ARUP

Amazon Data Services Ireland Limited

IE Licence Application

Attachment 1-1 Non-Technical Summary RFI Revision

Reference:

Issue | 2 July 2025

Job number 305131

Ove Arup & Partners Ireland Limited
50 Ringsend Road
Dublin 4
D04 T6X0
Ireland
arup.com

ARUP

Document Verification

Project title	IE Licence Application
Document title	Attachment 1-1 Non-Technical Summary RFI Revision
Job number	305131
Document ref	
File reference	

Revision	**Date**	**Filename**			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

Issue Document Verification with Document ☑

Contents

Tables

Figures

1. Introduction

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 proposed Installation site covers an area of c. 3.645 hectares (ha) in total and sits within the wider KIC Masterplan site, which was granted planning permission in January 2024 under Kildare County Council (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. A revised AA Screening has been submitted as part of the RFI Response to this IE Licence application (see Attachment 6-2-1 AA Screening Kildare Innovation Campus_Rev2).

ADSIL holds a long term lease that concerns lands within the IE licence boundary, which sits within 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”*.

The Installation comprises 1 no. data storage facility (Data Centre Building B1) and ancillary elements. The ancillary elements of the Installation will include data storage rooms, admin (comprising offices, breakroom, fuel unloading area, logistics delivery area, storage, and ancillary areas) and a variety of electrical plant areas / structures including battery storage rooms and mechanical rooms. Car parking, access roads, security fencing / gates, gate houses and landscaping will also be included. The Installation site layout and main building are shown on Figure 1, refer to 305131-ARP-ZZ-XX-YE-DR-1001 - Site Layout Plan for further details.

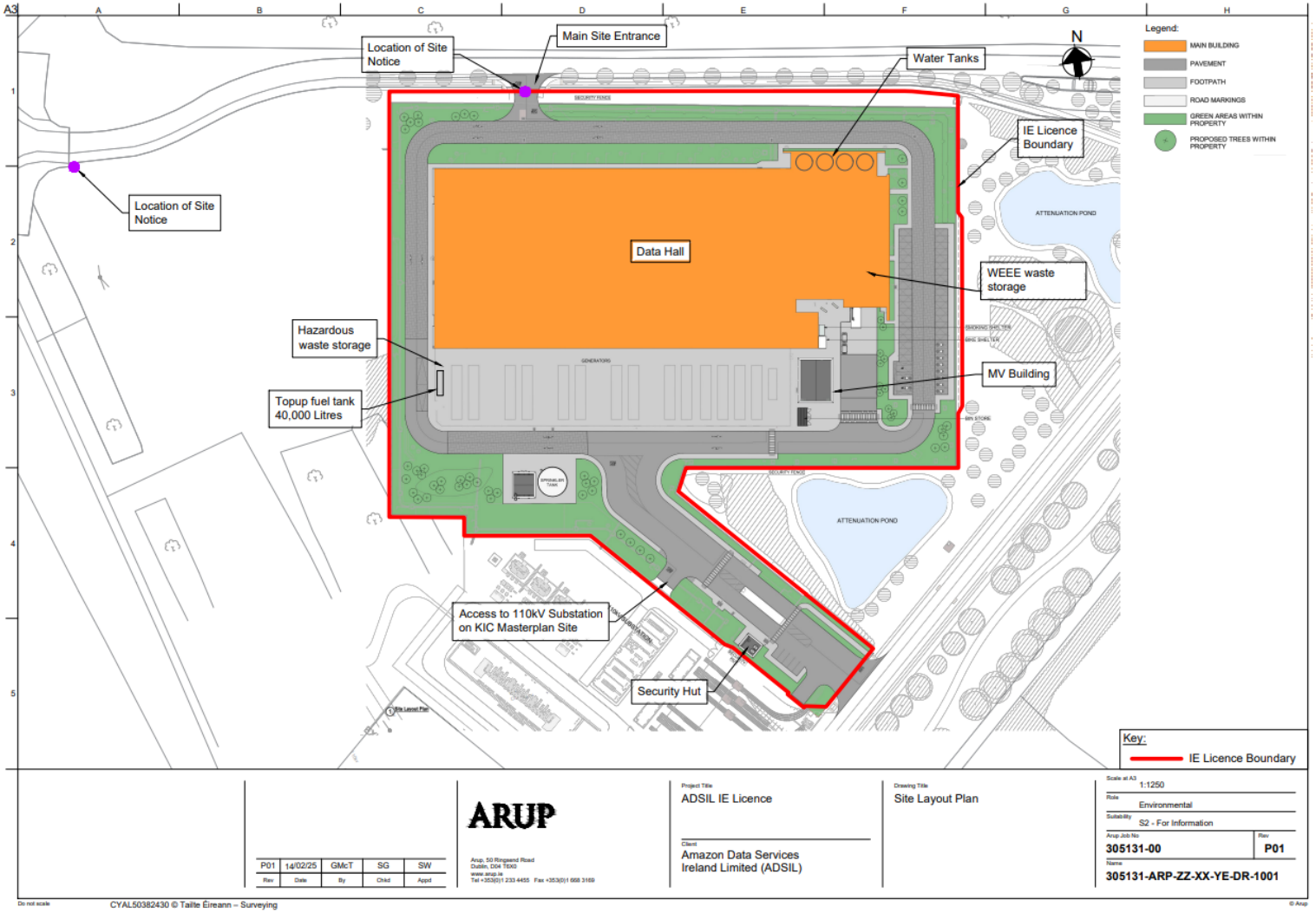

Figure 1: Site Layout with IE Licence boundary indicated by the red line | Not to scale | Arup ©

The Installation will be supported by a dedicated electrical plant room, which will provide the necessary power to ensure Data Centre Building B1 operates optimally at all times.

The Installation will require a continuous supply of electricity to operate. During normal operation, the Installation will be supplied electricity from the national grid. Outside of normal operations, the Installation will first be supplied electricity by an uninterruptible power supply (UPS) which will provide temporary power for a limited time while the generators start up, to allow the generators to activate without losing power to the data storage rooms and then by some or all of the onsite emergency generators. Outside of routine testing and maintenance, the operation of these emergency generators will typically only be required under the following emergency circumstances:

- A loss, reduction or instability of grid power supply,
- Critical maintenance to power systems,
- A request from the utility supplier (or third party acting on its behalf) to reduce grid electricity load.

2. General Information

2.1 Activities to be Licensed

The proposed IE licence seeks permission to carry out the following activity as listed under the First Schedule of the EPA Act 1992 Activity:

'*Class 2.1 Combustion of fuels in installations with a total rated thermal input of 50 MW or more*'.

The Installation will include 14 no.7.73 megawatt thermal (MW_{th}) critical emergency generators; 1 no. 2.50 MW_{th} house emergency generator; and 2 no. 0.57 MW_{th} fire sprinkler pumps. The combined thermal input of the Installation is 111.9 MW_{th}. This exceeds the 50MW_{th} threshold of Class 2.1 First Schedule of the EPA Act 1992. ADSIL is, therefore, applying to the EPA for an IE Licence principally relating to the operation of emergency generators under Activity Class 2.1.

The Installation will comprise 1 no. data centre facility (Data Centre Building B1) and is committed to using Hydrotreated Vegetable Oils (HVO). HVO, where supply is available, will be the preferred source of fuel for the operation of the emergency generators at the Installation. Where insufficient quantities of HVO are available, a blend of diesel and HVO will be supplied to the generators, and in the absence of HVO, diesel will be supplied to the generators. Where a blend of HVO and diesel is supplied to the generators, the ratio of HVO : diesel supplied will vary with the availability of HVO.

HVO is a renewable diesel that operates as a direct replacement for conventional diesel, and is made from renewable and sustainable raw materials which do not release any new CO_2 into the atmosphere (Refer to Attachment 4-8-1 Operational Report for further details).

2.2 Site Context

2.2.1 Surrounding Land

The Installation forms part of a wider Masterplan for the KIC, which is c. 72.23 hectares. The KIC masterplan site has planning permission for the construction of 4 no. data centres, 2 no. deep technology buildings and 1 no. energy centre which will be to be completed by 2035. The Installation is expected to be operational in mid-2026.

The KIC Masterplan site area, which includes the Installation site, sits on the site of the former Hewlett Packard (HP) Campus originally permitted under KCC Planning Ref. 95/923 at Barnhall Road, Leixlip, County Kildare, W23 X93P. The IE licence for this site (IE Licence No. P0195-02) was surrendered in 2019 with evidence of site closure and decommissioning activities included on EPA LEAP portal.

The closest waterbody, the River Liffey, runs adjacent to the Installation site in a south west to north east direction. There is an existing reservoir (Leixlip Reservoir) c. 800m southeast of the Installation site which forms part of the River Liffey.

