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Runways Information Services Limited

Operational Report

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Licence Application
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1.0 SITE OVERVIEW

This Operational Report relates to the Runways Information Services Limited ("RISL" or 'the applicant') Data Center located in the townlands of Gunnocks, Portan, Loughsallagh and Clonee, County Meath. The location of the subject site is shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-0001 included with this application, this application relates to the entire Installation, that covers c. 133.06 hectares (ha) in total (hereafter referred to as the 'Site').

The Data Center site, main buildings, and site infrastructure is shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-0002 and 21_123A-CSE-00-XX-DR-C-0003 included with the application (hereafter referred to as the 'Installation'). The Installation consists of five main Data Center Buildings (named CLN1, CLN2, CLN3, CLN5, and CLN6), that include roof-level mechanical plant, ground-level generator yard, as well as associated office and administration buildings, security and utility spaces, on site attenuation, internal roads.

The Installation is primarily supplied electricity from the national grid. The Installation includes a total of 90 no. 8.26 MW_{th} containerised emergency back-up generators (diesel-powered) that are located in the external generator yard adjoining each of the Data Center buildings. These generators provide the necessary power to ensure the data halls maintain operation in the event of a failure of electricity supply from the national grid. It is considered that these generators will be rarely used as they are for emergency back-up electricity supply to power the Data Centre only in an emergency event where the supply of electricity to equipment on the site was interrupted, is unstable, or is at high risk of interruption or becoming unstable.

The relevant requirement for an Industrial Emissions (IE) Licence is Activity Class 2.1 of the First Schedule of the Environmental Protection Agency EPA Act 1992 (as amended) (EPA Act 1992). Activity Class 2.1 states:

> *Combustion of fuels in installations with a total rated thermal input of 50 MW or more*

The combined thermal input (total capacity) from the emergency back-up generators is 743.4 MW_{th}, this exceeds the 50MW_{th} threshold of Class 2.1 First Schedule of the EPA Act 1992. The applicant is applying to the Environmental Protection Agency (EPA) for an Industrial Emissions (IE) Licence principally relating to the operation of emergency back-up generators under Activity Class 2.1.

The installation is in operation 24 hours a day, 7 days a week. There are approximately 270 personnel employed at the facility; including engineers, operational staff, security staff and administration staff.

2.0 SITE CONTEXT

The Installation is located c. 6 km northwest of the M50, the M3 motorway is located beyond the regional to the south of the Site. The Site, shown on Figure 2.1 below, is within the townlands of Gunnocks, Portan, Loughsallagh and Clonee, within the Meath County Council (MCC) administrative area, located on the MCC boundary with County Fingal Council administrative area. The lands were previously used as agricultural land, with existing dwellings and agricultural structures that were demolished at the time of construction. The nearest residential dwellings are located adjacent to the western boundary of the Site.

The Site is surrounded by a mixture of agricultural land, industrial developments, and rural housing. To the north and west of the Site there is predominantly agricultural land with scattered residential properties present. To the south of the Site is Clonee village. To the east of the Site is Damastown Industrial Park, that includes a number of industrial properties including pharmaceutical, meat processing and technology facilities.

The Site is relatively flat and is bisected by two minor watercourses (the Portan Stream and Pace Stream) which flow across the Site in a west to east direction. The Portan Stream and Pace Stream both flow into the Tolka River.



Figure 2.1 *Site Location (Indicative Red line Boundary)*

2.1.1 Industrial sites in the Surrounding Area

Existing development that may be capable of combining with the Installation to result in cumulative effects are those that have similar emission sources or environmental effects during the operation of these existing developments.

To provide context to this IE application and the impact assessments undertaken for the Site a search using the EPA Maps[1] has been undertaken to identify existing IE licenced, Waste Licenced, or Integrated Pollution Control (IPC) licenced facilities within 3 km of the Site boundary these are listed in Table 2.1 below.

