

Attachment 7-1-3-1 Emissions Compliance Report

Contents

1.	Introduction	1
1.1	Overview	1
2.	Air Emissions	1
2.1	Emissions	1
2.2	Compliance	2
3.	Stormwater Emissions	3
3.1	Emissions	3
3.2	Compliance	4
4.	Sewer Emissions	5
4.1	Emissions	5
4.2	Compliance	6
5.	Ground Emissions	6
6.	Noise Emissions	6
7.	Protection of Groundwater Quality	8
8.	References	9

Figures

Figure 1: Approximate Proposed Annual Noise Monitoring Locations in relation to IE Licence Boundary Not to Scale Google Earth ©	7
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1. Introduction

1.1 Overview

Amazon Data Services Ireland Limited (ADSIL) (*‘the Applicant’*) is applying to the Environmental Protection Agency (*‘the Agency’*) for an Industrial Emissions (IE) Licence for its data storage facility (hereafter referred to as the *‘Installation’*) located at Data Centre Building B1, Kildare Innovation Campus (KIC), Barnhall Road, Leixlip, County Kildare, Ireland.

The Installation site covers an area of c. 3.645 hectares (ha) in total and is situated within the wider KIC Masterplan site, which was granted planning permission in January 2024 by Kildare County Council (KCC) (KCC Planning Ref. 23/60047). An Environmental Impact Assessment Report (EIAR) and Appropriate Assessment (AA) Screening Report were prepared as part of this planning application and have been submitted with this IE Licence application, refer to Attachment 6-3-6 and Attachment 6-2-1 respectively.

ADSIL holds a long-term lease that concerns lands within the Installation site, which sits in the northwest corner of the KIC Masterplan site. The proposed IE licence application relates only to the area concerning the Installation. The remaining areas within the KIC Masterplan site are controlled by the KIC Masterplan site owner, hereafter referred to as *“the Landowner”*.

This Emissions Compliance Report forms part of the application for a new IE Licence, seeking permission to carry out the following licensable activity:

“Energy 2.1. Combustion of fuels in installations with a total rated thermal input of 50 MW or more”.

The following instruments have been considered when assessing the compliance of emissions from the Installation:

- Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022)
- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009) as amended.
- Environmental Protection Agency (EPA) *Publication Guidance Note for Noise : Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016*.
- Protection of Groundwater: European Communities Environmental Objectives (Groundwater) (amendment) Regulations, 2016 (Statutory Instrument No. 266 of 2016) and 2010 (Statutory Instrument No. 9 of 2010)
- Environmental Protection Agency (EPA) *Towards Setting Guideline Values for the Protection of Groundwater in Ireland EPA Groundwater Interim Report* (Draft Interim Guidelines Values (IGVs) for the Protection of Groundwater), 2003.

2. Air Emissions

2.1 Emissions

2.1.1 Main Emissions

There are no main emissions to air proposed as part of the Installation.

2.1.2 Minor Emissions

The Installation includes a total of 18 no. minor air emission points.

Minor Emissions at the Installation site pertain to the two-way normal pressure (breather) vents associated with the top up tank and fuel storage tanks onsite.

The following is a list of minor air emission points at the Installation.

- 14 no. belly tank relief vents associated with the critical emergency generators (1 per each belly tank);
- 1 no. belly tank relief vents associated with the house emergency generator (1 per each belly tank);
- 2 no. tank relief vents associated with the fire sprinkler pumps (1 per each fuel storage tank); and
- 1 no. tank relief vent associated with the top up tank.

Minor emissions will be monitored in line with the IE licence conditions and Green House Gas (GHG) permit, once granted.

2.1.3 Potential Emissions

Potential Emissions at the Installation site pertain to the operation of the generators onsite, which will only operate under emergency conditions.

The following is a list of potential air emission points at the Installation:

- 14 no. critical emergency generator stacks with a height of 18.0m above ground level;
- 1 no. house emergency generator stacks with a height of 18.0m above ground level; and
- 2 no. diesel-powered fire sprinkler pumps.