The Installation site is located within the northwest corner the KIC Masterplan site and is c. 3.645 hectares. The Installation site location and wider context is presented in Figure 2.

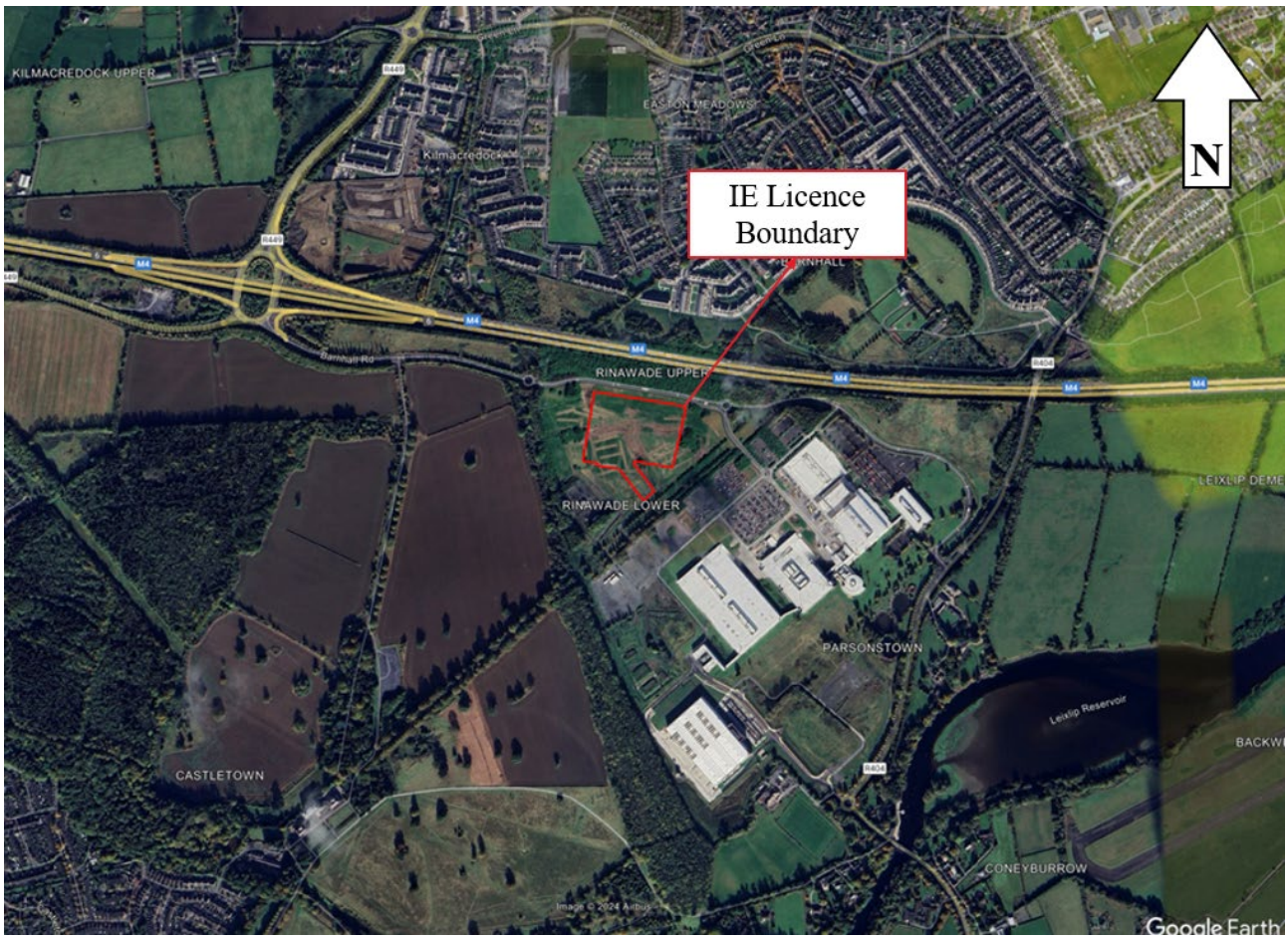

Figure 2: IE Licence Site Boundary Location (boundary indicated in red) | Not to Scale | Google Earth ©

The Installation site sits within the KIC Masterplan site. The KIC Masterplan site is principally bounded by the M4 Motorway (and Barnhall Meadows and Wonderful Barn lands) to the north; Celbridge Road to the south east; Barnhall Rugby Football Club and recently completed DB Schenker logistics facility to the south; and by grounds associated with Castletown House to the west. The nearest sensitive receptors are new housing estates c. 150m across the M4 Motorway to the north of the Installation site including Barnhall Meadows. Western airport is located approximately 2km east of the Installation.

There are five IE and Integrated Pollution Control (IPC) licensed sites within 5km of the Installation, outlined in Table 1. Three of these sites hold an active licence, the remaining sites have either surrendered or applied for licenses awaiting EPA approval.

Table 1: Industrial Emissions (IE) and Integrated Pollution Control (IPC) licensed sites within 5km of the Installation

Site Name	Licence Number	Licence Activity	Licence Status	Distance from Proposed ADSIL IE Licence
HP Production Company Limited	P0195-02	12.3: The surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 m^3.	Surrendered	390m southeast

Site Name	Licence Number	Licence Activity	Licence Status	Distance from Proposed ADSIL IE Licence
Intel Ireland Limited	P0207-05	12.2.1: The surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with a consumption capacity of more than 150 kg per hour or more than 200 tonnes per year.	Licensed	2km north
General Paints Limited	P029-02	12.2.2: The manufacture or use of coating materials in processes with a capacity to make or use at least 10 tonnes per year of organic solvents, and powder coating manufacture with a capacity to produce at least 50 tonnes per year, not included in paragraph 12.2.1.	Licensed	1.9km southwest
HDS Energy Limited	P0286-01	Not specified	Licensed	2.1km southwest
Edgeconnex Ireland Limited	P1204-01	2.1: Combustion of fuels in installations with a total rated thermal input of 50 MW or more.	Applied	5km southeast

3. Description of Activity

3.1 Site Overview

The Installation sits within the wider KIC Masterplan site area. The KIC Masterplan site is owned by the Landowner as outlined in Section 1. For the purposes of this IE Licence application, the proposed IE licence activities relate to the operation of 1 no. data centre at the Installation, which is leased from the Landowner and operated by ADSIL.

The Installation will comprise 1 no. single-storey data storage facility building (Data Centre Building B1) with associated office block and ancillary elements. The ancillary elements of the Installation will include: logistics and fuel unloading bays, maintenance and storage spaces, associated water tanks, sprinkler tanks, fire sprinkler pump house, electrical rooms, security and utility spaces, internal road network as well as underground foul and stormwater drainage networks. The generator yard at the Installation will consist of a total of 14 no. critical emergency generators, 1 no. house emergency generator and 2 no. fire sprinkler pumps.

The layout of the Installation, ancillary buildings, and structures is shown in Figure 3. Refer to Drawing 305131-ARP-ZZ-XX-YE-DR-1001 - Site Layout Plan for more detail.

Attachment 4-8-1 Operational Report presents a more detailed description of the Installation as it relates to this IE Licence application.

