Extreme (E)' which indicates an overburden depth of 0-3 m is present. This is consistent with site investigation data and the aquifer is considered to have 'Extreme' vulnerability.

A conceptual site model (CSM) was presented in the baseline report, which included an assessment of all site investigation works. Site specific information has been derived from an extensive site investigation involving drilling and trial pitting undertaken at the site in March 2018. Site specific soil and water quality data show no evidence of any historical contamination at the site. Samples were tested for hydrocarbons (mineral oils, BTEX), PAHs, metals, asbestos and phenols. The results indicated that there was no significant soil contamination at the site. Groundwater samples were also taken and sent for analysis for metals, speciated PAHs, speciated TPH, BTEX, total phenols and inorganics. The results of the analysis showed that of the range of aliphatic and aromatic hydrocarbons tested, borehole (BH) 15 was found to have concentrations of 250 µg/l total TPH, in excess of the drinking water standard. A second monitoring round composed of 4 no. groundwater samples was carried out (including BH15) and concentrations of all parameters tested did not detect elevated concentrations exceeding the relevant threshold values. The data from the site investigation works confirms that there is no evidence of any significant soil or groundwater contamination at the installation, due to previous use. The source pathway qualitative risk assessment concludes that the risk of an impact to soil or water is low.

Source-pathway-receptor linkages were assessed for the bulk storage areas. It was concluded that there are no direct pathways to either the soil or groundwater environment. Interceptors will be installed on the surface water drainage. Any leakages from tanks will be fully contained in the designated bund or the double skin lining of the tank, and leaks during delivery will be fully contained within the continuous hard stand delivery area. Any leakage outside of the delivery area would be contained within the drainage system.

The baseline report concluded that due to the lack of previous development at the site and the historical residential and agricultural use at the site, the risk of contaminated soils being present on-site is low and this was confirmed by

on-site soil sampling and analysis. Additionally, the preventative measures at the lubricating oil storage area, which includes bunded and double skinned vessels, dual -contained fuel pipe systems (when underground), leak detection systems and alarms, will significantly reduce the potential for an environmental impact to soil or water to occur. The storm water drainage system will be fitted with Class I full retention interceptors, which have capacity alarms and are connected to the site's Building Management System (BMS).

In accordance with the requirements of the IED, the RD requires soil and groundwater monitoring for hazardous substances every ten and five years respectively (Condition 6).

The RD includes a number of conditions to reduce the risk to soil and groundwater by preventing discharges to ground as follows:

- the provision and maintenance of adequate bunding for all tank, container and drum storage areas (Condition 3),
- the regular integrity testing of bunding structures, tanks, underground pipelines and containers installed on site (Condition 6),
- the provision of high level liquid alarms (or oil detectors as appropriate) in storage areas from which spillage of environmentally significant materials might occur (Condition 3), and
- waste and materials to be stored in designated areas, protected as may be appropriate against spillage and leachate run-off (Condition 8).

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 relating to 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 submissions 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 submissions are noted and addressed in this report and the submissions were taken into consideration during the preparation of the Recommended Determination (RD).

Table 12.1: Submissions

Submissions			
1.	Name & Position: Miss Selina Gallagher	Organisation: Health Service Executive, Environmental Health Service	Date received: 25 October 2023
Issues raised: 1. The perception of noise can be subjective and compliance with specific noise limits at site boundaries may not be adequate to prevent a noise nuisance at nearby noise sensitive locations. The EHS recommends that a licence condition regarding a public complaints procedure should be included to ensure that a local resident can make a complaint to the applicant and that complaints are dealt with in a timely manner. 2. It is the view of the EHS that the IE licence should include conditions which require the applicant to continuously investigate and implement technologies which reduce GHG emissions and should consider the use of renewable energy resources on site for the creation of electricity. Agency response: The Agency acknowledges the submission by the EHS and makes the following comments in response to the main issues raised: 1. <u>Noise Complaints</u> Noise is addressed in the 'Noise' section of this report. Condition 2 of the RD stipulates requirements for a public awareness and communications programme. Condition 11 of the RD stipulates record keeping and response requirements. In addition, Condition 4, Condition 5 and Condition 6 of the RD stipulate an annual noise survey, preparation of a noise management plan and compliance with the noise emission limit values and monitoring set out in <i>Schedule B.4 Noise Emissions</i> of the RD. 2. <u>GHG emissions</u> GHG emissions are addressed in the 'Climate' section of this report. Condition 7 of the RD stipulates requirements 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 to be submitted to the Agency within six months of the date of grant of the licence with recommendations for approval by the Agency on the options to decrease or offset their use (both directly and indirectly) of fossil fuelled energy - recommendations approved by the Agency, must be incorporated into the Schedule of Environment Objectives and Targets under Condition 2 of the RD. In addition, Condition 7 of the RD requires regard for the targets of the most recent national climate action plan when identifying opportunities for energy use reduction.			
2.	Name & Position Mr Colin Doyle	Organisation: N/A	Date received: 20 November 2023
Issues raised: 1. <u>Air Quality & Modelling:</u> The natural-gas emission sources input to normal/proposed operations scenarios modelled in the 2021 EIAR decreases by a factor of c. 3 in the 2023 IEL Air impact Assessment. Despite the large difference however, the change in NO₂ process contribution levels is marginal. 2. <u>Greenhouse Gas (GHG) Emissions:</u>			

Submissions

The Environmental Impact Assessment Reports submitted as part of the EPA licence application do not include GHG emission calculations.

3. Regulatory Framework for Climate:

The Environmental Impact Assessment Reports submitted as part of the EPA licence application do not include an assessment of the impact of the development with reference to national regulatory frameworks for climate.

4. Environmental Impact Assessment Report (EIAR):

The EIAR associated with planning application reference number SD22A/0333 has not been submitted as part of the EPA licence application.

5. An Bord Pleanála (ABP) Planning Ref. no. PL06S.317802:

Omission of reference and consideration of ongoing ABP appeal reference number PL06S.317802, concerning planning application SD22A/0333, in the application.

Agency response:

1. Air Quality & Modelling:

While the number of natural gas-based emission sources modelled decreases by a factor of c. 3 between the examples listed in the submission, the number of emission sources modelled that are listed in these examples increase by a factor of 2 (from 24 generators to 48 generators) and their run hours by a factor of 3 (from 52 hours to 152 hours). There is also a two-year gap between these assessments during which project variables like technical design specifications may become more defined, informing further refinements to the input data modelled. In any case, the most up to date air impact assessment was submitted by the applicant 03 June 2025 in response to a request for further information by the Agency and is addressed in detail in the 'Emissions to Air' section of this report.

2. GHG Emissions:

GHG emission calculations are addressed in the 'Climate' section of this report.

3. Regulatory Framework for Climate:

The potential impact of the development in the context of national regulatory frameworks for climate is addressed in the 'Climate' section of this report.

4. EIAR:

Planning application reference number SD22A/0333 was refused planning permission and is currently the subject of appeal with An Coimisiún Pleanála (ABP 317802-23). In the event of receipt of grant of planning permission per SD22A/0333 and PL06S.317802, the applicant will be required to submit a licence review application if they propose to commence any discharge from that proposed development. Any EIAR that may be associated with planning application SD22A/0333 & ABP 317802-23, would be considered by the Agency at that time. Additionally, the cumulative sensitivity analysis scenario included the emission points associated with SD22A/0333 & ABP 317802-23 and is addressed in the 'Emission to Air' section of this report.

5. Planning Ref. no. PL06S.317802:

The activity to which the RD relates to is restricted to activities associated with the developments as permitted by planning permissions which have been granted for the site. The proposed development in planning application SD22A/0333 (which is the subject of An Coimisiún Pleanála appeal ABP 317802-23) and any discharge associated with that development, is not the subject of the RD as drafted. Should a licence be granted by the Agency as proposed and should the planning authorities grant planning permission per SD22A/0333 & ABP 317802-23, the applicant may be required to submit a licence review application if they propose to commence any discharge from that proposed development. Any EIAR that may be associated with planning application SD22A/0333 & ABP 317802-23, would be

Submissions	
	considered by the Agency at that time. This is addressed in the 'Planning Status' section of this report. Additionally, the cumulative sensitivity analysis scenario included the emission points associated with SD22A/0333 & ABP 317802-23 and is addressed in the 'Emission to Air' section of this report.

13 Consultations

13.1 Cross Office Consultation

I consulted with Ann Lyng and Cyril Tynan in the Office of Environmental Enforcement in relation to the enforcement of this site and the applicable financial charges. I have also consulted with Suzanne Monaghan of the Office of Evidence and Assessment in relation to emission statistics.

13.2 Transboundary Consultations

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

14 Appropriate Assessment

Appendix 2 lists the European Sites assessed, their associated qualifying interests and conservation objectives.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activity, individually or in combination with other plans or projects is likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at Rye Water Valley/Carton SAC (001398), Glenasmole Valley SAC (001209), Wicklow Mountains SAC (002122), South Dublin Bay SAC (000210), North Dublin Bay SAC (000206), Red Bog, Kildare SAC (000397), South Dublin Bay and River Tolka Estuary SPA (004024), Wicklow Mountains SPA (004040), North Bull Island SPA (004006), and Poulaphouca Reservoir SPA (004063).

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

This determination has been made in light of the following reasons:

- the installation is located in a private business park and is not within a European Site,
- atmospheric dispersion modelling as submitted by the applicant for NO_x, NH₃, SO₂, nitrogen and acid deposition, indicates that the European Sites and their qualifying interests will not be adversely affected by air emissions arising at the installation. While the closest European Site to the installation is the Rye Water Valley/Carton SAC (001398), which is located approximately 4.1 km north-west of the installation, and is the most impacted from a NO_x, NH₃ and SO₂ perspective, the most impacted European Site, relating to nitrogen deposition, is the Glenasmole Valley SAC (001209), which is approximately 10 km south-east of the installation. Results indicate that NO_x emissions arising from the combustion of natural gas (continuous) and gas oil (100 hours) from the installation, either alone or in-combination with other projects (including the background concentration), will result in approximately 24% and 27% (respectively) of the annual limit value for the Rye Water Valley/Carton SAC. Modelling demonstrates that SO₂ emissions arising from the installation either alone or in-combination with other projects (including the background concentration), will result in approximately 3% of the annual limit value for the Rye Water Valley/Carton SAC. Emissions of NH₃ arising from the installation either alone or in-combination with other projects (including the background concentration) will result in approximately 231% and 235% (respectively) of the annual limit value for the Rye Water Valley/Carton SAC.