[1] https://gis.epa.ie/EPAMaps/

Table 2.1 *EPA licenced sites within 3 km of the site boundary*

Name	Address	EPA Licence Number	Industry
Astellas Ireland Co., Ltd	Dublin Plant, Damastown Road, Damastown Industrial Estate, Mulhuddart, Dublin 15, Dublin.	P0007-03	Pharmaceutical
Barclay Chemicals Manufacturing Ltd (t/a Barclay Crop Protection)	Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15	P0522-01	Agrochemical manufacturing
Guerbet Ireland ULC	Damastown, Mulhuddart, Dublin 15	P0050-02	Pharmaceutical
Clarochem Ireland Limited	Damastown, Mulhuddart, Dublin 15	P0125-02	Pharmaceutical
Kepak Clonee	Clonee, Meath.	P0167-02	Meat Processing
Rottapharm Limited	Damastown Industrial Park, Damastown Townland, Mulhuddart, Dublin 15, Dublin.	P0886-02	Pharmaceutical
Padraig Thornton Waste Disposal Ltd	Dunboyne Industrial Estate, Dunboyne, Meath	W0206-01	Waste
Swords Laboratories (T/A Bristol-Myers Squibb Cruiserath Biologics)	Cruiserath Road, Mulhuddart, Dublin 15	P0552-03	Pharmaceutical
Mallinckrodt Pharmaceuticals Ireland Limited	College Business and Technology Park, Cruiserath Road, Blanchardstown, Dublin 15, Dublin, D15TX2V	P1060-01	Pharmaceutical
ADSIL Cruiserath	Cruiserath Road, Dublin 15, Dublin, Dublin, D15 A6RX	P1182-01 (Applied)	Energy
Alexion Pharma International Operations Unlimited Company	College Business & Technology Park, Blanchardstown Road North, Blanchardstown, Dublin 15, Dublin	P1030-01	Pharmaceutical
Corduff FlexGen	Land to north of exisiting ESB National Supply Store, Townlands of Goddamendy and Cruiserath, Corduff Road, Dublin 15, Dublin	P1138-01	Energy

To provide context to this IE application and the impact assessments undertaken a similar search has been undertaken within 3 km of the site boundary for existing Control of Major Accident Hazards (COMAH) / Seveso Directive III establishments registered with the Health and Safety Authority[2], the consultation zones for these establishments include part of the Installation site. These sites are listed in Table 2.2 below.

Table 2.2 *Seveso establishments within 3 km of the site boundary*

Name	Address	Seveso Tier	Distance (km) from the Site	Consultation Zone (km)
Astellas Ireland Co., Ltd	Dublin Plant, Damastown Road, Damastown Industrial	Lower	0.4	1.0

[2]https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/comah/list_of_establishments/

	Estate, Mulhuddart, Dublin 15, Dublin.			
Guerbet Ireland ULC (Mallinckrodt)	Damastown, Mulhuddart, Dublin 15	Upper	0.4	1.0
Clarochem Ireland Limited	Damastown, Mulhuddart, Dublin 15	Lower	0.5	1.0
Contract & General Warehousing Ltd	Westpoint Business Park, Navan Rd. Mulhuddart, Dublin 15	Upper	1.2	0.7
Barclay Chemicals Manufacturing Ltd (t/a Barclay Crop Protection)	Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15	Upper	1.3	1.0

3.0 PLANNING STATUS

The Installation buildings CLN1, CLN2, and CLN3 were granted planning permission (MCC Reg Ref.: RA15/0605) by Meath County Council on 23 July 2015 subject to conditions, and subsequently granted by An Bord Pleanala (ABP) on appeal (PL 17.245347) on 22nd October 2015. A separate Strategic Infrastructure Development (SID) permission for the Outdoor Air Insulated Switchgear (AIS) 220 kV (Clonee) Substation which is located within the ownership boundary was granted by ABP on 22nd October 2015 (17/VA0018).

The buildings CLN5, and CLN6 were granted planning permission on (MCC Reg Ref.: RA18/0671) by Meath County Council on 24 September 2018 subject to conditions. A separate SID permission for an additional Outdoor AIS 220 kV (Bracetown) Substation which is located within the ownership boundary was granted by ABP on 15 November 2018 (ABP-301923-18).

In addition to the relevant planning permissions for the main Data Center Buildings and combustion of fuels (that relate to the IE application being made) there have been several subsequent applications seeking alterations or revisions to the parent approved applications (MCC Reg Ref.: RA15/0605 and RA18/0671).