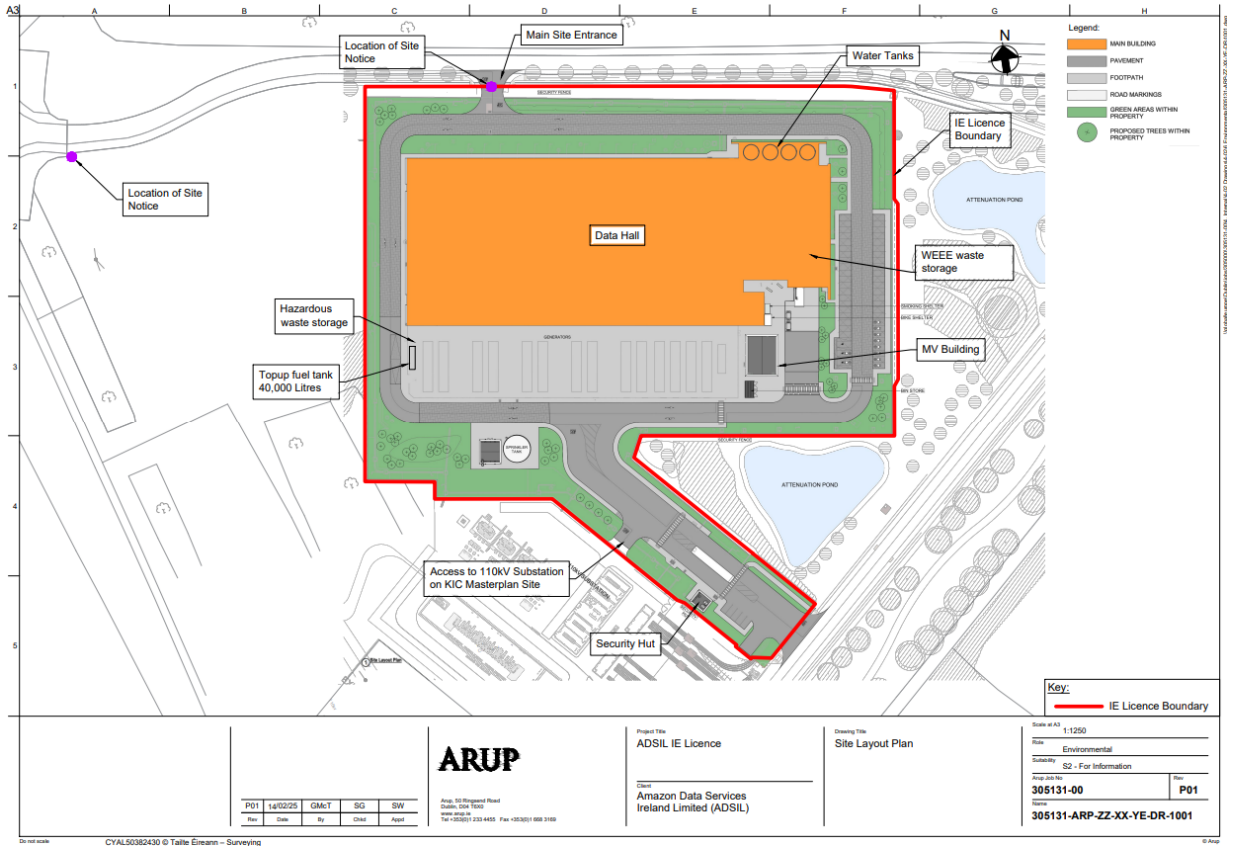

Figure 3: Installation Site Layout | Not to scale | Arup ©

3.2 Primary Processes and Activities

3.2.1 Overview

The main processes taking place at the Installation will consist of data storage within Data Centre Building B1.

3.2.2 Data Storage Building

Data storage facilities are centralised computer server systems on a large scale, typically involving systemised racks of hundreds/thousands of server units. They offer significant advantages (and economies of scale) over traditional in-house data storage systems. The primary advantages are:

- Higher reliability and redundancy of systems;
- 24/7 monitoring and maintenance of storage by staff;
- Higher security and data protection; and
- Flexibility – ability to increase or decrease storage requirements at short notice in line with specific business needs.

The demand for cloud computing and data storage continues to be high and the Installation is intended to help meet this need.

The Installation will operate using electricity available from the 110kV substations within the KIC Masterplan site area, outside of the IE licence boundary.

3.2.3 Emergency Generators

The Installation will be supported by emergency generators that will be located in the generator compound. These emergency generators will provide the necessary power to ensure the data centre building will

continue to operate in the event of a grid emergency. An uninterruptible power source or UPS system will also be provided for the short-term transition from mains power to the emergency generators.

The use of emergency generators will only take place in the event of an emergency or during routine testing and maintenance at the Installation site. Should this occur, 12 no. critical emergency generators will be in use at any one time, and the remaining 2 no. critical emergency generators will be used as "catcher" generators. ADSIL estimates, based on experience, that the standby generators will rarely be used.

Fuel will be stored onsite in a top up tank with a useable volume of 36,000 Litres. In a best case scenario, where sufficient HVO quantities are available to support the Installation, 30.46 tonnes of HVO (at a density of 0.846 kg/L for HVO) will be stored in the top up tank. In a worst case scenario, where only diesel fuel is used to support the Installation, 30.96 tonnes of diesel (at a density of 0.86 kg/L for diesel) will be stored in the top up tank. HVO will be used where supply is available, otherwise diesel will be supplied to the onsite tank. HVO can be blended together in the same tank.

Fuel will also be stored onsite for use in 15 no. double-skinned belly tanks associated with each of the 14 no. critical and 1 no. house emergency generators. These tanks will be filled centrally from the onsite top up tank. The belly tanks associated with the 14 no. critical emergency generators have the capacity to store 19.6 m^3 of fuel and the belly tank associated with the 1 no. house emergency generator has the capacity to store 6.2 m^3 of fuel.

HVO, where supply is available, will be the preferred source of fuel for the operation of the emergency generators at the Installation. Where insufficient quantities of HVO are available, a blend of diesel and HVO will be supplied to the tanks, and in the absence of HVO, diesel will be supplied to the tanks. Where HVO and diesel are blended in fuel storage tanks, the ratio of HVO : diesel in the fuel tanks will vary with the availability of HVO.

900 Litres of diesel will be stored onsite within the 2 no. double skinned fuel storage tanks associated with the diesel-powered fire sprinkler pumps. These tanks have a 500 litre capacity each and will be filled to 90% capacity under normal conditions.

The storage capacities and details of each type of generator at the Installation are outlined in Table 2.

Table 2: Overview of generator fuel storage capacities at the Installation

Generator Type	Storage of HVO / Diesel (Litres)	Storage of HVO (Tonnes)[Note 1]	Storage of Diesel (Tonnes)[Note 2]
14 no. Critical Emergency Generators	Approx. 274,400	232.43 tonnes at a density of 0.846 kg/L for HVO	236.27 tonnes at a density of 0.86 kg/L for diesel
1 no. House Emergency Generator	Approx. 6,200	5.26 tonnes at a density of 0.846 kg/L for HVO	5.35 tonnes at a density of 0.86 kg/L for diesel
2 no. Fire sprinkler pump generators [Note 3]	Approx. 900		0.77 tonnes at a density of 0.86 kg/L for diesel

Note 1: This value represents the total storage volume of HVO that may be stored onsite across the emergency generator belly tanks in a best case scenario where only HVO is stored onsite.

Note 2: This value represents the total storage volume of Diesel that may be stored onsite across the emergency generator belly tanks and the sprinkler pump fuel storage tanks in a worst case scenario where no HVO is available and only Diesel is stored onsite.

Note 3: The fire sprinkler pump generators are diesel powered and will not use HVO in any circumstance. This value represents the total storage volume of Diesel stored onsite for use in the fire sprinkler pump generators.

Attachment 4-8-1 Operational Report presents further details on the emergency generators as it relates to the IE Licence application.

3.3 Secondary Processes and Activities

Refer to Attachment 4-8-1 Operational Report for further details on the Secondary Processes and Activities outlined below.

3.3.1 Ancillary Infrastructure

The Installation will be supported by a dedicated electrical plant room, which will provide the necessary power to ensure the Data Centre Building B1 will operate optimally at all times.

In the event of an emergency, emergency generators will be provided to maintain power at critical loads. The emergency generators will be designed to automatically activate and provide power pending restoration of the primary power supply to the Installation site. An uninterruptible power source or UPS system will be used for the short-term transition from mains power to generator power.

There will be integrated administration areas associated with the Installation comprising of:

- Reception areas
- Open office areas, and conference rooms / meeting rooms
- Maintenance and storage spaces;
- Break room and sanitary facilities.

Additional ancillary infrastructure includes:

- Underground foul and storm water drainage network,
- Utility ducts and cables,
- Internal road network and 48 no car parking spaces, and
- Security fencing.

3.3.2 Data Storage Room Cooling System

The location of the Installation in Ireland allows for the use of free-cooling media without the need for mechanical cooling. To take advantage of this, the air handling equipment will be fitted with airside condensers to utilise outdoor air to cool the space.

The cooling units or AHUs will provide conditioned air to maintain temperature, relative humidity and pressurisation in the data storage rooms. The cooling units will operate under 2 modes; Free Cooling and Evaporative Cooling: Free Cooling will use outside air and Evaporative Cooling mode or ‘Adiabatic Cooling’ will use water from the mains supply as the cooling media. Duty and standby units will be in place to ensure cooling is available at all times.

The Installation will be designed to use humidifiers and air conditioning systems to maintain the relative humidity and temperature in the internal building space during high temperature days. However, when weather conditions are acceptable for the internal building, fresh air will be directly supplied to reduce both energy and water consumption.

If the relative humidity in the building drops below the minimum required for the electrical equipment, humidifiers will provide moisture to the makeup air. Water will be used to supply the humidifiers and is recycled at least 3 times. Any water remaining within the humidifiers will drain to an attenuation tray and then to the foul water system. The humidification process will be non-contact and chemical-free, thus the water discharged will be free of contamination and organics.