Potential emissions will be monitored in line with IE licence requirements and GHG permit, once granted.

2.1.4 Fugitive Emissions

Fugitive emissions are defined as low level diffuse emissions, mainly of volatile organic compounds, that occur when either gaseous or liquid process fluids escape from plant equipment. There are no such emissions anticipated from the Installation. External pipelines containing fuel will have flange guards to prevent fugitive emissions.

2.2 Compliance

There are no Emission Limit Values (ELVs) proposed for the generators at the Installation site as they will be designated potential air emission points; there are also no statutory emission limits applicable under the Medium Combustion Plant Directive. Regulation 13(3) of the European Union (Medium Combustion Plants) Regulations 2017 states that:

“New medium combustion plants which do not operate more than 500 operating hours per year, as a rolling average over a period of three years, shall not be required to comply with the emission limit values set out in Part 2 of Schedule 2 but, where they burn solid fuels, shall comply with an emission limit value for dust of 100 mg/Nm³. ”

The generators are for emergency only and are not anticipated to operate in excess of 500 hours per annum. Therefore, the emergency generators as proposed are exempt from complying with the emission limit values subject to Section 13(3) of the MCP Regulations.

Predictive air dispersion modelling has been undertaken as part of this IE Licence application and is presented in Attachment-7-1-3-2-Air Emissions Impact Assessment. The assessment was based on worst case operating conditions in line with EPA Guidance Note AG4. The modelling assessment included the impact of operations of the Installation alone (termed ‘the Installation Operations Assessment’) and the cumulative impact of additional facilities with emissions near the Installation (termed ‘the Cumulative Operations Assessment’).

Results from the Installation and Cumulative Operations Assessments indicate emissions to atmosphere of NO_x, NO₂, SO₂, PM_{2.5} and PM₁₀ from the emergency generators at the Installation site, will be in compliance with the ambient air quality standards which are based on the protection of the environment and human health. Therefore, no significant impacts to the ambient air quality environment are predicted.

The stack heights of the emergency generators will be designed to ensure that an adequate height was selected to aid dispersion of the emissions and achieve compliance with these ambient air quality standards at all off-site locations (including background concentrations). There is no selective catalytic reduction (SCR) abatement or treatment systems proposed or required for the emergency generators.

The CO₂ emissions from the proposed emergency generators will be controlled under the GHG Permit and IE Licence for the Installation, once issued.

Monitoring of the aforementioned minor and potential emissions points will be in compliance with the IE Licence and GHG permit once granted. Annual Environmental Reports (AER) demonstrating compliance will be prepared for the Installation once the IE Licence has been granted in line with the IE Licence conditions.

Refer to Attachment 4-8-1 Operational Report and Attachment 7-1-3-2 Air Emissions Impact Assessment for further details on emissions to air.

3. Stormwater Emissions

3.1 Emissions

The Installation sits within the KIC Masterplan site. Stormwater emissions for the Installation relate to those within IE licence application boundary and do not include other stormwater emissions associated with the KIC Masterplan site.

The emissions to stormwater consist of stormwater runoff from building roofs, yards and the road network, but does not include residual evaporative cooling water (mains water that has passed through the cooling / AHU equipment). Residual cooling water, associated with Air Handling Units at the Installation, will be discharged to the foul network.

The stormwater drainage network will be designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS)¹ and Greater Dublin Regional Code of Practice².

Rainwater runoff from impermeable areas (including but not limited to car parks and roads) at the Installation will be collected via onsite stormwater and sustainable drainage systems (SuDS) networks in accordance with the KIC Masterplan site planning application (KCC Planning Ref. 23/60047).

The network within the Installation site will convey stormwater via 2 no. monitoring stations and 2 no. bypass interceptors with alarms through 2 no. emission points situated at the IE Licence site boundary (SW1 and SW2) to the KIC Masterplan site's 1 no. attenuation pond (2,132 m³) to the east and 1 no. attenuation pond (1,836 m³) to the north of the Installation site boundary. Stormwater from the eastern attenuation pond on the KIC Masterplan site will flow to the northern attenuation pond on the KIC Masterplan site before combining with the remainder of the KIC Masterplan site's stormwater network. The attenuation ponds and point of discharge to the Leixlip Reservoir will be situated within KIC Masterplan site (outside of the IE Licence site boundary) and will be under the Landowner's control.