These exceedances are due to the background concentration which is over twice the critical level for ammonia. (An annual critical level of $1 \mu\text{g}/\text{m}^3$ for NH_3 has been applied given the presence of lichens and/or bryophytes. The background concentration for NH_3 at the Rye Water Valley/Cartron SAC is $2.308 \mu\text{g}/\text{m}^3$). The NH_3 process contribution from the installation is c. $0.0056 \mu\text{g}/\text{m}^3$. Similarly, in relation to nitrogen deposition, as the background concentration is $7.523 \text{ kg}/\text{ha}/\text{yr}$ for Glenasmole Valley SAC ($5\text{--}10 \text{ kg}/\text{ha}/\text{yr}$) and the process contribution from the installation is c. $0.050 \text{ kg}/\text{ha}/\text{yr}$, the effect of nitrogen deposition on the SAC is not significant,

- European Sites and their qualifying interests are considered to be outside of the Zone of Influence of noise emissions arising at the installation,
- there will be no direct process emissions to surface water, ground or groundwater,
- domestic effluent generated at the installation, condensate from the data centres and storm water from the transformer yard will be discharged to a foul sewer before ultimately discharging to the Ringsend Wastewater Treatment Plant, and
- 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 three Environmental Impact Assessment Reports (EIARs); *EdgeConnex Data Centre (DUB04)*¹¹ dated January 2019 (Attachment 6.3.7), *EdgeConnex Data Centre (DUB05)*¹² dated February 2021 (Attachment 6.3.8) and *Kishoge Substation Gridline Connection* (dated August 2022) (Attachment 6.3.9).

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), information received through consultation, the documents associated with the assessments carried out by South Dublin County Council and An Bord Pleanála and their reasoned conclusions, and the issues that interact with the matters that were considered by those authorities and which relate to the activity, written submissions, as well as considering any supplementary information, where appropriate. All the documentation received was examined and I consider that the EIARs comply 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 EIARs 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.

¹¹ The proposed development assessed in this EIAR included EDCDUB04 (consisting of 32 no. back-up generators) and 1 no. temporary gas powered generation plant (consisting of 19 no. gas engines).

¹² The proposed development assessed in this EIAR included EDCDUB05 (consisting of 24 no. back-up generators) and 3 no. gas powered generation plants (totalling 61 no. gas engines); i.e. ESSDUB97, ESSDUB96 and ESSDUB95.

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 submissions made by third parties has been set out in the 'Submissions' section of this report.

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

15.2 Consultation with Planning Authorities in relation to EIA

Consultation was carried out between South Dublin County Council and An Bord Pleanála and the Agency under the relevant section of the EPA Act.

An Bord Pleanála responded on the 03 October 2023 and referred to planning application ABP-314567-22, which relates to an underground transmission line connection. This development is not a licensable activity nor part of this licence application.

South Dublin County Council responded on the 15 December 2023 and provided links to the planning portal for EDCDUB04 (SD19A/0042 and SD23A/0151). SDCC confirmed that an EIAR was not required for SD23A/0151 as an EIAR had been prepared for SD19A/0042, and having regard to the nature of the proposed development, and the distance of the site from nearby sensitive receptors, there is no likelihood of significant effects on the environment arising from the proposed development.

An Bord Pleanála responded on the 12 January 2024 confirming grant of planning for ABP-314567-22.

15.3 Alternatives

The matter of alternatives is addressed in Chapter 4 of the EDCDUB04 EIAR, Chapter 4 of the EDCDUB05 EIAR and Chapter 3 of the gridline connection EIAR.

EDCDUB04

Section 4.3 of the EIAR addresses alternative project locations. Ireland was selected as the preferred country due to the relatively cool climate. When selecting a preferred site location, the applicant considered the following; availability of suitable power supply and infrastructure, natural heritage, environmental considerations such as noise, air quality, visual impact and traffic; flooding; suitable zoning; and sites specifically designed for large scale industrial activities with good water, wastewater and road access. Having undertaken the assessment it was concluded that the chosen site adjacent to the Grange Castle Business Park to the east of the R120 met the highest proportion of the necessary criteria and made strategic business sense to locate any future development close to the existing Edgeconnex campus.

Section 4.7 of the EIAR addresses alternative design/layouts and a number of iterations were considered. Taking into consideration set-backs from sensitive receptors and boundaries, positioning of the most attractive features to face the R120, the applicant determined that a north to south configuration with services to the west provided the most appropriate design and layout.

Section 4.10 of the EIAR addresses alternative processes. Given technology related to data centres is essentially the same there was limited alternative processes/technologies available to consider.

EDCDUB05

Section 4.3 of the EIAR considered a do-nothing scenario. The applicant determined that if the installation did not progress the site would be developed and landscaped as granted under SD19A/0042.

Section 4.4 of the EIAR addresses alternative project locations. The applicant considered the following criteria in selecting a location; availability of a high-quality telecommunications fibre network, accessibility to the natural gas network, availability of a suitably large site with suitable development zoning, low environmental sensitivity being within a predominantly industrial area, good water, wastewater and road access, proximity to and availability of suitable power supply, local planning precedent for the granting of permission for data centre facilities, and low natural disaster risk particularly in relation to flooding. The preferred location was considered a logical addition to the land use pattern of Grange Castle, and the permitted development on the site, as it met the highest proportion of the necessary criteria.

Section 4.7 of the EIAR addresses alternative design/layouts and a number of iterations were considered based on the current development and overall master plan. Taking into consideration set-back of the power plants to ensure maximum mitigation of air and noise emissions to off-site receptors, the need to maintain the permitted landscape buffer, minimising the extent of excavation required across the site, and location of attenuation pond, the preferred location and layout achieved the balance between minimal environmental effects, and an appropriate level of development on the site.

Section 4.10 of the EIAR addresses alternative processes. Alternative power sources to the gas plants were considered but it was evident that noise generation and power generation would be significantly deficient in terms of providing both the short-term permanent power, but also the permanent back up power to the national grid required under the Flexible Demand offer provided by EirGrid.

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 Chapter 6 of the EDCDUB04 EIAR, Chapter 5 of the EDCDUB05 EIAR and Chapter 4 of the gridline connection EIAR.

The installation is located on a site with a total area of c. 22.1 hectares (ha) consisting of partially greenfield and brownfield lands separated by hedgerow. The installation is bound to the north by the Grand Canal; the R120 to the east and agricultural lands to the west and south. The immediate surroundings are predominantly commercial and industrial, with extensive development in Grange Castle Business Park and Profile Park, located to the south-east of the site. Such developments include pharmaceutical plants, data centres and power plants. The nearest residential properties are to the east of the site along the R120 at a distance of approximately 50 m from the site boundary. There are also residential dwellings to the north of the site by the Grand Canal at a distance of approximately 130 m from the site boundary, and a halting site some 200 m from the southern boundary.

The potential direct and indirect effects of the installation on population and human health are associated with emissions to air from the combustion of natural gas and gas oil, noise emissions from the operation of the gas engines

and back-up generators, CO₂ emissions on climate (climate change and related effects), emissions to sewer, storm water discharge, emissions to ground and accidental emissions. Should emissions cause an exceedance of environmental quality standards, this could have implications for population and human health.

The applicant carried out air dispersion modelling to predict the impact of emissions from the gas engines and back-up generators (NO₂, CO, NH₃, SO₂ and Particulate Matter) on ambient air concentrations. The impact of emissions of NO_x, SO₂, NH₃ and nitrogen and acid deposition from the installation, on European and nationally designated habitat sites was also assessed. Modelling results demonstrate that the predicted environmental concentrations (PEC) from the installation alone and as part of a cumulative assessment are below the relevant air quality standards for the protection of human health and are within the critical levels for the protection of ecosystems, aside from NH₃. Emissions of NH₃ (including background) from the installation alone, as part of a cumulative assessment and also under the cumulative sensitivity analysis scenario (which included an additional 65 no. combustion plants), will exceed the annual critical level for certain ecosystems. It should be noted that these exceedances are primarily due to the existing high background concentrations of NH₃. Under the cumulative sensitivity analysis scenario (which included an additional 65 no. combustion plants) there is the potential for a significant effect on air quality from a human health and ecosystem perspective. For nitrogen oxides (as NO₂), the predicted environmental concentrations from this modelled scenario exceeds the relevant air quality standard for annual mean and reaches 106% of the AQS (40 µg/m³ for human health). Additionally, emissions will lead to an ambient NO_x concentration (including background) which is at most 150% of the annual limit value at the most impacted ecological habitat site (Grand Canal pNHA). In regard to nitrogen deposition flux, results for the worst-case year is 29.368 kg/ha/yr at the Grand Canal pNHA, which exceeds the critical load range of 5 - 15 kg/ha/yr. However the cumulative sensitivity scenario is theoretical and in the event of such a scenario occurring the applicant will be required to submit a licence review application.

The RD requires the preparation of an Ambient Air Quality Monitoring Programme which includes trigger levels for relevant parameters and an associated response programme in the event of an exceedance of trigger levels. The condition also requires a management programme to ensure that when the installation is operational, the emissions from the activity and emissions from nearby installations must not exceed the ambient air quality standards. The RD requires the applicant to consult with EirGrid as part of the establishment and implementation of the Ambient Air Quality Monitoring Programme.

Noise emissions will arise from the operation of the installation, particularly from the gas engines and back-up generators. Noise modelling was carried out by the applicant for a number of different operating scenarios. Results for Scenario B1, which is reflective of the licence application, show an exceedance of the evening (50 dB(A)) and nighttime noise limits (45 dB(A)) at noise sensitive locations, when the installation is operating alone and as part of a cumulative assessment. Based on the potential for noise exceedances, the RD includes a requirement on the applicant to prepare and implement a Noise Management Plan.