When ambient temperature exceeds the allowable internal space temperature, air conditioning systems in the admin area will mechanically reject heat from the space. During this process, condensed water may collect in the air conditioning systems and will drain to the foul water network. There will be no significant contaminants in the air conditioning condensate, as this is purely condensed moisture. The cooling system process will not use any water and will not produce condensation discharge during normal operations.

3.3.3 Electricity Supply and 110kV Substation

A connection agreement to supply the KIC Masterplan site, including the Installation, is in place with Eirgrid. The power requirements for the Installation will be provided via a direct connection to the 110 kV Gas Insulated Switchgear (GIS) Substation Compound located south of the IE licence boundary within the KIC Masterplan site. This substation lies outside of the Installation site boundary and outside of the scope of the proposed IE licence application.

3.3.4 Solar PV

The KIC Masterplan site will include the installation of an array of photovoltaic panels on the roof of buildings, including Data Centre Building B1. The array of photovoltaic panels for Data Centre Building B1 will consist of 180 no. modules yielding a total peak power generated of 72 kWp to offset lighting and electrical power requirements during the peak summer months for the administration section of the Installation.

3.3.5 Waste Heat Recovery

The data storage rooms will be supplied with fresh air which will be sufficient to cool the space for the majority of the annual running hours. For a small number of hours during the peak cooling season, adiabatic cooling will be required. Adiabatic cooling uses rainwater as primarily supply and mains water utility as a back-up at ambient temperature conditions to provide cooling on peak cooling days.

The system will not require chillers/compressors which minimises the use of electrical power to maintain the data storage room environmental conditions. The rainwater harvesting will be utilised from the roof of the Installation throughout the year for the water to be available during those hottest periods during summer months when adiabatic cooling may be needed.

The cooling system design for the Installation can accommodate the future installation of a waste heat recovery system. If incorporated, the heat recovery system would remove heat from the air after it passes through the data storage rooms to a hydraulic (water) pipe network, before the air is re-introduced to the data storage room or exhausted to the atmosphere. The heat recovery system could generate hydraulic temperatures of between 20-30°C at the point of recovery. The Installation could supply heat energy to a future district heating scheme developed by others external to the Installation site boundary. It should be noted that others will need to develop infrastructure external to the Installation site such as plate heat exchangers, pumps and distribution networks, to benefit from the above heat recovery system. A suitable receiver of waste heat from the Installation site is not currently available and therefore this is not included in the licence application. A suitable receiver of waste heat from the Installation site is not currently available and therefore this is not included in the licence application.

3.3.6 Living Walls

The Installation will include the incorporation of a living wall within the data centre building design. The building will be finished with a mix of insulated metal cladding (mixed tones) and a living wall. It is anticipated that this feature will promote biodiversity within the Installation, and provide potential foraging opportunities for bats, potential roosting and nesting opportunities for species such as gulls and support a diversity of invertebrate species. The living wall element is anticipated to require an annual demand of approximately 273.5m^3 water.

3.4 Water, Sewer and Stormwater Drainage Infrastructure

3.4.1 Overview

As outlined in Section 1, the Installation forms part of a wider masterplan area – the KIC Masterplan site. The KIC Masterplan site is owned by a separate landowner (‘the Landowner’). The proposed IE licence application relates only to the area operated by ADSIL who are applying for this licence. The remaining areas within the KIC Masterplan site are controlled by the Landowner. Stormwater discharges and emissions to sewer identified in this IE licence application will be monitored by ADSIL where they sit within the IE licence boundary.

3.4.2 Water Supply

The water supply to the Installation will be sourced from the Landowner's network via a metred connection to the existing 150 mm diameter watermain line at Celbridge Road to the south-east corner of the Installation in accordance with the KIC Masterplan site planning application (KCC Planning Ref. 23/60047).

The Installation will have an average domestic water demand of 912.5 m^3/year, a cooling water demand of 1,166 m^3/year, and an additional potable water demand of 273.5 m^3/year to support the onsite living wall. Additionally, the peak cooling water demand is estimated at 0.96 l/s.

The Installation will be designed to harvest rainwater to meet a significant fraction of the annual cooling water and irrigation requirements for its operation. Consequently, the Installation will require reduced amounts of water from local supply from the first year of its operation.

Rainwater

Rainwater will be stored on-site such that no water is required from Uisce Eireann during the peak summer months.

The water used during these peak summer months will be supplied by on-site water storage only. The storage will be filled during the winter months. For all temperatures below the peak summer days, the cooling system will operate on direct air only. To confirm, no water demand is required for cooling during the winter period.

The Installation will fill water tanks during the months of December, January and February. Rainwater storage tanks will be used for rainwater harvesting and will be topped up by the mains supply during off-peak months to reduce overall demand on the public mains supply.

3.4.3 Stormwater Drainage System

The stormwater drainage network will be designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS)[1] and Greater Dublin Regional Code of Practice[2].

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. Class 1 bypass interceptors with alarms through 2 no. discharge points situated at the IE Licence site boundary (SW1 and SW2) to the KIC Masterplan site's 1 no. attenuation pond (2,132 m^3) to the east and 1 no. attenuation pond (1,836 m^3) 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. Refer to Drawing 305131-ARP-ZZ-XX-YE-DR-1004 - Surface Water Layout for further details.

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

The Class 1 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 interceptor.

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 stormwater network will be monitored at 1 no. inbound stormwater monitoring point (termed ISW1-1) to identify any potential contamination of stormwater prior to entering the Installation site. In the unlikely event that this incoming

[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

stormwater is contaminated, the incoming stormwater will be subject to the same control measures as the remainder of the stormwater collected onsite.

It should be noted that there will be 1 no. Class 1 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 will ultimately discharge attenuated flows to the Leixlip Reservoir, located c. 800m southeast of the Installation immediately across from Celbridge Road. The Leixlip Reservoir will flow 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.

3.4.4 Wastewater Drainage System

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 (domestic) effluent and cooling water discharge from the Installation will be collected in separate streams throughout the Installation site. The main foul 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).

Cooling water discharge from the Installation will be monitored via 2 no. monitoring kiosk 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.

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.

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

Fuel Unloading Bay

The fuel unloading bay at the Installation will be surrounded by ACO drainage channels which will capture any spills via a Class 1 full retention interceptor and ultimately discharge to the Installation's main foul (domestic) 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 exceeds 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.

3.4.5 Firewater

A 250mm diameter fire hydrant main is in place to provide firefighting water to the Installation in accordance with the KIC Masterplan site planning application (KCC Planning Ref. 23/60047). A fire water ring main will be installed around the Installation to provide firefighting water to hydrants to be used in the event of a fire.

A firewater sprinkler pump house, equipped with 2 no. diesel-powered fire sprinkler pumps for the supply of firefighting water, will be situated beside the emergency generator yard.

Onsite firewater storage will be required for firefighting purposes. Firewater retention will be provided in accordance with EPA Guidance on Retention Requirements for Firewater Run-off and in accordance with the requirements of the IE licence.

4. Environmental Baseline & Impact Assessment

A Baseline Report for the Installation has been prepared as part of this IE licence application and is included in Attachment 4-8-2 Baseline Report. The baseline report presents available information to infer the condition of the Installation site as it existed prior to the construction and operation of Data Centre Building B1.

4.1 Soil and Groundwater

4.1.1 Baseline Environment

The baseline environment of the Installation site as it pertains to soil and groundwater is described in detail in the Baseline Report (Attachment 4-8-2). An assessment of the baseline report was conducted as part of this IE Licence application and is presented in detail in the Baseline Report (Attachment 4-8-2). The following is a summary of the findings of the desktop review of Geological Survey of Ireland (GSI) and Teagasc undertaken as part of the baseline environment assessment presented in the Baseline Report:

- The principal soil type underlying the Installation site is *Mineral Poorly Drained (Mainly Basic)* (BminPD). Other soils underlying the surrounding area include *Made Ground* and *Made Ground and Deep Well Drained Mineral Soil* (BminDW).
- The principal subsoil type underlying the Installation site consists of Carboniferous limestone till (TLs) "*Till derived from limestone*".
- The solid geology underlying the Installation site is Carboniferous Limestone derived from the Lucan Formation which comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar.
- The bedrock aquifer underlying the Installation site is classified as '*Locally Important'* which is characterised as moderately productive only in Local Zones. Also, the aquifer underlying the Installation has a vulnerability classification of '*Moderate Vulnerability'*
- The topography of the Installation site is generally flat and has an elevation of 51.0 m above Ordnance Datum (mAOD). The topography of the Installation and KIC Masterplan site slopes gently in a south east direction, which is consistent with the surrounding area. It is presumed that the local groundwater flow is in an easterly direction towards Leixlip Reservoir.
- There is no evidence of karstification at the immediate vicinity of the Installation site.