Stormwater collected around the emergency generator yard will pass through 1 no. full retention interceptor prior to combining with the remainder of the Installation site's stormwater network.

The hydrocarbon interceptors at the Installation site will be equipped with level detection sensors which will send an alarm signal to the Building Management System (BMS) to alert the onsite Engineering Operations Technicians (EOTs) to warn of high hydrocarbon, liquid and silt levels in the separator.

The Installation will include 1 no. inbound stormwater connection point to the Landowner's stormwater network (termed ISW1). The stormwater entering the Installation from the Landowner's surface water network will be monitored at 1 no. inbound stormwater monitoring point (termed ISW1-1) to identify any

¹ <https://www.sdcc.ie/en/download-it/publications/gdsds-new-development.pdf>

² <https://www.sdcc.ie/en/download-it/guidelines/greater-dublin-regional-code-of-practice-for-drainage.pdf>

potential contamination of stormwater prior to entering the Installation site. In the unlikely event that this incoming stormwater is contaminated, the incoming stormwater will be subject to the same control measures as the remainder of the stormwater collected onsite.

Refer to Drawing 305131-ARP-ZZ-XX-YE-DR-1004 - Surface Water Layout for further details.

It should be noted that there will be 1 no. hydrocarbon interceptor and 1 no. stormwater flow control device located downstream of KIC Masterplan site's attenuation pond which lies to the north of the Installation (outside of the IE Licence site boundary). These devices will ensure the quality and flow rate of stormwater prior to discharge to KIC Masterplan site's stormwater drainage system.

The KIC Masterplan site's stormwater network ultimately discharges attenuated flows to the Leixlip Reservoir, located c. 800m southeast of the Installation immediately across from Celbridge Road. The Leixlip Reservoir flows to the River Liffey which connects with the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) c. 19.5 km to the east of the Installation and the other Natura Designated Sites within Dublin Bay (South Dublin Bay and North Dublin Bay Special Areas of Conservation (SACs)).

Rainwater

The Installation will be designed to harvest a portion of the rainwater runoff from impermeable surfaces to meet a significant fraction of the annual cooling water and irrigation requirements for its operation. The remaining rainwater runoff at the Installation will be collected via the onsite stormwater and SuDS networks.

3.2 Compliance

In accordance with Best Available Techniques (BAT), clean stormwater will be kept separate from wastewater and there will be no inherent risk of cross-contamination.

The Installation will include 1 no. inbound stormwater connection point to the Landowner's stormwater network (ISW1). The stormwater entering the Installation from the Landowner's surface water network will be monitored at 1 no. inbound stormwater monitoring point (ISW1-1) to identify any potential contamination of stormwater prior to entering the Installation site. In the unlikely event that this incoming stormwater is contaminated, the incoming stormwater will be subject to the same control measures as the remainder of the stormwater collected onsite.

The only chemicals hazardous to the environment stored onsite in notable quantities will be fuel (HVO, diesel, or a blend of HVO and diesel). Fuel will be prevented from entering the stormwater network by hydrocarbon interceptors. The stormwater network will convey stormwater via monitoring stations and hydrocarbon interceptors with alarms upstream of the 2 no. Emission Points SW1 and SW2 situated at the Installation site boundary. Additionally, stormwater collected around the emergency generator yard will pass through 1 no. full retention interceptor prior to combining with the remainder of the Installation site's stormwater network.

The hydrocarbon interceptors at the Installation site will be equipped with level detection sensors which will send an alarm signal to the BMS to alert EOTs to warn of high hydrocarbon, liquid and silt levels in the separator.