All planning permissions for the Data Center Buildings and combustion of fuels that are relevant to this Licence application under Class 2.1 of the EPA Act 1992 (as amended) have been granted on site. Refer to Section 6 (Attachment-6-1-Stakeholder-Engagement) of this licence application for the Planning Description and Planning Report for each application. These planning permissions are summarised in Table 3.1 below.

Table 3.1 *Summary of Planning Permissions Granted at Installation*

Application Details	Description of Development
Meath County Council Ref: RA/150605 / PL17.245347	. The development will consist of: Construction of a Data Centre campus in two phases within 10 years which consists of the following: In Phase 1: Construction of two Data Centre buildings containing 8 no. data halls with a gross floor area of 50,800 m2 and with a data capacity of 36MW per building (each building is 25,400 m2 and contains 4 no. data halls) together with associated mechanical and electrical spaces and parking. 1 No. single storey ancillary administration/office building

	with gross floor area of 6,424 m2 linking and accessing the Data Centre buildings. Ground-level emergency back-up generators (with internal fuel tanks). New site access and temporary construction access and car parking arrangements (including utilisation of existing farm access) off the Kilbride Road (L5028).
An Bord Pleanala Ref: PL17.VA0018	The proposed development of a 220-kilovolt Outdoor Air Insulated Switchgear (AIS)substation compound (approximately 30,100 square metres) will include: Construction of 2 number 220-kilovolt towers (26.5 metres in height) in line with the existing 220-kilovolt overhead line and installation of lead-in connections between towers and terminal structures within the substation.
Meath County Council Ref: RA/160433	Development will consist of a Minor Amendment to previously approved Data Centre Campus application (ref: RA/150605) comprising two elements: 1. a 16 sq metre illuminated entrance sign to the immediate north of the main Data Centre Kilbride Road entrance; and 2. a 3.5m high Weather Transmitter mounted on the roof of Datahall CLN-1.1, projecting 2m above the building's perimeter screen wall and associated works
Meath County Council Ref: RA/160937	The development will consist of the minor alteration to the previously approved road layout as part of Data Centre Campus Reference RA/150605 and ABP Reference PL 17.245347 involving the relocation of a landscaping berm and associated works to provide a new internal two lane access road to a secondary entrance for emergency and incidental service use only at the south east corner of the site. (The above mentioned application is concurrent with a separate planning application to Fingal County Council for a secondary access road for emergency incidential service use only to the previously approved Clonee Date Centre Campus Reference RA/150605 and ABP Reference PL 17.245347, comprising a new entrance and associated works on Damastown Road, 2.4m height perimeter security fencing with associated entrance gate, CCTV and intercom system)
Fingal County Council Ref: FW16A/0127	A secondary access road for emergency and incidental service use only to the previously approved Clonee Data Centre Campus Reference RA/150605 and ABP Reference PL 17.245347, comprising a new entrance and associated works on Damastown Road, 2.4m height Perimeter security fencing with associated entrance gate, CCTV and Intercom system.
Fingal County Council Ref: FW18A/0008	The development will consist of alterations to the previously consented 2.4m high perimeter fence (granted under reg. ref: FW16A/0127); Proposed boundary treatment improvements including: 3.0m high weathered steel corten picket fencing on concrete base wall (Type1); and erection of 3.0 high mesh boundary fencing with matching gates (Types 2 and 3) and associated works.
Meath County Council Ref: RA/180048	The development will consist of alterations comprising the following elements: 1) Alterations to the layout, design, external lighting and siting of the previously consented entrance guardhouse of the Data Centre Campus (granted under reg. ref: RA/150605 and ABP reg. ref: PL17.245347) involving the extension of the guardhouse canopy and adddition of Corten steel to the facade and canopy of the building; 2) Proposed boundary treatment improvements including: 3.0m high weathered steel Corten Picket fencing on a concrete base wall (Type 1); 3.0m high mesh boundary fencing with matching gates (Types 2 and 3) and associated works; 3) CCTV cameras; 4) 3.0m high fence and matching gates along the internal substation access road; 5) 600mm high oak bollards on the edge of road/pathways; and 6) All other associated works.
Meath County Council Ref: RA180671	The proposed development will consist of an expansion of the existing approved Data Centre Campus (Meath County Council ref: RA/150605 / An Bord Pleanala ref: PL 17.245347) comprising the following elements (a) Construction of two single-storey Data Centre buildings with a gross floor area (GFA) of circa 57,400m2; (b) A single storey administration / office building with a GFA of circa 5,710m2 which is