Waste water, which comprises of domestic effluent from welfare facilities, condensate from the data centres and storm water from the bunds at the transformer yard, will discharge from the on-site foul sewer into South Dublin County Council (SDCC) foul sewer, which is located to the east of the site, at SE1 and SE2. Emission limit values and monitoring requirements of emissions to sewer to be carried out in accordance with the specifications from Uisce Éireann.

There are no direct process emissions to surface waters from the installation. Storm water run-off from the site will be attenuated through the use of attenuation ponds, silt traps, bioswales, rain gardens, weirs and the drainage network will be fitted with Class I full retention interceptors. Discharge of storm water from site into the private storm water sewer at SW1 is controlled by a hydrobrake and restricted to a greenfield run-off rate. The storm water eventually discharges to the Griffeen River. Refer also to the 'Storm water discharges' section of this report. It is not considered that this storm water discharge is likely to have a significant effect on the receiving water.

The effects identified and described above have been assessed in the following sections of this report: 'Emissions to Air', 'Emissions to Water/Ground/Sewer', 'Noise', and 'Storm water discharges'.

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 or oils, or due to a fire or explosion causing air pollution or soil, groundwater or surface water contamination. The installation is not considered as a 'Lower tier' site under the COMAH Regulations 2015 as the amount of gas oil stored is less than 2,500 tonnes. These aspects are addressed in the 'Prevention of Accidents' and 'Cessation of Activity' sections of this report.

Cumulative effects of the activity in relation to population and human health have been assessed. It is considered that there is a potential for a significant cumulative effect on air quality and noise. The RD requires the applicant to prepare and implement an Ambient Air Quality Monitoring Programme and a Noise Management Plan.

Other effects on Population and Human health such as those relating to land use, employment and traffic are not covered by Industrial Emissions Licences. These are dealt with in the assessments undertaken by the Planning Authority and An Bord Pleanála. For EDCDUB04 (SD19A/0042 & ABP-305948-19), ABP have concluded *"I have considered all the documentation in relation to Population and Human Health. I am satisfied that any potential negative impacts would be avoided, managed, and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect, or cumulative impacts in terms of 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', 'Emissions to Water/Ground/Sewer', 'Storm water discharges', 'Noise' and 'Prevention of Accidents'.

Conclusions

I have examined all the information on population and human health, provided by the applicant, received through consultations, 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 Chapter 7 of the EDCDUB04 EIAR, Chapter 6 of the EDCDUB05 EIAR and Chapter 7 of the gridline connection EIAR. The EIARs describe the habitats and species at and in the vicinity of the installation.

A desktop review and a number of field surveys were undertaken to establish the biodiversity baseline of the site. Habitats within the site boundary include: dry meadows and grassy verges (GS2), improved agricultural grassland (GA1), buildings and artificial surfaces (BL3), hedgerows (WL1), drainage ditches (FW4), recolonising bare ground (ED3) and treelines (WL2). The majority of the site is comprised of improved agricultural grassland and dry meadows and grassy verges, which are classified as being of local importance (higher/lower value). The installation is adjacent to and overlaps a small section of the Grand Canal pNHA (002104) which lies to the north of the site. The non-native invasive *Buddleia davidii*, which is a highly invasive species, was present within the site.

No signs of badger or other protected mammals were noted within the site boundary.

Bird surveys undertaken in 2018 and 2021 identified amber-listed birds and red-listed species. Given the presence of suitable habitat within and directly adjacent to the site the local breeding bird populations are considered to be of local importance (higher value). Additionally one raptor species was recorded during the surveys. In regard to wintering birds, a flock of lapwing were recorded on site in November 2018. Even though their habitat (arable field) is no longer available, the habitats offer suitable foraging and shelter for smaller overwintering species such as the passerine species redwing, which was also recorded during the survey.

A survey of the buildings and structures on site, with respect to their suitability for roosting, noted no signs of bats in any of the derelict buildings. However, the bat activity surveys, which were carried out in August and September 2019, recorded bats foraging and commuting within the site. The habitat within the site provides good commuting and foraging routes for bats, particularly near and along the Grand Canal. The treelines and hedgerows create linear corridors together with the Grand Canal, which connects the site to the surrounding area. Trees to the north of the site were identified as potential bat roost features.

The installation provides a suitable habitat for the common frog and common lizard.

The Griffeen River is approximately 330 m east of the site, the Lucan Stream is approximately 310 m west of the site, and the Grand Canal is approximately 5-10 m north of the site. There are several drainage ditches which drain into the Griffeen River and Lucan Stream. Freshwater white-clawed crayfish were recorded in the Camac River as part of a survey undertaken by South Dublin County Council in 2018. Given the hydrological connection between the site and the Camac River, via the Griffeen River, it is assumed that white-clawed crayfish are present in the Griffeen River too.

There are no Natura 2000 sites (European Sites) within or immediately close to the installation. The nearest Special Area of Conservation, Rye Water Valley / Carton SAC (001398), is approximately 4.1 km north-west of the installation, and the nearest Special Protection Area, Wicklow Mountains SPA (004040), is approximately 14.3 km south east of the site. The applicant submitted an Appropriate Assessment Screening Report (Refer to the 'Appropriate Assessment' section of this report). The nearest Natural Heritage Area (Grand Canal pNHA (002104)) is located c. 5-10 m north of the site.

The potential direct and indirect effects on biodiversity are related to air emissions (e.g. NO_x, NH₃, SO₂ and nitrogen deposition), effects on aquatic flora and fauna and their habitats, due to effects on water quality, and disturbance to fauna (birds and mammals) due to noise and light emissions. As noted in the EIAR, with the employment of appropriate mitigation measures, such as planting of native treelines and woody hedgerows to the north of the site and creation of a new hedgerow to connect the eastern and western boundaries of the site, the installation will have no negative operational effects on biodiversity. The effects identified and described above have been assessed in the following sections of this report: 'Emissions to Water/Ground/ Sewer', 'Emissions to Air', 'Noise' and 'Storm water discharges'.

There is also the potential for accidental emissions to the environment due to fire, leaks or spillages. Accidental emissions to air, water or ground could occur in the event of a leak or spillage of gas oil or other oils, and chemicals during storage, delivery and refuelling operations causing air pollution or soil, groundwater or surface water contamination. These aspects are addressed in the 'Prevention of Accidents' section of this report.

Cumulative effects of the activity in relation to biodiversity have been assessed. There will be emissions to air (NO₂, CO, NH₃, SO₂ and Particulate Matter) from the gas engines and back-up generators when running on natural gas and gas oil, respectively, and indirect effects on habitats due to nitrogen deposition, (as described in the 'Emissions to Air' section of this report). Attachment 7-1-3-2 Air Emissions Impact Assessment-FI-REV 2, submitted 03 June 2025, assessed the potential effects on air quality from the installation alone, as part of a cumulative assessment and also

under a cumulative sensitivity analysis (which included an additional 65¹³ no. combustion plants). It is considered that there is a potential for a significant effect on air quality.

The 'Emissions to Air' section of this report provides details on air dispersion modelling including a summary of potential impacts of air emissions on ecological receptors. Modelling results indicate that emissions of NH₃ (including background) from the installation alone, as part of a cumulative assessment and also under the cumulative sensitivity analysis, will exceed the annual critical level for certain ecosystems. However, it should be noted that these exceedances are primarily due to the high background concentrations. The annual critical level of 3 µg/m³ for NH₃ has been applied to the Grand Canal pNHA (which has a background concentration of 2 µg/m³) and an annual critical level of 1 µg/m³ has been applied to the Glenasmole Valley SAC and the Rye Water Valley/Carton SAC (which have a background concentration for NH₃ of 1.460 µg/m³ and 2.308 µg/m³ respectively).

With regard to nitrogen deposition flux in the cumulative scenario, the results for the worst-case year (2020) is 13.210 kg/ha/yr at the Grand Canal pNHA, 7.805 kg/ha/yr at the Glenasmole Valley SAC and 6.906 kg/ha/yr at the Rye Water Valley/Carton SAC. Given the results are within the critical load range of 5 - 15 kg/ha/yr for the habitat types '*Semi-dry Perennial calcareous grassland (basic meadow steppe)*' (Grand Canal pNHA) and the critical load range of 5-10 kg/ha/yr for the habitat type '*Petrifying springs with tufa formation (Cratoneurion)*' (Glenasmole Valley SAC and the Rye Water Valley/Carton SAC) the effects of nitrogen deposition on these ecological habitats are not significant. However under the cumulative sensitivity analysis scenario (additional 65 no. combustion plants) results indicate that emissions will lead to an ambient NO_x concentration (including background) which is at most 150% of the annual limit value at the worst-case location within the most impacted ecological habitat site (Grand Canal pNHA). Additionally, nitrogen deposition flux results for the worst-case year (2022) is 29.368 kg/ha/yr at the Grand Canal pNHA, which exceeds the critical load range of 5 - 15 kg/ha/yr. It is acknowledged that these results exceed the annual limit value for NO_x and critical load range for nitrogen deposition under the cumulative sensitivity analysis scenario, however this scenario is theoretical and in the event of such a scenario occurring the applicant will be required to submit a licence review application.

The RD requires the preparation of an Ambient Air Quality Monitoring Programme which includes trigger levels for relevant parameters and an associated response programme in the event of an exceedance of trigger levels. The condition also requires a management programme to ensure that when the installation is operational, the emissions from the activity and emissions from nearby installations must not exceed the ambient air quality standards. The RD requires the applicant to consult with EirGrid as part of the establishment and implementation of the Ambient Air Quality Monitoring Programme.

Other effects on biodiversity not covered by Industrial Emissions Licences (such as effects associated with the loss of habitat during the construction phase, tree protection, landscaping and lighting) are addressed in the planning conditions for EDCDUB05 (SD21A/0042 & ABP-312749-22), EDCDUB04 (SD19A/0042) and the gridline connection project (ABP-314567-22).

Mitigation and Monitoring

Mitigation measures and monitoring in relation to biodiversity are detailed in the following sections of this report: 'Emissions to Air', 'Emissions to Water/Ground/Sewer', 'Noise', 'Storm water discharges' and 'Prevention of Accidents'.