An Environmental Management System (EMS) will be in place to ensure compliance with licencing requirements. This will include full and adequate containment and management of potential contaminants. Site-specific emergency response measures will be in place and all relevant personnel will be trained accordingly. Additional measures to minimise any impact on the surface water, groundwater or soil from material spillages will be implemented including double skinned fuel storage tanks, impervious fuel unloading areas, double lined fuel delivery lines (underground), and the use of hydrocarbon interceptors on stormwater pipelines.

Penstocks will be installed on the outfalls prior to the discharge into the KIC Masterplan site's stormwater network. Once installed, the penstocks will restrict stormwater outflow in the event of a large spill or a fire. Any resulting stormwater of unacceptable quality will be pumped out or otherwise removed from the stormwater network and disposed of appropriately.

Due to the nature of the stormwater run-off (stormwater from buildings, roads and other hardstanding areas) and the inclusion of hydrocarbon interceptors, the proposed discharge is unlikely to exceed the Environmental Quality Standards as set out in the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended.

No online monitoring is proposed for the stormwater discharge. The only chemical stored in notable quantities onsite will be fuel; adequate control measures will be in place to monitor any potential leaks or spills of hydrocarbons at source.

Weekly visual inspections will be undertaken at the outfalls from the Installation (monitoring points SW1-1 and SW2-1) to monitor the quality of the discharge.

Weekly visual inspections will be undertaken at the inbound stormwater connection point from the Landowner's stormwater network to the Installation (monitoring point ISW1-1) to monitor the quality of the stormwater prior to entering the Installation stormwater network.

Monitoring of the stormwater emissions points will be in compliance with the IE Licence. AERs demonstrating compliance of the Installation will be prepared once the IE Licence has been granted in line with the IE licence conditions.

Further detail on the stormwater network and emissions is set out in Attachment 4-8-1 Operational Report.

4. Sewer Emissions

4.1 Emissions

The Installation's foul network will be designed in accordance with the relevant guidance including Uisce Eireann Code of Practice for Wastewater Infrastructure, National Building Regulations Technical Guidance Document H – Drainage & Waste Disposal.

The Installation will include 1 no. main emission to sewer, SE1. The Installation's foul drainage network will comprise of 150mm diameter pipes and 2 no. effluent streams. The main foul effluent and cooling water discharge from the Installation will be collected in separate streams throughout the Installation site. The main foul (domestic) and cooling water discharge streams will combine within the IE Licence site boundary prior to outfall and connection to the KIC Masterplan site's foul water network at SE1.

The Installation will include 1 no. inbound foul water connection point to the Landowner's foul network (termed IF1). The foul water entering the Installation from the Landowner's foul network will be monitored at 1 no. inbound foul water monitoring point (termed IF1-1) to identify any potential contamination of foul water prior to entering the Installation site. In the unlikely event that this incoming foul water is contaminated, the incoming foul water will be subject to the same control measures as the remainder of the foul water collected onsite.

The KIC Masterplan site's foul water network will ultimately discharge by gravity to the existing 450 mm diameter KCC public foul network in accordance with KIC Masterplan site planning application (KCC Planning Ref. 23/60047). The KIC Masterplan site's foul water network will connect to the KCC foul sewer outside of the IE Licence site boundary on Celbridge Road and foul water will ultimately be disposed of at Leixlip Wastewater Treatment Plant (WWTP).

Refer to Drawing 305131-ARP-ZZ-XX-YE-DR-1005 - Foul Water Layout for the foul water network layout.

Main Foul Effluent

The fuel unloading bay at the Installation will be surrounded by ACO drainage channels which will capture any spills via a full retention interceptor and ultimately discharge to the Installation's main foul (domestic) network. Other rainwater runoff drainage from the fuel unloading bay at the Installation will be directed to the Installation's stormwater network.

Cooling Water Discharge

The cooling water discharge foul stream will comprise of cooling water used in Air Handling Units (AHUs) at the Installation.

Discharges from AHUs at the Installation will consist of mains water utilised in the AHUs. No treatment chemicals will be added to water used in the AHUs. As such, cooling water discharges will be of sufficient quality to be discharged to the Installation's foul network.