	physically linked to the proposed Data Centre buildings; (c) Site infrastructure to include entrance gates and appropriate signage, a security guardhouse of circa 60m2 and associated canopy; (d) Road works including a new permanent site access, internal roadways, underpass & footpaths, circa 276 no. car parking spaces, bicycle parking facilities, upgrades to a section of the L5028 Kilbride Road together with an emergency access via the L10101 to include resurfacing only a section of the road and additional of circa 1 no. passing bay; (e) General drainage networks and arrangements and a connection to the existing public sewer network; (f) Surface level back-up generators with internal fuel tanks; (g) Hard & soft landscaping incorporating perimeter fencing to include both external and internal circa 3.0 metre high architecturally designed metal fencing and matching gates; (h) Temporary construction access and associated car parking arrangements off the Kilbride Road (L5028); and (i) Associated & ancillary site works.
An Bord Pleanala Ref: .ABP-301172-18	Request to alter previously approved 220kV substation compound and associated loop-in connection to the existing Corduff-Woodland No. 1 220kV overhead line, Clonee, Co. Meath (planning application reference number 17.VA0018). The proposed amendments relate to Outdoor Air Insulated Switchgear (AIS) equipment, Outdoor AIS equipment and associated site works.
An Bord Pleanala ABP 301923-18	Proposed Development: Construction of a new 220kV Outdoor Air Insulated Switchgear (AIS) substation compound and associated underground 220kV cables to facilitate a new Data Centre campusTwo 220kV underground cables (approximate length of 2.5 kilometres) which will connect the proposed substation to a previously consented substation under case register reference number PL 17.VA0018 at the existing adjacent Data Centre campus.
Fingal County Council Ref: FW19A/0003	1. Addition of an automatic vehicle barrier; 2. Relocation of steel sliding gate and associated vehicle barrier; 3. erection of circa 3.0m high black paladin fence; 4. Erection of CCTV cameras; and 5. Associated and ancillary works.

3.1.1 Project Threshold and Planning

Ireland's list of Projects for which an EIA is required are set out in Part 1 and Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended. This list was developed from Annex I and Annex II of the EIA Directive. The proposed activity is not directly listed under Annex I of the EIA Directive, or Part 1, Schedule 5, or Part 2, Schedule 5.

It is considered that most relevant development class in the context of the proposed Project under Part 2, Schedule 5 is Class 10(b)(iv):

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

The Installation is 'urban development…elsewhere' in which the threshold is based on an area of 20 ha. The total site area is c. 133.06 hectares, therefore exceeds the limit, quantity or threshold set out in Part 2, Schedule 5 is Class 10(b)(iv).

The Environmental Impact Statement (EIS) relating to Buildings CLN1, CLN2, and CLN3, was prepared by AECOM et. al. dated June 2015 and was previously submitted to MCC with Reg. Ref.: RA150605 (Attachment-6-3-6-EIAR-Planning-Oct-2015 of the IE Licence application).

The Environmental Impact Assessment Report (EIAR) relating to Buildings CLN5, and CLN6, was prepared by AECOM et. al. dated June 2018 and was previously submitted to MCC with Reg. Ref.: RA180671 (Attachment-6-3-6-EIAR-Planning-Sep-2018 of the IE Licence application).

4.0 DESCRIPTION OF ACTIVITY

4.1 SITE OVERVIEW

The Installation consists of five main Data Center buildings (CLN1, CLN2, CLN3, CLN5, CLN6) with roof-level mechanical plant, ground-level generator yard, water treatment rooms, associated office, security and utility spaces.

The Data Center buildings CLN1 and CLN2, as well as the Data Center buildings CLN5 and CLN6 are connected by a centralised single-story administration building. The buildings CLN1, CLN2, and CLN3 are separated from buildings CLN5, CLN6 by Portan Road (L5028).