With regard to groundwater quality, the Installation site is situated in the region of the site (Dublin GWB) is classified as '*Good'* per the WFD Risk Score system. The Dublin GWB (Code: IE_EA_G_008) achieved '*Good Status'* in the period 2016-2021

The European Communities Directive 2000/60/EC established a framework for community action in the field of water policy commonly known as the Water Framework Directive (WFD). The WFD aims to achieve 'Good Water Status' for all European waters through a system of river basin management planning and extensive monitoring. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'.

Water bodies identified as being 'At Risk' of not achieving their environmental objectives need to have targeted measures implemented to achieve objectives outlined in River Basin Management Plans.

During the period between 2016 and 2021, the groundwater body (GWB) in the region of the Installation stie, Dublin GWB (Code: IE_EA_G_008), was classified as '*Under Review'* per the WFD Risk Score yet achieved '*Good Status'* per the WFD Quality Status.

Additionally, based on the site-specific data available from the KIC Masterplan site investigations undertaken in 2018 and 2020 as part of the KIC planning application (KCC Planning Ref. 23/60047), the following conclusions have been made:

- Bedrock at the Installation site consists of Carboniferous Limestone and a "*Locally Important*" aquifer with moderate vulnerability.
- The KIC Masterplan site, which includes the Installation site, was previously used by Hewlett Packard (HP) Manufacturing Limited which was licensed for the use of coating materials in processes using organic solvents and electroplating operations until 2019, when the license was surrendered with approval from the EPA.
- Site specific soil and water quality data show no evidence of any historical contamination at the Installation site.

Further information regarding the soil and groundwater baseline environment and historical contamination of soil and groundwater at the Installation site can be found in Attachment 4-8-2 Baseline Report.

4.1.2 Potential Impact

There is no proposed direct discharge to the groundwater or to the soil environments during the operation of the Installation.

The only chemical stored at the Installation site in notable quantities will be HVO, diesel, or a blend of HVO and diesel. HVO, where supply is available, will be the preferred fuel supplied to fuel storage tanks at the Installation. Where insufficient quantities of HVO are available, a blend of diesel and HVO will be supplied to storage tanks, and in the absence of HVO, diesel will be supplied to storage tanks. Where a blend of HVO and diesel is supplied to storage tanks, the ratio of HVO : diesel supplied will vary with the availability of HVO.

Based on the site-specific data available from the KIC Masterplan site investigations undertaken in 2018 and 2020 as part of the KIC planning application (KCC Planning Ref. 23/60047), an assessment of source-pathways-receptors has been completed. The following conclusions have been made:

- Only bulk fuel is proposed to be stored at the Installation in double skinned tanks associated with each of the generators onsite and the top up tank. However, the risk prevention measures planned at the Installation significantly reduce the potential for an environmental impact to soil or water to occur. These measures include double contained fuel storage vessels, dual-contained fuel pipe system (when underground), and spill management procedures.
- Source-pathway-receptor linkages were assessed for potential contamination of soil or groundwater arising from accidental emissions of fuel from fuel storage tanks associated with each of the emergency generators and the top up tank at the Installation site. It was concluded that there will be no direct pathways to either the soil or groundwater environment. A leakage from the top up tank or the generator fuel storage tanks will be fully contained in the double skin lining of the tank, and leaks during fuel delivery will be fully contained within the continuous hardstand fuel delivery area. Any leakage outside of the fuel delivery area will be contained within the drainage system, which includes Class 1 hydrocarbon interceptors. Drainage from the containment area(s) shall be diverted for collection and safe disposal. Spill kits and appropriate training will also be in place.
- Based on the assessment of the source-pathway-receptor linkages, there are no potential for impact of any downgradient protected sites. The Installation's stormwater network will connect to the KIC Masterplan's stormwater sewer which will discharge to the Leixlip Reservoir. The Leixlip Reservoir ultimately flows into River Liffey. There is no hydrological connection identified between the Installation and the Rye Water Valley / Carton Special Area of Conservation (SAC) (1.6km north) or Royal Canal pNHA (1.3km north) as these are located upstream of the River Liffey and the Installation. An indirect hydrological connection exists between the Installation site and the Liffey Valley pNHA

(2km northeast) through the stormwater discharge from the KIC Masterplan site to Leixlip reservoir. However, according to the EIAR prepared as part of the planning application for the KIC masterplan site, which includes the Installation site, (KCC Planning Ref. 23/60047), "*Potential adverse effects on these European sites* [from the KIC Masterplan site, which includes the Installation site] *are highly unlikely given the distance of removal and integrated mitigation measures in place through standard nature-based SuDS measures on site".*

Refer to Attachment 4-8-2 Baseline Report for further information.

4.2 Surface Water

4.2.1 Baseline Environment

The Installation is located within the former ERBD (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). It is situated in Hydrometric Area No. 09 of the Irish River Network. It is located within the sub-catchment Liffey_SC_080 (Catchment ID: 09).

The aim of the WFD is *'Good Water Status'* for all European waters to be achieved through a system of river basin management planning and extensive monitoring. '*Good status'* means both *'Good Ecological Status'* and *'Good Chemical Status'.* Water bodies identified as being '*At Risk'* of not achieving their environmental objectives need to have targeted measures implemented to achieve objectives outline in River Basin Management Plans (RBMPs).

In accordance with the WFD, each river catchment was assessed by the EPA and a water management plan detailing a programme of measures was put in place for each. Currently, the EPA classifies the WFD Ecological Status for the Liffey_150 and Rye Water_040 waterbodies as having a '*Poor'* status (2016-2021) with the current WFD River Waterbody risk score being '*Under Review'* for the Liffey_150 and '*At Risk'* for the Ryewater_040. According to the EPA Map viewer, the Leixlip Reservoir also received a '*Poor'* status (2016-2021) and the WFD Lake Waterbodies Risk score is currently *'Under Review'*.

Class 1 hydrocarbon interceptors will be installed within the stormwater drainage network. The interceptors will be equipped with a hydrocarbon warning system which will be connected and send alarm to the Building Management Systems (BMS) / Event and Power Management System (EPMS) to warn of high hydrocarbon, liquid and silt levels in the system.

4.2.2 Potential Impact

The Leixlip Reservoir is situated southeast of the Installation and forms part of the River Liffey. The Installation will discharge stormwater runoff to the KIC Masterplan site's network, which will ultimately discharge into the Leixlip Reservoir at Celbridge Road following confirmation of water quality through online monitoring mechanisms operated by the KIC Masterplan site.

There is no proposed direct discharge to the surface water environment during the operation of the Installation.

Refer to Attachment 4-8-2 Baseline Report and Attachment 7-1-3-2 Soil and Water Impact Assessment Report for further information.

4.3 Air Quality

4.3.1 Baseline Environment

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality '*Air Quality in Ireland 2023*' (EPA, 2024a), details the range and scope of monitoring undertaken throughout Ireland. As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024b). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which

represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring, the Installation site is categorized as Zone C (EPA, 2024c).

Refer to Table 3 for further details on the annual mean background concentrations (ug/m^3) at Zone C monitoring stations (Dundalk, Kilkenny and Portlaoise) for the following pollutants: NO_2, SO_2, CO, $PM_{2.5}$ and PM_{10}.

Table 3: Annual Mean Background Concentrations In Zone C Locations (ug/m^3) (EPA, 2024a)

Year	Dundalk					Kilkenny					Portlaoise				
	Annual Mean Background Concentration (ug/m^3)														
	NO_2	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_2	SO_2	$PM_{2.5}$	PM_{10}	CO	NO_2	SO_2	$PM_{2.5}$	PM_{10}	CO
2018	14	3.8	-	15	500	6	-	-	-	-	11	3	-	11	200
2019	12	1.5	-	14	100	5	-	-	18	-	11	1.3	-	15	100
2020	10	2	-	13	300	4	-	-	19	-	11	1.6	8	12	100
2021	11	2.3	-	11.7	100	4	-	-	16.7	-	8	1.9	8.1	11.4	400
2022	10.4	3.8	19.8	12.3	300	4.8	-	-	17.5	-	9	2.9	8.1	12	200
2023	9.3	2.1	8.9	13.2	300	4.4	-	-	13.9	-	8.3	4	7.4	11	300
Maximum Annual Mean	**14**	3.8	**19.8**	15	**500**	6	**-**	**-**	**19**	-	11	**4**	8.1	15	400
Limit	40	20	25	40	10,000	40	20	25	40	10,000	40	20	25	40	10,000

Note: Grey entries are those where measurements were not published by the EPA for that monitoring station

4.3.2 Potential Impact of the Installation

An assessment of the potential air quality impacts resulting from the Installation was conducted. The modelling of air emissions was carried out to assess concentrations of various pollutants at locations beyond the Installation site boundary. The modelling assessment includes 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') by evaluating a set of air quality parameters.