¹³ 41 no. gas engines associated with SD21A/0042 (ESSDUB95 and ESSDUB96; granted planning permission) and 24 no. back-up generators associated with SD22A/0333 & ABP-317802-23 (EDCDUB06, which is currently with An Coimisiún Pleanála for a decision).

Conclusions

I have examined all the information on biodiversity, provided by the applicant, received through consultations, 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 (including geology and hydrogeology) are addressed in Chapter 8 of the EDCDUB04 EIAR, Chapter 7 of the EDCDUB05 EIAR and Chapter 5 of the gridline connection EIAR. The installation is approximately c. 22.1 hectares (ha) of predominantly undeveloped, greenfield land which is characterised by an agricultural (arable) function.

Historical maps indicate that the site has been predominantly used for agricultural development with the exception of a historical quarry which was located in the northwest portion of the site and is depicted to have been present from 1837 to 1913. An additional two quarries are depicted in the immediate vicinity of the site, one located adjacent to the northeast boundary, and another quarry situated on land directly north of the Grand Canal to the north of the site. The quarry which occupied the northeast portion of the site no longer exists and was subsequently infilled prior to 1995.

The installation is bound to the north by the Grand Canal, the eastern boundary of the site is formed by R120 with the current Edgeconnex campus on the opposite side and agricultural lands bound the site to the west and east. The surrounding lands are under, agricultural, commercial, individual, residential, and recreational uses. The commercial development of the broader Grange Castle area commenced c. 2000 and has expanded significantly since c 2010. Grange Castle Business Park includes a number of datacentres, pharmaceutical manufacturing and food manufacturing facilities within a 2 km radius to the southeast and east of the site. There are a number of IE and Waste licensed facilities in the locality such as Takeda Pharma Ltd, Grange BackUp Power Ltd, Pfizer Biotech and Rilta Environmental.

The topography is relatively flat across the site with gentle/minor localised undulations and a slight gradient to the northeast. There are no water courses bounding or traversing the site. Extensive site investigation work involving drilling, trial pitting and groundwater sampling has been undertaken at the site. There was no evidence of soil contamination based on visual assessment and laboratory analysis. No bedrock outcrops were identified during the site investigations.

The bedrock geology underlying the site and surrounding area is dominated by rocks of Carboniferous Age. The site and local area are underlain by Dinantian Limestones or 'Calp' limestone that is dark grey to black limestone, and shale of the Lucan Formation. The aquifer underlying the site is classified as a Locally Important Bedrock Aquifer (LI) and described as being 'moderately productive only in local zones'. The aquifer vulnerability across the site is 'Extreme' which is consistent with site investigation data.

The installation is located entirely within the Dublin Ground Water Body (GWB) (IE_EA_G_008). Currently, the EPA (2023) classifies the Dublin GWB as having 'Good Status', with a Ground Waterbody Risk score is 'under review'.

The GSI Well Card index shows there are no wells drilled or springs at the site or surrounding area, with the nearest recorded wells located over 3 km to the west of the site. The area is serviced by Uisce Eireann mains water; therefore it is unlikely that any wells are used for potable supply. The site is not located near any public groundwater supplies or group schemes. There are no groundwater drinking water protection areas within 5 km of the installation.

In accordance with TII methodology, the importance of hydrogeological features at the site is rated as *medium importance* based on the assessment that the attribute has a medium quality significance or value on a local scale. The aquifer is a *locally important aquifer* but is not widely used for public water supply or generally for potable use.

A Complete Baseline Report, which describes soil and groundwater conditions in relation to hazardous substances was submitted with the application (Attachment 4-8-3) and described in the 'Cessation of Activity' section of this report.

The potential direct and indirect effects on land and soil are associated with emissions to air, emissions to water/ground/sewer and accidental emissions. 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: 'Emissions to Air', 'Emissions to Water/Ground/Sewer', 'Prevention of Accidents' and 'Cessation of Activity'.

There is also the potential for accidental emissions to the environment due to fire, leaks or spillages. Accidental emissions to air, water or ground could occur in the event of a leak or spillage of gas oil or other fuels or oils, and chemicals during storage, delivery and refuelling operations causing air pollution or soil, groundwater or surface water contamination. These aspects are addressed in the 'Prevention of Accidents' and 'Cessation of Activity' sections of this report.

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

Mitigation and Monitoring

Mitigation measures and monitoring in relation to land and soil are detailed in the following sections of this report: 'Emissions to Air', 'Emissions to Water/Ground/Sewer', 'Prevention of Accidents' and 'Cessation of Activity'.

Conclusion

I have examined all the information on land and soil, provided by the applicant, received through consultations, 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 (hydrology) is addressed in Chapter 9 of the EDCDUB04 EIAR; Chapter 8 of the EDCDUB05 EIAR; and Chapter 6 of the gridline connection EIAR.

The closest water courses to the installation include the Grand Canal, Lucan Stream and the Griffeen River. There are no major waterbodies within the site of the installation, however, a field drainage ditch at the eastern and western boundary connects the site to the Lucan Stream to the west, and a network of drainage ditches connects the site to the Griffeen River to the east. The Griffeen River, which is located c. 330 m east of the site, flows in a northerly direction where it is culverted beneath the Grand Canal, and ultimately discharges to the River Liffey before entering Dublin Bay. As outlined in Chapter 8 of the EDCDUB05 EIAR, a section of the Griffeen River was realigned during the construction of the Grange Castle Business Park and associated access roads and now runs alongside the local access road in a northerly direction to the east of the Takeda Ireland Limited installation (IE Reg. No. P0693-02). The Lucan Stream is located c. 310 m to the west of the site and runs in a northerly direction where it enters the River Liffey north of Lucan Village and to the west of the Griffeen outfall. Given there are several drainage ditches which drain into the

Griffeen River and Lucan Stream, the site would have an indirect hydrological connection to Dublin Bay which is located c. 21 km downstream of the site.

The Grand Canal, which is approximately 5-10 m north of the site, runs in an east to west direction along the northern boundary of the site and is classified as a proposed National Heritage Area (pNHA). Due to the Grand Canal being lined, there is no hydrological connection between the site and the canal.

As outlined in the EDCDUB05 EIAR, the Griffeen River and the Lucan Stream belong to the LIFFEY 170 WFD surface waterbody (European Code: IE EA 09L012100) whose most recent WFD groundwater status (2013-2018) is 'Good' with a current WFD risk score for '*not achieving good status*' under 'Review'. However, according to current data available on EPA maps¹⁴ (2016-2021), the Liffey_170 water body has a '*Poor*' status and is '*At risk*' of not achieving good status whilst the Grand Canal has a '*Good*' status and '*Not at Risk*' of achieving good status.

There will be no process effluent discharged to surface water, ground or groundwater. The potential direct and indirect effects on water relate to emissions to sewer, storm water emissions, and accidental emissions. Should the discharges cause an exceedance of Water Quality Standards in the receiving waters, this could have potential effects on water quality, aquatic biodiversity and human health.

Storm water arising from the installation will discharge at emission point SW1 into an existing private storm water sewer which is located within the R120, to the north-east of the site. This storm water sewer runs in a northerly direction before ultimately draining into the Griffeen River. Drainage from EDCDUB04 and ESSDUB97, including roof areas, roads, oil tanks and fuel delivery areas, passes through Class I full retention interceptors, before entering attenuation pond no. 2. Drainage from EDCDUB05 and the GIS substation, aside from storm water from the bunds at the transformer yard, pass through Class I full retention interceptors, bioswales, rain gardens and weirs before entering attenuation pond no. 1. The discharge of storm water from the attenuation ponds into the private storm water sewer at SW1 is controlled by a hydrobrake and restricted to a greenfield run-off rate. The interceptors are fitted with oil level alarms which alerts when the interceptor is at storage capacity. Storm water monitoring will be carried out in accordance with *Schedule B.5 Storm Water Discharge Monitoring* of the RD.

There is also the potential for accidental emissions to water or groundwater, which could occur in the event of a fire, explosion, leaks or spillages, with the potential to affect surface water/groundwater quality as well as aquatic habitats and species. However, the likelihood of accidental emissions to water is considered low, in light of the measures outlined in the 'Prevention of Accidents' section of this report and the conditions in the RD.

All gas engines will be contained within an engine cell, which will be bunded and have a leak detection system. Bulk tanks storing lubricating oil, waste oil, and urea will be double-skinned and have leak detection and high-level alarms installed. The oil day tanks for the gas engines will be double-skinned and have high-level alarms fitted, whilst the urea day tanks will be double skinned. Each back-up generator will be located in a generator yard which will be bunded and have leak detection installed. Each back-up generator will have a double-skinned belly tank with high-level alarms fitted. Fire sprinkler pumps will be equipped with a double-skinned gas oil fuel storage tank with leak detection and high-level alarms fitted. Loading and unloading activities will only occur in designated hardstanding areas with hydrocarbon interceptors in place. All hydrocarbon interceptors, along the foul and storm water network, will be fitted with high-level alarms.

Emissions to sewer will comprise of domestic effluent from welfare facilities, condensate from the data centres and storm water from the bunds in the transformer yard. Condensate from EDCDUB04 and sanitary waste from the sprinkler tank and pump house will discharge to SDCC foul sewer at SE2, whilst condensate from EDCDUB05 and sanitary waste from the rest of the site will discharge into SDCC foul sewer at SE1. Storm water from the bunds in the

¹⁴ <http://wexgisapp/EPAMaps/default>

transformer yard will be directed through a Class I full retention oil interceptor before discharging at SE1 into SDCC foul sewer. The interceptor will be fitted with high-level alarms which alert when the interceptor is at storage capacity. Given SDCC foul sewer ultimately discharges to Ringsend WWTP for secondary treatment, an additional indirect hydrological link to Dublin Bay will exist via the site's foul water emissions to sewer.

Cumulative effects of the activity in relation to water have been assessed and it 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.

Flood Risk Assessments (FRA's) prepared by the applicant for the installation assessed the potential risk to the site from coastal, fluvial, pluvial and groundwater flooding. As the installation is located within Flood Zone C, an area where the probability of flooding is low, and following the implementation of mitigation measures and containment and management of surface water; such as attenuation ponds, interceptors, hydrobrake, the FRA's concluded that the installation will not pose any flooding issues.