Each of the 5 no. Data Center buildings contain data halls which house computer servers hosting user data, and data management facilities operated for the purpose of storing, managing, and distributing electronic data. Each Data Center building also includes supporting mechanical and electrical rooms, and redundancy systems for emergency operation. Office functions within the administration building include maintenance, planning, and operation activities and include office and amenity spaces for part- and full-time employees.

Each of the 5 no. Data Center buildings include a generator yard external to the main building; each generator yard comprises 18 no. 8.26 MW_{th} emergency back-up generators, with associated diesel fuel belly tanks. The Installation includes a total of 90 no. 8.26 MW_{th} emergency back-up generators. The 36 no. 8.26 MW_{th} emergency back-up generators at CLN5 and CLN6 include Selective Catalytic Reduction (SCR) abatement systems.

The overall roads infrastructure includes two main entrances (located on Portan Road) and two emergency entrances (located on Damastown Drive, and Old Navan Road), the Site includes all internal roads, car parking, entrance security guardhouse, hard and soft landscaping and perimeter security fencing. The Site security is based at a security hut at each of the two site main entrances.

The Site includes underground foul wastewater, process wastewater, and storm water drainage network, on site attenuation basins, underground attenuation tanks, as wells as the underground water supply network.

The operation of the Data Centre IT equipment at buildings CLN1, CLN 2, CLN3, CLN 5 and CLN6 and associated ancillary equipment produces heat which is managed by use of roof mounted cooling equipment. There is process water demand (for cooling water) on the Irish Water mains that is required to supply the cooling units with water, this mains water undergoes additional treatment on Site in the water treatment rooms located in each building.

The overall site includes the Bracetown 220 kV Substation (owned and operated by ESB/EirGrid); 1 no. transformer compound located at the Bracetown Substation with associated control room (owned and operated by RISL); and the Clonee 220 kV Substation (owned and operated by ESB/EirGrid); and 1 no. transformer compound

located at the Clonee Substation with associated control room (owned and operated by RISL).

4.2 PRIMARY AND SECONDARY PROCESSES/ACTIVITIES

4.2.1 Emergency Back-up Generators

The Installation is supported by containerised emergency back-up generators that are located in an external generator yard adjoining each of the Data Center buildings. These generators provide the necessary power to ensure the data halls maintain operation in the event of a failure of electricity supply. It is considered that these generators will be rarely used as they are for emergency electrical supply to power the Data Centre only in an emergency event where the supply of electricity to equipment on the site was interrupted, is unstable, or is at high risk of interruption or becoming unstable.

The overall campus includes 90 no. 8.26 MW_{th} emergency (diesel-powered) generators all of which are individually situated within acoustic containers.

- Building CLN1: 18 no. 8.26 MW_{th} emergency back-up generators;
- Building CLN2: 18 no. 8.26 MW_{th} emergency back-up generators;
- Building CLN3: 18 no. 8.26 MW_{th} emergency back-up generators;
- Building CLN5: 18 no. 8.26 MW_{th} emergency back-up generators including Selective Catalytic Reduction (SCR) Abatement Systems; and
- Building CLN6: 18 no. 8.26 MW_{th} emergency back-up generators including SCR Abatement Systems.

The emergency back-up generators are powered with diesel fuel, diesel is stored locally within a belly tank located in the base of each generator. Each individual belly tank is a double-skinned tank, the containerised housing includes bunding and leak detection systems within the generator housing. The belly tanks are equipped with monitoring and alarm systems, with internal level gauge sensor (high-high, high, low, and low-low) these are connected to an onboard controller which will alarm (audible) to prevent overfilling or a sudden loss of fuel within the tank.

There is no bulk tank farm or separate storage of diesel on site, and no diesel pipelines, other than what is required to transfer from the belly tank to the generator engine placed above each belly tank. Diesel storage and delivery is set out further in Section 6 of this report.

The emergency back-up generator stacks at CLN5 and CLN6 are equipped with a Nitrogen Oxides (NOx) Abatement system, Selective Catalytic Reduction (SCR). The SCR abatement works by injecting a reagent (Urea/Ad-Blue) into engine exhaust gas stream, causing a reaction with the NOx, significantly reducing NOx emissions and producing nitrogen and water vapor.