The air dispersion modelling has been carried out using the United States Environmental Protection Agency's (USEPA) regulated model AERMOD (USEPA, 2021). The AERMOD model has USEPA regulatory status and is one of the advanced models recommended within the air modelling guidance document '*Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)*' published by the EPA in Ireland (EPA, 2020).

HVO, where supply is available, will be the preferred source of fuel for the operation of the emergency generators at the Installation. Where insufficient quantities of HVO are available, a blend of diesel and HVO will be supplied to the generators, and in the absence of HVO, diesel will be supplied to the generators. Where a blend of HVO and diesel is supplied to the generators, the ratio of HVO : diesel supplied will vary with the availability of HVO.

For the purposes of this assessment, a "worst-case scenario" that only diesel is used to power emergency generators is assumed.

Installation Operations Assessment

The Installation Operations Assessment modelled emissions of nitrogen deposition, NO_x, CO, NO_2, SO_2, $PM_{2.5}$ and PM_{10} from the 14 no. critical and 1 no. house emergency generators at the Installation using EPA methodology:

- The continuous operation of the 14 no. critical and 1 no. house emergency generators at 100% load on the Installation site for 250 hours per year at factored rates;

- Load bank testing at 100% load for each of 14 no. critical and 1 no. house emergency generators for a maximum of one hour each, one generator at a time, sequentially four times per year;
- Scheduled weekly testing of all 14 no. critical and 1 no. house emergency generators at 25% load for 30 minutes each, one generator at a time, sequentially.

Cumulative Operations Assessment

The Installation is situated in, and forms a part of, the KIC Masterplan site, which was granted permission by KCC (Planning Ref. 23/60047). The Environmental Impact Assessment Report (EIAR) prepared for the KIC Masterplan site planning application identifies several key proposed operations at the KIC Masterplan site which will have a potential impact on air quality during operation. The proposed operations are:

- 4 no. data centre buildings (including the Installation) consisting of a total of 80 no. critical emergency generators of which 2 no. of the generators in each building are 'catcher' generators to provide redundancy to the remaining generators (i.e. 72 of the 80 no. generators will operate in the event of a grid emergency); and the
- energy centre consisting of 9 no. Combustion Turbine Generators (CTGs), of which 1 no. CTG is a back-up to provide redundancy to the remaining CTGs.

The Cumulative Operations Assessment considers the impact of the operation of the Installation and the cumulative impact of the operation of the Installation in addition to the operation of the other 3 no. data centre facilities and the energy centre proposed on the KIC Masterplan site. The Cumulative Operations Assessment modelled NO_2 emissions at the KIC Masterplan site using EPA methodology:

- The continuous operation of the CTGs associated with the energy centre (although in reality they will not operate more than 330 days per year) in addition to the operation of 72 no. of 80 no. critical emergency generators (no more than 72 will be in operation at any one time) for 250 hours per year at factored rates at 100% load;
- Load bank testing at 100% load for each of the critical emergency generators for a maximum of one hour each, one generator at a time, sequentially four times per year; and
- Scheduled weekly testing of all 80 no. critical emergency generators at 25% load for 30 minutes each, one generator at a time, sequentially.

Results from the Installation and Cumulative Operations Assessments outline that emissions to atmosphere of NO_x, NO_2, CO, SO_2, $PM_{2.5}$ and PM_{10} 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 expected.

Moreover, a cumulative modelling assessment of potential air quality impacts was undertaken to consider other EPA Installations in the vicinity, in accordance with EPA guidance AG4. As no sites are situated within the impact area of the Installation, no further assessment is required.

Additionally, the nearest European site is the Rye Water Valley/Carton SAC (site code 001398), located 1.6km north of the Installation. Negligible concentrations of nitrogen oxides and nitrogen deposition levels resulting from the Installation are expected at this SAC and other European sites within the zone of influence.

Further information regarding the results from this assessment are presented in Attachment 7-1-3-2 Air Emissions Impact Assessment Report RFI Revision.

4.4 Noise

4.4.1 Baseline Environment

A baseline environmental noise survey was undertaken as part of the EIAR for the KIC Masterplan site planning application.

The baseline survey considered the following criteria, according to the EPA NG4 Guidance, to assess the baseline noise environment at the KIC Masterplan site, which includes the Installation site:

- Daytime (07:00 to 19:00): 55 dB $L_{Ar\ (15\ mins)}$
- Evening (19:00 to 23:00): 50 dB $L_{Ar\ (15\ mins)}$
- Night time (23:00 to 07:00): 45 dB $L_{Ar\ (15\ mins)}$

Noise levels were measured at four NSRs (NSR1, NSR2, NSR3 and NSR4). Existing noise levels at all NSRs are below the day, evening and night-time noise criteria.

4.4.2 Potential Impact

An assessment of the potential noise impact of the Installation was conducted in accordance with guidance contained in the EPA publication *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016* and ISO 1996-2:2017 *Acoustics - Description, Measurement and Assessment of Environmental Noise -Determination of Sound Pressure Levels*.

The primary sources of outward noise in the operational context are deemed long term and will involve fixed plant at the Installation during normal and emergency site operations.

Three scenarios were modelled as part of the Noise Impact Assessment Report (Attachment 7-1-3-2), which include the normal day-to-day operations, testing operations and emergency operations.

In summary, the predicted increases in noise emissions as a result of the operation of the Installation are in compliance with EPA limits at the nearest sensitive receptors. The cumulative impact of the Installation and KIC Masterplan sites were considered to be not significant to moderate, negative and short term, with the implementation of appropriate mitigation measures.

Further information regarding the results from this assessment are presented in Attachment 7-1-3-2 Noise Emissions Impact Assessment Report RFI Revision.

5. Planning and Environmental Assessment

5.1 Planning Permission

Under the Planning and Development Act 2000, as amended, the Davy Platform ICAV on behalf of Liffey Sub Fund, sought planning permission from KCC for the development of the KIC Masterplan site at Barnhall Road, County Kildare (KCC Planning. Ref 23/60047). The construction of 4 no. data centres, 2 no. deep tech buildings and 1 no. energy centre building is proposed as part of the KIC Masterplan site. This IE licence application relates to the operation of one of these data centres (termed 'Data Centre Building B1'), granted under the KIC Masterplan site development, and operated by ADSIL. The Installation site will be located within the northwest corner of the KIC Masterplan site.

Full details of planning applications relating to the KIC Masterplan site, which includes the Installation site, and stakeholder engagement are included under Section 6 of this IE licence application. Further information on planning is included in Attachment 6-3-1 Planning Evidence Report and 6-3-1 Planning Evidence Table.

5.2 Environmental Impact Assessment and Appropriate Assessment

Ireland's list of Project for which an Environmental Impact Assessment (EIA) is required are set out Part 1 and Part 2 of Schedule 5 of the Planning and Development Regulations 2001-2018. This list was developed from Annex I and Annex II of the EIA Directive. The proposed activity at the KIC Masterplan site, which includes the Installation site, is not directly listed under Annex I of the EIA Directive, or Part 1, Schedule 5, or Part 2, Schedule 5.

The most relevant development class in the context of the KIC Masterplan site under Part 2, Schedule 5 is Class 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 the parts of a built-up area and ***20 hectares elsewhere."***

The KIC Masterplan site is not within a business district or a built-up area and has a total site area of c. 73.95 hectares. As such, the KIC Masterplan site exceeds the limit, quantity or threshold set out in Part 2, Schedule 5, Class 10 (b) iv. Therefore, an Environmental Impact Assessment Report (EIAR) for the KIC Masterplan site was required and submitted as part of the planning application for KIC Masterplan site Development.

An EIAR relating to this activity was prepared by Tom Phillips + Associates (July 2023) as part of the planning application for the KIC Masterplan site. This EIAR for the KIC Masterplan site was previously submitted to KCC (KCC Planning Ref. 23/60047) and is included with this IE Licence application (Attachment-6-3-6-EIAR-Planning-July-2023-(Volumes 1 & 3), Attachment-6-3-6-EIAR-Planning-July-2023-(Volume 2 part 1), Attachment-6-3-6-EIAR-Planning-July-2023-(Volume 2 part 2), Attachment-6-3-6-EIAR-Planning-July-2023-(Volume 2 part 3), Attachment-6-3-6-EIAR-Planning-July-2023-(Volume 2 part 4), and Attachment-6-3-6-EIAR-Planning-July-2023-(Volume 2 part 5)).