Mitigation and Monitoring

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

Conclusions

I have examined all the information on water provided by the applicant, received through consultations, 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 Chapter 10 of the EDCDUB04 EIAR, Chapter 9 of the EDCDUB05 EIAR, Chapter 9 of the gridline connection EIAR, and in other licence application documents.

The installation is located on a site with a total area of c. 22.1 hectares (ha) consisting of partially greenfield and brownfield lands separated by hedgerow. The northern portion of the site is occupied by a derelict farmhouse and barns. The installation is bound to the north by the Grand Canal; the R120 to the east and agricultural lands to the west and south. The immediate surroundings are predominantly commercial and industrial, with extensive development in Grange Castle Business Park and Profile Park, located to the south-east of the site. Such developments include pharmaceutical plants, data centres and power plants. Casement Aerodrome is approximately 2.2 km to the south of the installation. The installation is located between the N4 and N7 and accessible from the Nangor Road and Grange Castle Road. The M50 is approximately 5 km east of the installation. The nearest residential noise sensitive locations are to the east of the development along the R120 at a distance of approximately 50 m from the site boundary. There are also residential dwellings to the north of the site by the Grand Canal at a distance of approximately 130 m from the site boundary, and a halting site some 200 m from the southern boundary.

As detailed in the EIARs prepared for EDCDUB04 and EDCDUB05 a series of noise surveys were undertaken to determine the background noise levels. Noise sources recorded during these surveys included road traffic from the R120 and plant and machinery noise from nearby sites. Similar to the Noise Impact Assessment (Attachment 7-1-3-2) prepared in support of the licence application, a number of scenarios were modelled in the EIARs, and different noise criteria were proposed. According to the EIAR the impact of the installation on noise during the operational phase would be negative, slight–moderate and long-term.

The noise modelling results from the Noise Impact Assessment (Attachment 7-1-3-2) indicate an exceedance of the evening (50 dB(A)) and nighttime noise limits (45 dB(A)) under Scenario B1, which includes the operation of all 48 no. back-generators at full load and the operation of 18 no. gas engines at full load. Even though the applicant applied a noise criterion of 55 dB(A) as per Section 4.4.1 of NG4¹⁵, given the back-up generators could be operated for an extended period (up to 100 hours, per generator, per annum), it is considered that the standard noise limit values should apply at the noise sensitive locations. The nearest ecological receptor is the Grand Canal pNHA (002104) which lies directly north of the installation. Noise modelling results indicate that the noise levels at the Grand Canal pNHA are of the order of 55 dB (A). Given the nearest European Site, Rye Water Valley/Carlton SAC (001398), is approximately 4 km north-west of the site, there will be no significant adverse impact in relation to noise on the SAC.

There are no expected sources of vibration associated with the operation of the installation.

There is also the potential for accidental noise emissions due to an explosion. Accidental noise/vibration could occur if there was a gas related explosion, causing loud noise and disturbance. This is addressed in 'Prevention of Accidents' section of this report.

In regard to cumulative noise emissions, the EIARs considered the potential noise impacts the installation and two other developments would have on the NSLs, and results indicated the noise emissions to be within the noise limit values. However the cumulative assessment undertaken as part of the Noise Impact Assessment (Attachment 7-1-3-2) indicate an exceedance of the evening (50 dB(A)) and nighttime noise limits (45 dB(A)) at all NSLs under Scenario B1.

Based on the potential for noise exceedances, the RD includes a requirement on the applicant to prepare a Noise Management Plan (Condition 6). The RD requires that the Noise Management Plan be implemented within six months of date of grant of the licence.

Mitigation and Monitoring

Mitigation measures and monitoring in relation to noise include the purchasing of low noise generating equipment, acoustic containers and engine cells. Noise conditions, emission limit values for noise and a noise management plan requirement have been included in the RD.

Conclusions

I have examined all the information on noise and vibration provided by the applicant, received through consultations, 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 Chapter 11 of the EDCDUB04 EIAR, Chapter 10 of the EDCDUB05 EIAR, Chapter 8 of the gridline connection EIAR, and in other licence application documents.

The potential direct effects on air are associated with emissions to air (nitrogen oxides (NO_x), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), carbon monoxide (CO), ammonia (NH₃) and dust) from the installation. There is also the potential for indirect effects on habitats, due to nitrogen deposition as a result of NO_x emissions to air. See the 'Emissions to Air'

¹⁵ *Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to Scheduled Activities* (NG4) (2016), as maybe amended or replaced by the Agency.

section of this report. Should emissions cause an exceedance of Air Quality Standards or critical loads, this could have implications for air quality, population and human health and biodiversity within and beyond the installation boundary. The activity will not be a significant source of odour or dust.

The installation is located adjacent to Grange Castle Business Park and Profile Park which are predominately occupied by commercial and industrial developments including pharmaceutical plants, data centres and power plants. The nearest residential properties are to the east of the site along the R120 at a distance of approximately 50 m from the site boundary. The nearest European Sites (Rye Water Valley/Carton SAC (001398) and Glenasmole Valley SAC (001209) are approximately 4.1 km and 10 km from the installation, respectively. The Grand Canal pNHA (002104) is located c. 5-10 m north of the site.

Air modelling was undertaken for EDCDUB04, and the EIAR states *“The results of the modelling assessment based on the proposed development both with and without the temporary gas generation compound have found that concentrations of emissions from the emergency operation and scheduled testing of generators on site are below the air quality limit values. Thus it is predicted that the impact of the proposed development on air quality will be long-term, negative and not significant”*. In relation to EDCDUB05, the EIAR states *“The results of the modelling assessment based on the proposed development have found that ambient concentrations of NO₂, due to emissions from the gas generators on site and standby operation of the diesel generators, are below the air quality limit values. Thus, it is predicted that the impact of the proposed development on air quality will be long-term, negative and not significant*. In regard to cumulative assessment, both EIARs state *“The cumulative assessment results are also within the relevant air quality limit values for NO₂ and as such the impact to air quality as result of emissions from both the proposed development and Phases 1, 2, 3 and 4 of the neighbouring EdgeConnex site and Licenced IED sites at Takeda and Pfizer is predicted to be long-term, negative and insignificant”*.

Given the EIARs prepared for EDCDUB04 and EDCDUB05 were prepared in 2019 and 2021, respectively, and the EIAR for EDCDUB04 included a temporary energy centre (containing 19 no. gas engines) which is no longer required due to confirmed electrical grid connection and the construction of ESSDUB97, the air results presented in the EIARs are not entirely reflective of the IE licence application. Additionally, the Air Emissions Impact Assessment-FI-REV 2 (Attachment 7-1-3-2) considers the data centres and power plants from a cumulative perspective. Modelling results demonstrate that the predicted environmental concentrations (PEC) from the installation alone and as part of a cumulative assessment are below the relevant air quality standards for the protection of human health and are within the critical levels for the protection of ecosystems, aside for NH₃. Emissions of NH₃ (including background) from the installation alone and as part of a cumulative assessment will exceed the annual critical level for certain ecosystems. It should be noted that these exceedances are primarily due to the high background concentrations.

Under the cumulative sensitivity analysis scenario (which included an additional 65 no. combustion plants) there is the potential for a significant effect on air quality from a human health and ecosystem perspective. For nitrogen oxides (as NO₂), the predicted environmental concentrations from the modelled scenario exceeds the relevant air quality standard for annual mean and reaches 106% of the AQS (40 µg/m³ for human health). Additionally, emissions will lead to an ambient NO_x concentration (including background) which is at most 150% of the annual limit value at the most impacted ecological habitat site (Grand Canal pNHA). In regard to nitrogen deposition flux, results for the worst-case year (2022) is 29.368 kg/ha/yr at the Grand Canal pNHA, which exceeds the critical load range of 5 - 15 kg/ha/yr. It is acknowledged that these results indicate an exceedance of the annual limit value for NO_x and critical load range for nitrogen deposition at the Grand Canal pNHA, however this scenario is theoretical and in the event of such a scenario occurring the applicant will be required to submit a licence review application.

Therefore, it is considered that there is a potential for a significant cumulative effect from the activity in combination with other activities/developments.

The effects identified and described above have been assessed in the ‘Emissions to Air’ section of this report.

The RD requires the preparation of an Ambient Air Quality Monitoring Programme which includes trigger levels for relevant parameters and an associated response programme in the event of an exceedance of trigger levels. The condition also requires a management programme to ensure that when the installation is operational, the emissions from the activity and emissions from nearby installations must not exceed the ambient air quality standards. The RD requires the applicant to consult with EirGrid as part of the establishment and implementation of the Ambient Air Quality Monitoring Programme.

Mitigation and Monitoring

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

Conclusions

I have examined all the information on Air (including Dust and Odour) provided by the applicant, received through consultations, 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

Chapter 11 of the EDCDUB04 EIAR, Chapter 10 of the EDCDUB05 EIAR and Chapter 8 of the gridline connection EIAR addresses Climatic Factors. Climate change is a significant global issue which affects weather and environmental conditions (air, water 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 Irish Government published Ireland's "Climate Action Plan 2025 (CAP 25)" on 15 April 2025, which is the third climate action plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. 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 most recent Climate Action Plan 2025¹⁶ sets out how these targets are to be met and includes a sectoral based approach that specifies sectoral emissions ceiling. The sectoral emissions ceilings outlined within the plan set out the maximum amount of GHG emissions that are permitted in different sectors of the economy during a carbon budgetary period. In addition to CAP targets, individual county councils have also published their own Climate Change Strategies, which outline the specific climate objectives for that local authority and associated actions to achieve the objectives. In 2024, SDCC published South Dublin County Council's Climate Change Action Plan 2024 – 2029.

The potential direct effects on climate are from CO₂ and methane emissions released from the combustion of natural gas in the gas engines and the combustion of gas oil in the back-up generators, and the the potential release of fluorinated greenhouse gases. Certain equipment and systems on site may contain F-gases, such as fire protection equipment, and cooling systems. SF₆ can also be used as an insulating gas in switchgear. F-gases are controlled under the F-Gas regulations (F-Gas Regulation (EU) No. 517/2014) and are not addressed in the RD. Other climate risks noted in the EIARs relate to flooding.