Cooling water will only be used when the external temperature reaches a set point of 24 degrees Celsius, therefore the emissions to foul sewer will vary and will be low. For the majority of the year, there will be no emissions to foul sewer from the cooling systems.

4.2 Compliance

Foul water entering the Installation from the Landowner's foul network will be monitored at 1 no. inbound foul water monitoring point (IF1-1) to identify any potential contamination and monitor the quality of foul water prior to entering the Installation site.

Cooling water discharge from the Installation will be monitored via 2 no. monitoring kiosks within the IE Licence site boundary. Monitoring of the cooling water discharge stream will occur prior to its combination with the Installation's main foul (domestic) effluent stream and emission to the KIC Masterplan site's foul network at SE1.

Additionally, the rainwater management system for the top up tank and fuel unloading bay at the Installation will be equipped with 1 no. full retention interceptor to prevent hydrocarbons from entering the foul network of the KIC Masterplan site.

Sewer outfall from the KIC Masterplan site to the KCC public foul sewer will be situated outside the Installation site and regulated under the total outflow limits assigned to the KIC Masterplan site.

5. Ground Emissions

There are no emissions to ground proposed from the Installation.

6. Noise Emissions

During operation, the primary source of noise expected to arise from the Installation will be from the building service plant required to service the Installation (i.e. the AHU air intake and the AHU air exhaust); and the operation of the generators onsite during testing and emergency scenarios (i.e. generator air intake, generator air exhaust and generator engine exhaust).

The primary sources of outward noise from the operation of the Installation will occur in during the following scenarios:

- Day to day operation of fixed plant at the Installation;
- Emergency site operations where backup electrical power will be used due to a power outage or issue with supply from the national grid occur (this is extremely unlikely); and
- Testing of emergency generators, which occurs once a week for a maximum of one hour each, one generator at a time (only takes place between 9:00 and 17:00 hours).

An assessment of the noise emission impacts in line with the *EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* has been conducted. Predicted noise levels from normal, testing and emergency operations at the Installation were modelled at the

nearest Noise Sensitive Receptors (NSRs) and are all anticipated to remain within the aforementioned noise emission limits.

Plant items will be selected in order to ensure onsite operations do not exceed the required noise levels. Each emergency generator will be contained within an acoustic container to dampen the noise, and in line attenuators for the emergency generator stacks and exhausts will be used where necessary.

The Installation will be designed to ensure that the Installation operates within the constraints of EPA noise limits.

It is anticipated that the proposed noise abatement measures will be sufficient to ensure that the noise levels comply with the daytime, evening and night-time noise limits proposed, to be stipulated in the IE licence at the nearest noise sensitive receptors

Annual day time, evening and night-time monitoring is proposed to be undertaken in accordance with standard IE licence requirements. It is proposed that annual noise monitoring be carried out once the Installation site is licenced at the location of the nearest NSRs used in the Noise Emissions Impact Assessment Report (see Attachment 7-5 Noise Emissions). The approximate location of these NSRs in relation to the IE Licence boundary is seen below in Figure 1.



Figure 1: Approximate Proposed Annual Noise Monitoring Locations in relation to IE Licence Boundary | Not to Scale | Google Earth ©

See Attachment 7-1-3-2-Noise Emissions Impact Assessment for further details regarding the results of the noise modelling and noise emissions.

7. Protection of Groundwater Quality

On the basis of the results from the Baseline Report (Attachment 4-8-2), and the proposed activities at the Installation, it is considered that operations at the Installation are unlikely to cause an exceedance of the EPA IGVs³ or the relevant Groundwater Regulations⁴.

The only hazardous chemicals stored onsite in notable quantities will be fuel (HVO, diesel, or a blend of HVO and diesel) used for the generators. There will be no direct discharges of contaminated water to groundwater or to the soil environment during the operation of the Installation. The only potential impact of the Installation to ground and groundwater would be from indirect emissions from fuel and other accidental spills that may occur.