The Installation will be operated in accordance with KCC Planning Ref. 23/60047, therefore the EIAR (Attachment-6-3-6-EIAR-Planning- July-2023) is relevant to this IE Licence application activity.

An Appropriate Assessment Screening Report was submitted as part of the planning application for the KIC Masterplan site (KCC Planning Ref. 23/60047) and as part of this IE Licence application (see Attachment 6-2-1 AA Screening July 2023).

The AA Screening was revised to account for EPA Instruction note: "*Licence Application Instruction Note 2 (IN2) (DRAFT) Assessing the Impact of Ammonia Emissions to Air and Nitrogen Deposition from EPA licensable activities on European Sites, 2024*" and has been submitted as part of the RFI Response to this IE Licence application.

The conclusion of the revised AA Screening aligns with those of the original screening and this report. The revised AA Screening reaffirms that "*it can be objectively concluded, based on the best scientific knowledge available, no significant effects whether arising from the project itself or in combination with any other plan or project, are likely to occur to the Natura 2000 sites: South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC, North Dublin Bay SAC and North Bull Island SPA or any other European site in the wider hinterland. This conclusion is reached in light of the special conservation and qualifying interests of the sites in question and in view of the site's conservation objectives.*"

6. Derogation Under Section 86A(6)

Derogation under Section 86A(6) is not being sought as part of this application.

7. Emissions and Abatement Treatment Systems

This section describes the emissions from the operation of the Installation and summarises any monitoring controls that will be in place at the Installation. There is no selective catalytic reduction (SCR) abatement or treatment systems proposed or required for the emergency generators. There are no planned direct emissions to ground, ground water or surface water from the Installation therefore this has not been described.

8. Best Available Techniques and Commission Implementing Decision

Section 86A(3) of the EPA Act 1992 as amended, requires that the Agency shall apply Best Available Techniques (BAT) conclusions as a reference for attaching one or more conditions to an IE Licence. The installation has principally been assessed against the BAT conclusions contained in Table 4.

Table 4: List of applicable BREF documents relating to the proposed activities

Horizontal BREF	Publication date	Attachment
Reference Document on the Best Available Techniques for Energy Efficiency	2009	Attachment 4-7-2 BREF Energy Efficiency
Reference Document on the Best Available Techniques for Emissions from Storage	2006	Attachment 4-7-1 BREF Emissions from Storage
Reference Document on the Best Available Techniques for Industrial Cooling Systems	2001	Attachment 4-7-3 BREF Industrial Cooling Systems
Reference Document on the Best Available Techniques for Large Combustion Plants	2021	Attachment 4-7-4 BREF Large Combustion Plants

The Installation will comply with all applicable BAT Conclusion requirements specified in the Commission Implementing Decisions (CID) and will be in line with the guidance specified in the other relevant BAT Reference (BREF) Documents and relevant national BAT notes.

8.1 Air Emissions

8.1.1 Emissions Overview

Main Air Emissions

No main air emissions are proposed as part of the Installation.

Minor Emissions

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.

The potential for environmental impacts due to emissions from these minor emission points are set out in Section 7, Attachment-7-1-3-2-Air Emissions Impact Assessment Report of this IE Licence application. Refer to Attachment 7-4-2 Emissions to Air – Minor and Potential for further details on minor emissions.

Potential Air 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 18.6m above ground level;
- 1 no. house emergency generator stacks with a height of 18.6m above ground level; and
- 2 no. diesel-powered fire sprinkler pumps.

Refer to Attachment 7-4-2 Emissions to Air – Minor and Potential RFI Revision for further details on potential emissions.

Fugitive Air 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.

External pipelines containing fuel will have flange guards to prevent fugitive emissions.

There are no such emissions anticipated from the Installation.

8.1.2 Control and Monitoring

The emissions from the emergency generators have been considered against the Medium Combustion Plant (MCP) Regulations (S.I. No. 595 of 2017), which transposes the Medium Combustion Plant Directive ((EU) 2015/2193).

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

No controls for emissions to air are proposed.

Minor and potential emissions arising from the Installation will be monitored in compliance with this IE licence, once granted.

8.2 Sewer Emissions (Wastewater 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 (domestic) effluent and cooling water discharge from the Installation will be collected in separate streams throughout the Installation site. The main foul 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 (IF1). The 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 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).

Fuel Unloading Bay
The fuel unloading bay at the Installation will be surrounded by ACO drainage channels which will capture any spills via a Class 1 full retention interceptor and ultimately discharge to the Installation's main foul (domestic) 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 exceeds 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.

8.2.1 Control and Monitoring

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.

Emissions to sewer will be treated offsite at the Leixlip Wastewater Treatment Plant (WWTP).

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

Cooling water discharge from the Installation will be monitored via 2 no. monitoring kiosk 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.

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.

8.3 Stormwater Discharges

Stormwater discharges consist of stormwater runoff from building roofs, yards and the road network, but do not include residual evaporative cooling water (mains water that has passed through the cooling / AHU equipment).

The stormwater drainage network will be designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS)[3] and Greater Dublin Regional Code of Practice[4].

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. Class 1 bypass interceptors with alarms through 2 no. discharge points situated at the IE Licence site boundary (SW1 and SW2) to the KIC Masterplan site's 1 no. attenuation pond (2,132 m^3) to the east and 1 no. attenuation pond (1,836 m^3) 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

[3] https://www.sdcc.ie/en/download-it/publications/gdsds-new-development.pdf

[4] https://www.sdcc.ie/en/download-it/guidelines/greater-dublin-regional-code-of-practice-for-drainage.pdf

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 and monitoring regime.

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 stormwater 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.

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.

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

8.3.1 Control and Monitoring

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

The stormwater network will convey stormwater via monitoring stations and Class 1 hydrocarbon interceptors with alarms upstream of the 2 no. discharge points SW1 and SW2 situated at the Installation site boundary. Additionally, the stormwater network will convey inbound stormwater from the Landowner's stormwater network through a monitoring station at 1 no. inbound stormwater monitoring point (ISW1) situated at the Installation site boundary.

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

The proposed stormwater monitoring regime will include the following parameters: visual (daily inspection), pH (weekly inspection), TOC (weekly inspection), temperature (weekly inspection), conductivity (weekly inspection) and any other parameter as may be required by the Agency. This regime will monitor the quality of inbound stormwater prior to entering the Installation stormwater network at monitoring point ISW1-1 and outbound stormwater prior to discharging to the KIC Masterplan site stormwater network at monitoring points SW1-1 and SW2-1.

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 limited storage of bulk chemicals on site, and the robust control measures outlined above, it is considered that not further monitoring or control methods will be required for stormwater.

8.4 Ground Emissions

There are no emissions to ground proposed from the Installation.

8.5 Noise Emissions

During operation, the primary source of noise expected to arise from the Installation will be from:

- the 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).

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 by Arup and included in Attachment 7-1-3-2 Noise Emissions Impact Assessment RFI Revision.

8.5.1 Control and Monitoring

Plant items will be selected 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, once granted, 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.

See Attachment 7-1-3-2 Noise Emissions Impact Assessment RFI Revision for further details on noise emissions.

9. Management of Raw Materials, Intermediates and Wastes

There will be minimal solid and liquid waste produced at the Installation. The waste will comprise mainly domestic wastes, kitchen wastes, packaging wastes, non-hazardous waste electrical and electronic equipment (WEEE), E-Waste, filters, waste oils and spent batteries.

The only chemicals stored on site in bulk will be HVO, diesel or a blend of HVO and diesel depending on the availability of supply of HVO. There will be no other raw materials held onsite in notable quantities other than domestic cleaning chemicals for cleaning of the staff facilities. These will be managed by the cleaning company to be employed on site. All oils, adhesives or other materials required will be brought onsite and removed from the Installation site by the relevant contractors.

Refrigerant will be held within the Variable Refrigerant Flow (VRF) system for the offices. R32 refrigerants will be held within this system on a continuous basis and would only be removed during decommissioning. No refrigerants will be stored onsite outside of this system.

The majority of the wastes generated will be non-hazardous. Appropriate segregation and management of waste operators will ensure no significant impacts on downstream facilities.

The small amounts of hazardous waste generated will be stored in a designated, hardstanding storage area situated within the fuel unloading area. A small, covered bund container will be in place to contain any liquid waste that requires storage, where required. The waste will be collected from these areas by an authorised waste contractor for recovery and / or disposal off-site.

Additionally, the small amounts of waste electrical and electronic equipment (WEEE) generated will be stored in a designated, hardstanding area situated in the building within the logistics/storage area. A small, covered bund container will be in place to store WEEE waste. The waste will be collected from these areas by an authorised waste contractor for recovery and / or disposal off-site.