¹⁶ Climate Action Plan 2025, We're Taking Climate Action, <https://www.gov.ie/en/publication/79659-climate-action-plan-2024/Climate-Action-Plan-2025>)

A worst-case estimate of the total annual emissions of CO₂ from the activity, assuming the gas engines operate continuously on natural gas and the back-up generators operate no more than 100 hours (per generator, per annum) on gas oil, would be approximately 314,156 tonnes and 10,133 tonnes CO₂ per year, respectively. This has been calculated based on the applicant's projected fuel usage. Given the installation relates to the combustion of fuel at data centres, such GHG emissions (including F-gases) are accounted for under the Buildings Sector Sectoral Emissions Ceilings (Buildings (Commercial and Public services) Sector. GHG emissions from the Buildings Sector (Commercial and Public services) in 2018 were 1.55 million tonnes of CO₂ equivalent, and by 2023 reduced to 1.39 million tonnes of CO₂ equivalent¹⁷. To put this in context, the installation alone would account for approximately 23% of the CO₂ equivalent from the Buildings Sector (Commercial and Public) in 2023 (which was 1.39 million tonnes of CO₂ equivalent), or approximately 32% of the total 2026-2030 Sectoral Ceiling¹⁸ (which is 5 million tonnes of CO₂ equivalent). As the activity will result in a net increase in CO₂ emissions, the impact of these direct emissions from the installation will have a significant, negative impact on climate, and therefore mitigation measures are required.

Indirect emissions of CO₂ may arise due to the use of electricity from the national grid, if generated from fossil fuels, which will contribute to climate change. Based on the information provided by the applicant in Attachment 4.6.1 (Rev 1), the amount of electricity purchased will be approximately 358,300 MWh. These indirect CO₂ emissions are covered under the EU ETS at the electricity generating plant¹⁹. However, the applicant is also required to address electricity usage as part of energy efficiency management.

In relation to cumulative effects, any combustion process will inevitably produce quantities of gases, including greenhouse gases (GHG's), which have the potential to impact on climate. Therefore, impact of the direct emissions from the installation and other sources will have a significant cumulative effect on climate. However, any discussion of GHG emissions must be extended to national and global climate impact.

Given that this installation is subject to the EU ETS, I consider that the impact of indirect CO₂ emissions from the installation are controlled under that legislation and that the impact of any other greenhouse gases will be minimal (or controlled under the relevant legislation).

The impact of direct emissions occurs when the energy centre will act as the alternative source of power for the site and the back-up generators will be used in the case of a loss or reduction in power from the grid, or a disruption to the gas network. These emissions will be captured under the Buildings Sector Sectoral Emissions Ceilings. Should this scenario occur this will have a significant impact on Ireland achieving its target set under the Building Sector Sectoral Emissions Ceiling. Mitigation measures are outlined below for both direct and indirect emissions.

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 of this report, and the proposed conditions in the RD.

Mitigation and Monitoring

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

- The installation will be required to operate under a greenhouse gas permit under the EU Emissions Trading System (EU ETS) Directive, in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012, (SI 490/2012 and amendments). There is currently no GHG permit in place, as there is no energy activity taking place. Under a GHG permit, the operator must report each year all CO₂ emitted from the activity

¹⁷ Ireland's Final Greenhouse Gas Emissions 1990-2023 (EPA, 2025)

¹⁸ Ireland's Greenhouse Gas Emissions Projections 2024-2055 (EPA, 2025), [Ireland's Greenhouse Gas Emissions Projections 2024-2055 | Environmental Protection Agency](#)

¹⁹ GHG emissions which arise due the use of electricity from the national grid, if generated from fossil fuels, are accounted for under the Electricity Sectoral Emissions Ceiling.

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, to ensure that overall emissions from the Emissions Trading System (ETS) sector meet the EU targets on reducing greenhouse gas emissions. As this site is part of the EU ETS, the impact of carbon dioxide emissions is addressed in that market-based scheme. A local impact on air quality from CO₂ is not expected, and there is therefore no CO₂ limit in the RD.

- Indirect emissions arising from the use of electricity from the national grid in the installation are also covered under the EU ETS Directive.
- The RD requires the applicant to address electricity usage as part of energy efficiency management under the Schedule of Environmental Objectives and Targets (Condition 2).
- The RD also 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 (Condition 7).
- Any leakage of potential F-gases on site will be monitored and controlled under the F-Gas regulations (F-Gas Regulation (EU) No. 517/2014).
- *Schedule A: Limitation* imposes restrictions on the installation with respect to the number of gas engines and back-up generators permitted to operate simultaneously and the hours of operations for each back-up generators.
- *Schedule A: Limitation* only permits the operation of the gas engines within the timeframe as instructed by EirGrid.
- *Condition 11 and Schedule B: Emission Limits and Monitoring* imposes stricter emission limit values and monitoring frequencies on the operation of the gas engines.

Conclusions

I have examined all the information on climatic factors provided by the applicant, received through consultations, 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 including waste are addressed in Chapters 15 & 16 of the EDCDUB04 EIAR, Chapters 14 & 15 of the EDCDUB05 EIAR, Chapters 13 & 14 of the gridline connection EIAR and in other licence application documents.

The potential direct and indirect effects on material assets are consumption/use of natural resources, in particular natural gas, gas oil, electricity, water use and waste generation. The estimated quantities of electricity, natural gas, gas oil and water to be used are provided in the 'Energy Efficiency and Resource Use' section of this report. These quantities are based on a worst-case scenario, i.e. continuous operation of the gas engines on natural gas (i.e. 8,760 hours per annum), the scheduled testing of the back-up generators on gas oil and the emergency operation of the back-up generators on gas oil, for less than 100 hours per generator, per annum.

The activity will also generate a certain amount of waste material and the potential amounts to be generated are listed in the licence application.

The potential direct and indirect effects identified and described above have been assessed in the following sections of this report; 'Waste Generation', 'Energy Efficiency and Resource Use' and 'Prevention of Accidents'. It is considered that there is not likely to be a significant effect on material assets in terms of use of natural resources or the generation of wastes by the installation alone or cumulatively with other activities/developments.

Material assets such as traffic and transportation are dealt with in the decision of the Planning Authority and An Bord Pleanála to grant permission for the development. The Planning Authority and An Bord Pleanála has also identified, described and assessed the likely significant direct and indirect effects of the development on material assets concluding for EDCDUB04 (SD19A/0042 & ABP-305948-19), *“I have considered all the documentation in respect of material assets. I am satisfied that any potential impact has been appropriately addressed in terms of the application. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect, or cumulative impacts in terms of material assets.”* For EDCDUB05 (SD21A/0042), the Planning Authority noted *“It is considered that the information contained within the EIAR allows for adequate assessment of the potential impacts of the proposed development on the receiving environment and complies with the requirements of Article 94 of the Planning and Development Regulations 2001 (as amended)”*. In relation to the gridline connection development (ABP-314567-22), ABP state *“I am satisfied that with proper implementation of mitigation and best practice measures, together with implementation of environmental commitments under the Construction and Environmental Management Plan, no significant direct, indirect or cumulative adverse effects on material assets are likely to arise.”*

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 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, received through consultations, 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.

15.4.8.2 Cultural Heritage

Identification, Description and Assessment of Effects

Cultural heritage is addressed in Chapter 14 of the EDCDUB04 EIAR, Chapter 13 of the EDCDUB05 EIAR and Chapter 11 of the gridline connection EIAR.

The potential direct and indirect effects on cultural heritage relate mainly to the construction phase of the installation. Any loss of archaeological or architectural heritage could impact negatively on human beings. These matters are dealt with in the decision of the planning authority and An Bord Pleanála to grant planning permission for the developments on site and the planning authorities have considered the effects to be acceptable subject to compliance with planning conditions in relation to the preservation, recording and protection of archaeological materials or features associated with EDCDUB04 (SD19A/0042 & ABP 305948-19), EDCDUB05 (SD21A/0042) and the gridline connection project (ABP 314567-22).

A desk-based assessment, geophysical survey and archaeological testing and excavation were carried out. The desk-based survey, which used a number of sources including the Record of Monuments and Places, the National Inventory of Architectural Heritage, the Excavations Database, cartographic, aerial photography and documentary sources, indicated that there are no recorded archaeological sites, monuments or architectural heritage structures within the licence boundary. However, the surrounding lands are characterised by upstanding archaeological monuments dating to the medieval period.

Geophysical surveys along with archaeological testing and excavation have revealed a number of archaeological features associated with early settlements and agricultural activity. A number of prehistoric artefacts, most notably a

polished stone axehead and a leaf shaped flint arrowhead, may also be indicative of prehistoric activity in the locality. Evidence for medieval and post medieval agricultural activities were represented by a network of linear and curvilinear ditches and drains. The survey indicated that the majority of the site has been extensively and significantly impacted by intensive farming practices and development.

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

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

Mitigation and Monitoring

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

Cultural Heritage Conclusions

The Planning Authority and An Bord Pleanála have identified, described and assessed the likely significant direct and indirect effects of the development on cultural heritage. For EDCDUB04, ABP concluded *“I have considered all the documentation in respect of cultural heritage. I am satisfied that any potential impact would be avoided, managed, and mitigated by the measures which form part of the proposed scheme, the mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect, or cumulative impacts in terms of cultural heritage”*. For EDCDUB05, the Planning Authority concluded *“It is considered that the information contained within the EIAR allows for adequate assessment of the potential impacts of the proposed development on the receiving environment and complies with the requirements of Article 94 of the Planning and Development Regulations 2001 (as amended)”*. In relation to the gridline connection project, ABP concluded *“I am satisfied that with proper implementation of all mitigation measures, no significant direct, indirect or cumulative adverse effects on cultural heritage and the landscape are likely to arise”*.

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

Chapter 12 of the EDCDUB04 EIAR, Chapter 11 of the EDCDUB05 EIAR and Chapter 10 of the gridline connection EIAR address landscape and visual impacts.