An Environmental Management System (EMS) has been developed for ADSIL and will be amended to include the Installation site in accordance with the requirements of BAT. The EMS will outline the management of the Installation's environmental program and is ISO14001 accredited. This includes full and adequate containment and management of potential contaminants.

Site-specific emergency response measures will be in place and all relevant personnel will be trained accordingly. The risk prevention measures planned at the Installation significantly reduce the potential for an environmental impact to soil or water to occur. These measures will include double skinned fuel storage vessels, double lined drainage and containment systems and spill management procedures.

Fuel will be stored locally in the double skinned belly tanks at each emergency generator and the top up tank located within the generator yard. The individual emergency generators will be housed within containers. The containerised emergency generator housing will include leak detection systems. Should hydrocarbon be detected in the base of the housing containers, the system will send an alarm signal to the BMS to alert the onsite EOTs. The onboard controller for individual emergency generators will be connected to the BMS.

The individual fuel storage tanks associated with the varying types of generators and top up tank have level gauges (high and low) connected to an onboard controller which will alarm to the BMS to prevent overfilling and identify a sudden loss of fuel within the tank.

Delivery of fuel will be a controlled process, and is undertaken in accordance with the Fuel Delivery SOPs. Fuel deliveries will be supervised and will take place in designated fuel unloading bays. Hydrocarbon interceptors will be in place for the fuel tanker delivery bay to capture any spills.

Fuel will be prevented from entering the groundwater by hydrocarbon interceptors. The stormwater network will convey stormwater via monitoring stations and hydrocarbon interceptors with alarms upstream of the 2 no. Emission Points SW1 and SW2 situated at the Installation site boundary. Additionally, stormwater collected around the emergency generator yard will pass through 1 no. full retention interceptor prior to combining with the remainder of the Installation site's stormwater network.

Fuel will also be prevented from entering the foul network by hydrocarbon interceptors. The fuel unloading bay at the Installation will be surrounded by ACO drainage channels which will capture any spills via a full retention interceptor and ultimately discharge to the Installation's main foul (domestic) network.

The Installation will include 1 no. inbound stormwater and 1 no. inbound foul water connection point to the Landowner's stormwater and foul networks, termed ISW1 and IF1 respectively. The stormwater and foul water entering the Installation from the Landowner's surface water and foul networks will be monitored at monitoring points ISW1-1 and IF1-1 respectively to identify any potential contamination prior to entering the Installation site. In the unlikely event that these incoming stormwater and foul water are contaminated, the incoming stormwater and foul water will be subject to the same control measures as the remainder of the stormwater and foul water collected onsite.

³ Environmental Protection Agency (EPA) Draft Interim Guidelines Values (IGVs) for the Protection of Groundwater, 2003.

The hydrocarbon interceptors at the Installation site will be equipped with level detection sensors which will send an alarm signal to the BMS to alert EOTs to warn of high hydrocarbon, liquid and silt levels in the separator.

Groundwater and soil will be monitored for relevant hazardous substances in line with conditions set out in the IE licence, once granted.

Further detail on the fuel storage management and control features are set out in Attachment 4-8-1 Operational Report.

8. References

EPA (2003) *Towards Setting Guideline Values for the Protection of Groundwater in Ireland EPA: Groundwater Interim Report*. Available at: Microsoft Word - FINAL REPORT - April03 MK.doc.

EPA (2016) *Publication Guidance Note for Noise : Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*. Available at: NG4 Guidance Note (January 2016 Update).

EPA (2024) *EPA Maps*. Available at: <https://gis.epa.ie/EPAMaps/SEA>.

EU (2010) *Directive 2010/75/EU of The European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)*.

Geological Survey of Ireland (GSI) (2024) *Data and Maps*. Available at: <http://www.gsi.ie>.

Government of Ireland (GoI) (2009) *European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009)*.

Government of Ireland (GoI) (2010) *European Union Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010)*.

Government of Ireland (GoI) (2016) *European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016 (S.I. No. 366 of 2016)*.

Government of Ireland (GoI) (2019) *European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2019 (S.I. No. 77 of 2019)*.

Government of Ireland (GoI) (2022) *Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022)*.