Details of the estimated waste volumes, types, disposal/recovery techniques are provided in Section 8 of this IE Licence application. Additionally, a list of all raw materials that will be used on the Installation site is provided in Attachment 4-6-2 Raw Materials.

9.1 Energy Efficiency and Resource Use

The operation of the Installation will involve the consumption of electricity, fuel, and mains water. Attachment 4-6-1 specifies the maximum annual water and energy consumption permitted under the IE Licence at the Installation when operating under a worst-case scenario. It should be noted that the actual water and energy consumption of the Installation under normal operating conditions are likely to be significantly lower.

The estimated maximum quantities of fuel that will be consumed by the Installation during operation are shown below in Table 5 below.

Table 5: Summary of the Estimated Maximum Fuel Use by the Generators at the Installation

Activity	Estimated Maximum Quantity per Annum of Fuel Consumed [Note 1]	
	Diesel (Tonnes)[Note 2]	HVO (Tonnes)[Note 2]
Maximum emergency operation	2,311	2,274
Testing and maintenance	97.08	95.5
Total	**2,409**	**2,369**

Note 1: HVO, where supply is available, will be the preferred source of fuel for the operation of the emergency generators at the Installation. Where insufficient quantities of HVO are available, a blend of diesel and HVO will be supplied to the generators, and in the absence of HVO, diesel will be supplied to the generators. Where a blend of HVO and diesel are supplied to the generators, the ratio of HVO : diesel in the fuel tanks will vary with the availability of HVO.

Note 2: The fuel (maximum use) figures are conservative and based on 1 no. house and 14 no. critical emergency generators running at 100% load for a total of 250 hours per generator per year, in addition to testing and maintenance of all 15 emergency generators.

The Applicant will employ a variety of technologies to maximise the efficient use of energy within the Installation. The Installation will be operated in accordance with an Energy Efficiency Management System (ENEMS) as well as the requirements of BAT.

The application of BAT 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 ENEMS.

9.2 REDIII Directive Compliance

HVO for the Installation site will be sourced from suppliers that can provide Proof of Sustainability (PoS) under the Renewable Energy Directive (RED) Voluntary Scheme system. Presently, the Installation utilises Certa as a supplier of HVO Fuel. Certa's current supplies of HVO is derived from used cooking oil (UCO). Other waste-based feedstocks such as POME and tallow are also utilised in the production of HVO provided that they meet the definition of waste or residue under the REDIII Directive.

Ireland does not have its own national RED certification scheme so compliance will be demonstrated through a European Commission approved scheme or the national scheme of another Member State.

While the Installation aims to use HVO whenever possible, it cannot commit to using it exclusively due to potential challenges with supply. It is likely that during the operational lifetime HVO and diesel fuel will both be used as they will be blended in the fuel storage tanks.

9.3 Waste Framework Directive Compliance

HVO used at the Installation site will be imported. The imported HVO fuel is a product, and not a waste, and its use as fuel does not fall within the scope of the Waste Framework Directive.

There is currently no significant commercial HVO fuel production in Ireland. A substantial proportion of imported HVO fuel is produced in the Netherlands, with additional sources including the USA, Sweden, Belgium, China, and Italy. The fuel is produced outside Ireland and imported into Ireland as a finished product.

HVO at the site will be sourced from reputable suppliers to ensure it meets the high-quality standards. HVO is a manufactured product designed specifically for fuel use and is not a waste material. HVO fuel complies with EN 15940 standards (paraffinic diesel fuel).

10. Prevention of Accidents

Based on the information available for products used on site and corresponding usage and storage volumes, the EC (Control of Major Accidents Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) do not apply to the Installation site.

Regardless of the potential for major accident hazards, the operation of any activity involves a certain amount of risk to the environment and human health. Preventative / Control measures will be implemented to reduce the likelihood of accidents and mitigate the effects of the consequences of an accident at the Installation.

11. Management and Process Control Systems

11.1 Environmental Management System

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.

11.1.1 Building Management System (BMS) and Electrical Power Monitoring System (EPMS)

The Installation will operate a BMS and an Electrical Power Monitoring System (EPMS) for control and monitoring, data collection and alarm/reporting of the air handling systems and mechanical utility systems site wide. Specifically, this will include the cooling systems, electrical supply, emergency generators, water supply, fire alarms, fire detection and suppression systems and fuel use.

The BMS/EPMS will ensure the Installation is running an optimal efficiency and will alert the operators in the event of a malfunction through the use of visual and auditable alarms. This will include malfunctions of the bulk fuel storage tank level indications, of the Class 1 hydrocarbon interceptors, and any fuel storage tank leaks.

11.2 Emergency Response Plan

An on-site Emergency Response Plan (ERP) will be developed for the Installation and will be updated to incorporate any requirements of the IE Licence, once issued.

11.3 Standard Operating Procedures

SOPs have been developed for the Installation and these will be continuously updated in conjunction with the EMS. These address all the relevant environmental matters onsite including, but not limited to:

- Spill prevention and response procedures;
- Pollution management and prevention;
- Waste management;
- Fuel delivery; and
- Emergency electricity supply and changeover procedures.

Refer to Attachment 4-8-1 Operational Report for further details of onsite SOPs and to Appendix A of Attachment 4-8-1 Operational Report for the fuel delivery and refuelling process SOPs for the Installation site.

11.4 Preventative Maintenance

Preventative Maintenance (PM) will be undertaken on mechanical moving parts equipment and electrical equipment including pumps, AHUs, humidifiers, generators, power transformers, etc. This maintenance will include all the regular and systematic tasks that ADSIL will carry out to ensure that the equipment is in an acceptable working condition, delivering required performance and expected durability.

11.5 Waste Management

Waste management Standard Operating Procedures (SOPs) will be in place for the operation of the Installation. This will ensure the proper management and recycling of wastes generated at the Installation. The waste SOPs will enable the Installation to contribute to the targets and policies outlined in the National Waste Management Plan for a Circular Economy 2024 - 2030[5].

11.6 Energy Management

Energy management forms an integral part of the Installation's management. Measures will be in place to minimise energy use as far as possible. ADSIL is committed to continually improving their energy efficiency and reducing their carbon footprint.

A BMS and an EPMS will be in place to track the operation of critical sub-units and report back on energy efficiency of each section.

11.7 Fire Management

A system will be provided for detection, alarm and fire suppression to enhance life safety and protection of property by the detection of fire, enabling an audio/visual alarm to be given such that emergency actions may be taken fully compliant with Irish and EU regulations and in accordance with the insurers' requirements.

The Installation will be equipped with automated fire detection systems (heat and smoke). The fire detection and alarm systems will be subject to routine checks by site personnel and will be inspected and tested by the external service provider on a regular basis.

11.8 Site Closure

Upon cessation of operations and subsequent decommissioning of the Installation, it is anticipated that there will be no remaining environmental liabilities, i.e. clean closure is expected. Environmental monitoring will be conducted upon agreement and request of the Agency. Once operations cease and the Installation site is decommissioned, there will be no significant emissions to atmosphere at the Installation and monitoring of emissions will not be required.

A site Closure Plan is described in Attachment 9-2 Site Closure Plan of this IE Licence Application.

12. Alternatives

A number of alternatives for the Installation have been considered during the design processes undertaken as part of the KIC Masterplan site development. These are outlined in the EIAR submitted as part of the KIC Masterplan site planning application (KCC Planning Ref. 23/60047) prepared by Tom Philips + Associates dated July 2023 (refer to Attachment-6-3-6-EIAR-Planning-July-2023 of this IE Licence application).

[5] National Waste Management Plan for a Circular Economy 2024 – 2030 National Waste Management Plan for a Circular Economy 2024-2030 - My Waste

Alternatives considered as part of the EIAR include the “do nothing” alternative, alternative site location, alternative site layout and land use, alternative design, alternative processes and alternative mitigation measures. Refer to Attachment 4-8-1 Operational Report for further details on each alternative as they relate to the KIC Masterplan site in which the Installation site sits.

The proposed KIC Masterplan site, which includes the Installation site, was considered the preferred option in terms of sustainable development and reduced environmental impact from a noise, air and visual perspective.

In terms of technology, the Installation will employ similar data server technology that is used by ADSIL at their other data storage facilities, in the greater Dublin area and around the world, and represents state of the art technology.

Alternative technologies are considered on an ongoing basis by ADSIL as a part of each of its designs based on many factors including technical feasibility, environmental impact, efficiency, security, reliability and cost.

13. Conclusion

This Non-Technical Summary (NTS) includes a brief overview of the IE licence application, detailing each of the sections contained within the application that are relevant and applicable to the Installation site.

It should be noted that in order to obtain comprehensive, detailed description of the Installation and the activities that will be carried out at the Installation site, the full application should be reviewed.