The potential direct and indirect effects on the landscape are visual impacts from the data centre buildings (EDCDUB04 and EDCDUB05), the gas power generation plant (ESSDUB97) containing exhaust stacks, and associated infrastructure from the gas engines and back-up generators. The installation, which is approximately 22.1 hectares, is situated to the west of Grange Castle Business Park and south of the Grand Canal. The landscape to the east and south east is characterised by large built developments and new tree lined roads.

The location from which the installation is most visually prominent is from the R120, which borders the site to the east. The installation is also visible from the Green Route of the Grand Canal Water directly north of the site. In addition to the viewpoints prepared for EDCDUB05, a number of photomontages were submitted as part of additional information request by South Dublin County Council. These updated photomontages showed the screening and landscaping after 1 year and 5 years. The photomontages also included the visual impacts of the installation on protected structures and the Grand Canal.

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

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 and An Bord Pleanála has identified, described and assessed the likely significant direct and indirect effects of the development on the landscape. In relation to EDCDUB04, ABP concluded *“I have considered all the documentation in respect of landscape and visual impact. I am satisfied that any potential impact would be avoided, managed, and mitigated by the measures which form part of the proposed scheme, the mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect, or cumulative impacts in terms of landscape and visual impact”*. For EDCDUB05, the Planning Authority concludes that *“in the event of grant, conditions are recommended seeking final details of materials and flues to be submitted for the written agreement of the Planning Authority.”* In relation to the gridline connection project, ABP concluded *“I am satisfied that with proper implementation of all mitigation measures, no significant direct, indirect or cumulative adverse effects on cultural heritage and the landscape are likely to arise”*.

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, received through consultations, 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 Chapter 17 of the EDCDUB04 EIAR, Chapter 16 of the EDCDUB05 EIAR and Chapter 15 of the gridline connection EIAR. The interactions, which covers both the construction and operational phases, were classed as positive, neutral, negative or no interaction of note.

The most significant positive and negative interactions between the factors as a result of the activity are summarised below.

- Positive interaction between Biodiversity and Landscape; even though the construction of the installation will involve the removal of vegetation, it will be replaced with other suitable landscaping treatments.
- Negative interaction between Noise and Biodiversity; noise generated during the construction phase has the potential to displace fauna.
- Negative interaction between Air & Climate and Landscape; the series of stacks from the back-up generators and gas engines will be visible either against the sky or the landscape backdrop.
- Negative interaction between Air & Climate and Population & Human Health; atmospheric emissions arising from the combustion of fossil fuels during operation.

- Negative interaction between Land & Soil and Noise; excavation works, which will be transient in nature will have a negative impact on the noise environment.
- Negative interaction between Landscape and Population & Human Health; disturbance of the landscape has the potential to impact on population and human health, and their enjoyment of the surrounding area, due to the visual impact that the installation may have.

As demonstrated such effects are considered not to be likely or significant.

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 EIAR 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. This is dealt with in Chapter 3 of the EDCDUB04 EIAR, Chapter 2 of the EDCDUB05 EIAR and Chapter 2 of the gridline connection EIAR.

The installation is not subject to the requirements of the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015). The site is not a Seveso site. The only substance stored on site controlled under Seveso/COMAH, will be gas oil for the back-generators. The installation is proposing to store a maximum of c. 1,300 tonnes of gas oil at any one time on site. The quantity of gas oil which qualifies for the application of lower-tier and upper-tier requirements under Directive 2012/18/EU is 2,500 tonnes and 25,000 tonnes respectively. Therefore, the amounts proposed do not exceed the relevant thresholds of the Seveso directive.

Flood Risk Assessments (FRA's) prepared by the applicant for the installation assessed the potential risk to the site from coastal, fluvial, pluvial and groundwater flooding. As the installation is located within Flood Zone C, an area where the probability of flooding is low and following the implementation of mitigation measures and containment and management of surface water; such as attenuation ponds, interceptors, hydrobrake, the FRAs concluded that the installation will not pose any flooding issues.

Mitigation and Monitoring

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, received through consultations, 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 EIAR and supplementary information provided by the applicant, and the submissions from the authorities and 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 back-up generators, through combustion of natural gas and gas oil. Cumulative effects from air emissions are likely to arise with other existing and/or approved projects,
- noise emissions associated with the operation of the installation,
- accidental emissions to air, surface water, ground or groundwater, from fire, explosion, leaks or spillages,
- storm water discharge to the Griffeen River,
- waste water discharge to Ringsend Wastewater Treatment Plant for treatment, 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 through: operation of abatement, imposing emission limit values to comply with ambient air quality standards and to comply with the LCP CID, through the requirement to establish an Ambient Air Quality Management Programme in consultation with EirGrid subject to the satisfaction of the Agency, operation of the gas engines within the defined timeframe as instructed by EirGrid and implementing monitoring, maintenance and control measures,
- noise emissions will be mitigated by imposing daytime, evening time and nighttime 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, leaks or spillages will be prevented and mitigated through accident and emergency requirements, tank, container and drum storage requirements and integrity testing of pipes, tanks and bunds,
- storm water discharges to the Griffeen River will be mitigated through the requirement for silt traps, Class I full retention interceptors, bioswales, rain gardens and attenuation ponds on the storm water drainage system, establishment and maintenance of trigger levels and a response programme to address exceedances and visual inspection of storm water drains,
- waste waters, which ultimately discharge to Ringsend Wastewater Treatment Plant, will be mitigated through the requirement for a Class I full retention interceptor and by imposing emission limit values and implementing other monitoring, maintenance and control measures, and
- effects on climate due to release of CO₂ and methane emissions will be mitigated through the limitation on the back-up generators (operating hour restrictions), stricter emission limit values on the gas engines, conditions relating to energy efficiency, operation of the gas engines within the defined timeframe as instructed by EirGrid 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 €15,417, which reflects the anticipated enforcement effort required and the cost of monitoring.

17 Recommendation

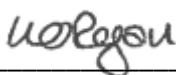
The Agency, in considering an application for a licence or the review of a licence, shall have regard to section 83 of the EPA Act. The Agency shall not grant a licence or revised licence unless it is satisfied that emissions comply with relevant emission limit values and standards prescribed under regulation. 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 to 2021, 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 Acts 2015 to 2021, as amended. The RD gives effect to the requirements of the EPA Act and has regard to submissions made.

This report was prepared with the assistance of Noelle Crimmins O'Leary, Cian O' Rourke and Brid Horgan.

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

Signed



Naoimh O' Regan

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 Location / Layout



Figure 1: Site Location Map (DWG-001)

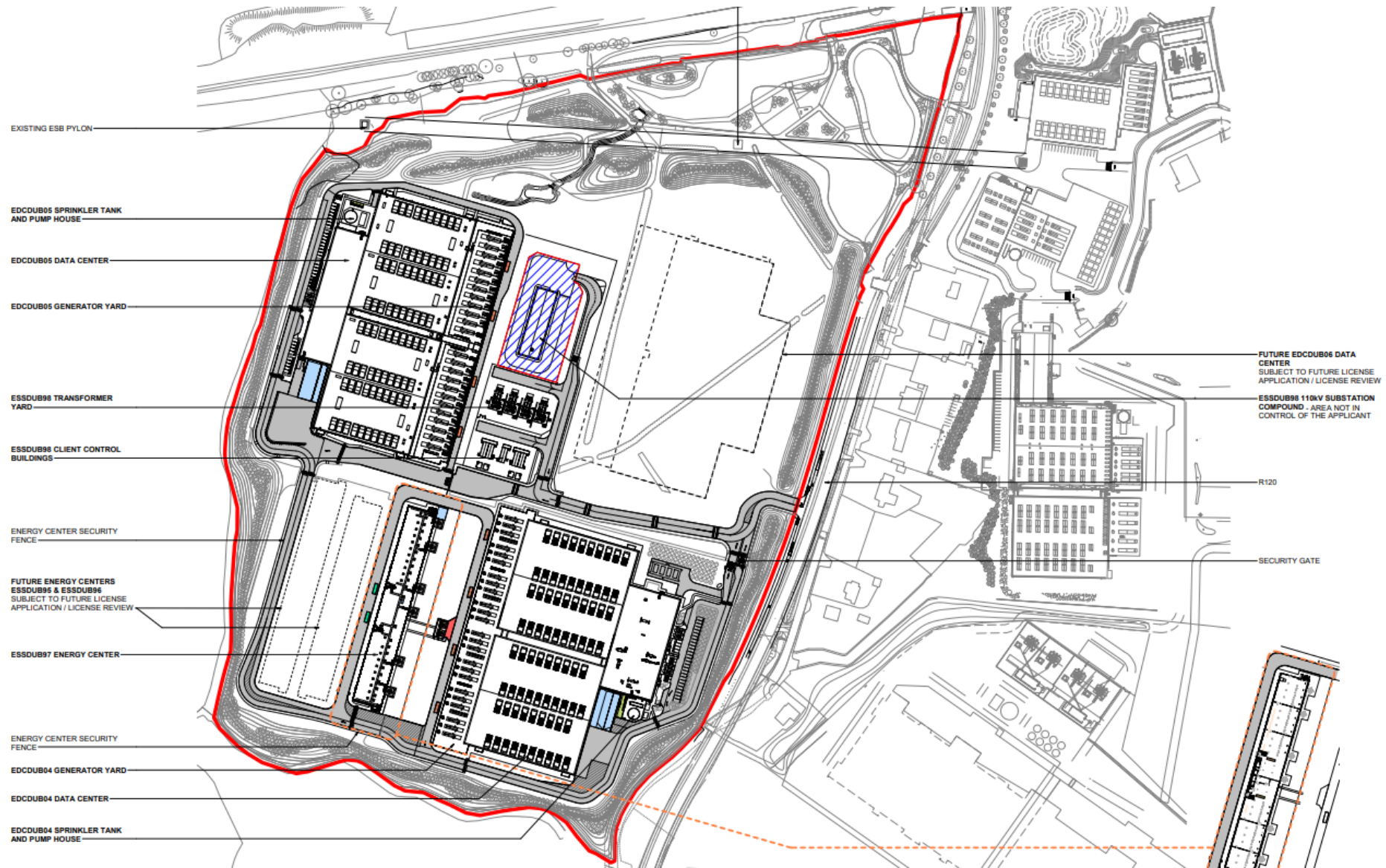


Figure 2: Site Plan DWG-003 (REVC01)

Appendix 2 Appropriate Assessment

Table 1: List of European Sites assessed, their associated qualifying interests and conservation objectives.

Site Code	Site Name	Qualifying Interests (* denotes 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.
002122	Wicklow Mountains SAC	Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 4060 Alpine and Boreal heaths 6130 Calaminarian grasslands of the <i>Violetalia calaminariae</i> 6230 Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)* 7130 Blanket bogs (* if active bog) 8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) 8210 Calcareous rocky slopes with chasmophytic vegetation 8220 Siliceous rocky slopes with chasmophytic vegetation 91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	NPWS (2017) Conservation Objectives: Wicklow Mountains SAC 002122. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs

Site Code	Site Name	Qualifying Interests (* denotes priority habitat)	Conservation Objectives
		Species 1355 Otter (<i>Lutra lutra</i>)	
000397	Red Bog, Kildare SAC	Habitats 7140 Transition mires and quaking bogs	NPWS (2019) Conservation Objectives: Red Bog, Kildare SAC 000397. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
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. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
000206	North Dublin Bay SAC	Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (<i>Glauco- Puccinellietalia maritima</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)* 2190 Humid dune slacks Species 1395 Petalwort (<i>Petalophyllum ralfsii</i>)	NPWS (2013) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
004040	Wicklow Mountains SPA	Birds A098 Merlin (<i>Falco columbarius</i>) A103 Peregrine (<i>Falco peregrinus</i>)	NPWS (2024) Conservation Objectives: Wicklow Mountains SPA 004040. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Site Code	Site Name	Qualifying Interests (* denotes priority habitat)	Conservation Objectives
004024	South Dublin Bay and River Tolka Estuary SPA	Birds A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A137 Ringed Plover (<i>Charadrius hiaticula</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A143 Knot (<i>Calidris canutus</i>) A144 Sanderling (<i>Calidris alba</i>) A149 Dunlin (<i>Calidris alpina</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A162 Redshank (<i>Tringa totanus</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A192 Roseate Tern (<i>Sterna dougallii</i>) A193 Common Tern (<i>Sterna hirundo</i>) A194 Arctic Tern (<i>Sterna paradisaea</i>) Habitats Wetlands	NPWS (2015) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
004063	Poulaphouca Reservoir SPA	Birds A043 Greylag Goose (<i>Anser anser</i>) A183 Lesser Black-backed Gull (<i>Larus fuscus</i>)	NPWS (2024) Conservation Objectives: Poulaphouca Reservoir SPA 004063. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
004006	North Bull Island SPA	Birds A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A048 Shelduck (<i>Tadorna tadorna</i>) A052 Teal (<i>Anas crecca</i>) A054 Pintail (<i>Anas acuta</i>) A056 Shoveler (<i>Anas clypeata</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A143 Knot (<i>Calidris canutus</i>) A144 Sanderling (<i>Calidris alba</i>) A149 Dunlin (<i>Calidris alpina</i>) A156 Black-tailed Godwit (<i>Limosa limosa</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A160 Curlew (<i>Numenius arquata</i>) A162 Redshank (<i>Tringa totanus</i>) A169 Turnstone (<i>Arenaria interpres</i>)	NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Site Code	Site Name	Qualifying Interests (* denotes priority habitat)	Conservation Objectives
		A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) Habitats Wetlands	

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) as amended & Birds Directive (2009/147/EC) as amended
Water Framework Directive [2000/60/EC]
Medium Combustion Plant Directive (EU) 2015/2193
Air Quality Directives (2008/50/EC and 2004/107/EC)
Energy Efficiency Directive (2018/2002/EU)

Appendix 4 Other BREF documents relevant to this assessment

Horizontal BREF	Publication date
Reference Document on the Best Available Techniques on Emissions from Storage	July 2006
Reference Document on the Best Available Techniques for Energy Efficiency	February 2009
Reference Document on the application of Best Available Techniques to Industrial Cooling Systems	December 2001

Appendix 5 Relevant BAT Compliance Condition

BAT Conclusions for Large Combustion Plant (CID 2021/2326/EU)			
BAT No.	BAT Requirement	Proposed technique/RD requirements	Relevant Condition/Schedule
1	Environmental Management System	Environmental Management System	Condition 2
2	Determine the net electrical efficiency of the combustion unit	The RD requires the net electrical efficiency of the combustion units to be determined after commissioning.	Condition 7
3	Monitor key process parameters relevant for emissions to air	N/A as each gas engine and back-up generator are less than 15MW _{th} . However continuous monitoring of flow, oxygen content, temperature and pressure will be undertaken for the gas engines.	Schedule C.1
4	Monitor emissions to air with at least the frequency given in BAT 4 and in accordance with EN standards.	N/A as each gas engine and back-up generator are less than 15MW _{th} . However, the 20 no. gas engines equipped with CEMS will continuously monitor for NO _x , NH ₃ and CO and carry out annual monitoring for SO ₃ , formaldehyde and CH ₄ .	Schedule B.1 Schedule C.1
5	Monitor emissions to water from flue-gas treatment	N/A. No process waste water will be discharged to water.	N/A
6	Ensure optimised combustion and to use an appropriate combination of the techniques given in BAT 6	The following techniques have been assessed - Maintenance of the combustion system. - Advance control system; each engine will be connected into individual control systems, which will control the operation of the units to ensure optimal efficiency at all times. - Good design of the combustion equipment.	Condition 2 Condition 3 Condition 5
7	To reduce emissions of ammonia to air from the use of selective catalytic reduction (SCR) and/or selective non-catalytic reduction (SNCR)	The gas engines will optimise Selective Catalytic Reduction (SCR) for NO _x control. ELV for NH ₃ is 4 mg/m ³ and monitoring will be continuous.	Schedule B.1 Schedule C.1
8	To ensure, by appropriate design, operation and maintenance, that the emission abatement systems are used at optimal capacity and availability	SCR abatement system will be used to reduce emissions and will be designed and maintained in optimum condition to ensure its effective and efficient operation.	Condition 2 Condition 3 Condition 6 Schedule C.1

9	Quality assurance/quality control programmes for all the fuels used.	Characterisation of the fuel is undertaken by the supplier and provided to the operator in the form of a product (fuel) supplier specification and/or guarantee. The quality assurance of fuel will form a part of the site wide EMS.	Condition 2
10	Implement a management plan (as part of the environmental management system) to reduce emissions to air and/or to water during other than normal operating conditions (OTNOC)	A management plan for OTNOC to be included in EMS.	Condition 2
11	Monitor emissions to air and/or to water during OTNOC	Emissions to air will be monitored under OTNOC.	Condition 2 Condition 6
12	In order to increase the energy efficiency of combustion units operated $\geq 1,500$ h/yr BAT is to use an appropriate combination of the techniques given in BAT 12.	The measures that will be used to maximise the energy efficiency include, combustion optimisation, minimisation of energy consumption and advanced control system. Condition 7 of the RD sets out the net electrical efficiency for the gas engines.	Condition 2 Condition 7
13	In order to reduce water usage and the volume of contaminated wastewater discharged, BAT is to use the technique given below. • Water recycling • Dry bottom ash handling	N/A. No waste water is produced from combustion processes or flue gas treatment. However, condensate, arising from the cooling systems associated with the data centres, will be minimal and will discharge to the private foul sewer.	N/A
14	To prevent the contamination of uncontaminated wastewater and to reduce emissions to water, BAT is to segregate waste water streams and to treat them separately	N/A. No waste water is produced from combustion processes or flue gas treatment. The on-site foul network which consists of condensate from the data centres, storm water from the bunds at the transformer yard and sanitary effluent discharge to a private sewer via SE1 and SE2. The on-site storm water drainage network, which is separate to the foul network, discharges at SW1 to a private storm water sewer.	N/A
15	To reduce emissions to water from flue-gas treatment	N/A. No waste water is produced from combustion processes or flue gas treatment.	N/A
16	To reduce the quantity of waste sent for disposal from the combustion process	Waste management will form part of the EMS. Spent SCR are returned to supplier for recycling / disposal.	Condition 2 Condition 8

17	To reduce noise emissions, BAT is to use one or a combination of the techniques given below • Operational measures • Low-noise equipment • Noise attenuation • Noise-control equipment • Appropriate location of equipment	- Low-noise equipment selected where practical, - Appropriate location of plant and equipment, - Noise attenuation incorporated into design, - Preventative maintenance undertaken as part of the EMS. The RD specifies noise emissions limits, annual noise surveys and requirement for a noise management plan.	Condition 2 Condition 4 Condition 5 Condition 6 Schedule B.4
40	To increase the energy efficiency of natural gas combustion, BAT is to use an appropriate combination of the techniques given in BAT 12 and below.	The typical net electrical efficiency of the gas engines is estimated to be 42.85%, however considering expected degradation over time, the net electrical efficiency of the gas engines will not fall below 39.5%. Condition 7 of the RD requires the gas engines to meet a net electrical efficiency of at least 39.5%.	Condition 7
43	In order to prevent or reduce NO_x emissions to air from the combustion of natural gas in engines, BAT is to use one or a combination of the techniques given below.	Gas engines will use the following techniques: - Advanced control system, - Selective catalytic reduction.	Condition 5 Schedule C.1
44	In order to prevent or reduce CO emissions to air from the combustion of natural gas, BAT is to ensure optimised combustion and/or to use oxidation catalysts.	The installation will include an advanced control system to optimise the combustion process. Daily and yearly average ELVs for NO_x of 85 mg/m³ and 56 mg/m³ respectively.	Condition 5 Schedule B.1 Schedule C.1
45	In order to reduce non-methane volatile organic compounds (NMVOC) and methane (CH₄) emissions to air from the combustion of natural gas in spark-ignited lean-burn gas engines, BAT is to ensure optimised combustion and/or to use oxidation catalysts.	BAT- AELs (average over the sampling period) for formaldehyde and methane (CH₄) are 15 mg/m³ and 500 mg / m³ respectively.	Condition 5 Schedule B.1