4.2.2 Data Center Building(s)

The Data Center is a centralised computer server, information storage and management facility designed and operated for the purpose of storing, managing, distributing content when requested, and allows quick and efficient communication.

The campus provides the servers needed to store the data, deliver this content when requested, and allow quick and efficient communication. As the applicant's business

grows, so too does the volume of data stored on-line or via the “the cloud” and this Data Center will meet the present and future storage needs of applicant whose function is to safely store electronic information in support of users.

Data Center facilities can in many cases be more efficient than the in-house office servers they replace. This comes from maximising server utilisation, using high-efficiency facilities and making power usage efficiency a priority. The Data Centre buildings themselves consist of numerous data halls, secure areas that contain the IT equipment. The data halls require a consistent temperature and constant electricity in order to operate.

4.2.3 Data Centre Cooling Systems

The operation of the Data Centre IT Equipment at buildings CLN1, CLN 2, CLN3, CLN 5 and CLN6 and associated ancillary equipment produces heat which is managed by use of the roof mounted cooling plant.

The cooling system for the Data Centre IT Equipment at buildings CLN1, CLN2, and CLN3 consists of roof mounted Indirect Air Cooling (IAC) units located on the roof of each Data Centre building. Indirect Air Cooling units (IAC) uses the local ambient (colder) air to cool the servers inside the Data Centre buildings. The IAC unit operates in two different modes dry cooling and wet cooling mode (adiabatic mode).

The cooling system for the Data Centre IT Equipment at buildings CLN 5 and CLN6 is a highly efficient new technology referred to as Statepoint Liquid Cooling (SPLC) that will reduce the amount of process water demand, in comparison to conventional technologies, to achieve desired cooling. Similar to the IAC cooling units, the SPLC units operates in dry cooling and wet cooling mode. The SPLC system operates in one of three modes to optimize water and power consumption, depending on outside temperature and humidity levels. The SPLC requires less water than other cooling systems, because it uses air to cool water instead of using water to cool air.

There is process water demand on the Irish Water supply main to provide the required water for the IAC / SPLC units wet cooling mode. Potable water from the Irish Water mains supply undergoes additional treatment on site to provide sufficient quality for the cooling and humidification processes. As the use of this process water at the Installation is for cooling, the volume of water used is related to ambient temperature and will fluctuate in order to maintain the Data Centre at optimal temperatures and humidity.

During wet cooling mode operations, water use is optimised through the recirculation of cooling water, with water consumed through evaporation. Once the cooling water reaches a setpoint level of concentration, this is discharged to the wastewater network.

The water use continuously monitored by the Building Management System (BMS). The tracking of water use ensures that the system is operating as designed.

4.2.4 Process Water Treatment and Process Wastewater Discharge

Process Water from the Irish Water supply main undergoes additional treatment on site to provide sufficient quality for the cooling process (as described in Section 4.2.3 above). There are two treatment rooms within each of the Data Centre buildings, accounting for a total of 10 no. water treatment rooms across the Installation. Water treatment is only undertaken for the cooling water in the IAC / SPLC units, the domestic consumptive water use on site is provided direct from the mains supply.

The operation of the IAC / SPLC units produces residual cooling water, a wastewater by-product from the cooling systems. As the supply water undergoes chemical treatment and is a by-product from the cooling system it is classified as a process wastewater (Trade Effluent). The process wastewater is collected in a underground process drainage system, that is separated from the domestic foul wastewater system. These underground networks are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1200, 1201, 1202, and 1203 that are included with the application documentation. The process water combines with the domestic effluent at the foul pumping station(s) prior to discharge into the offsite Irish Water foul sewer.

See Section 4.3 of this Document for further information on the drainage systems and details on the Trade Effluent Discharge License (TEDL).

4.2.5 Electricity Supply and 220 kV Substations

The power requirements for the Installation are to be provided via a direct connection the 2 no. 220 kV Air Insulated Switchgear (AIS) Substation Compounds located in the site named Bracetown 220 kV AIS Substation, and Clonee 220 kV AIS Substation.

The 220 kV AIS Substations are owned and operated by Electricity Supply Board (ESB) and EirGrid respectively. In addition, There are a number of RISL owned transformers connected at each substation and a client control building at each location which are owned and operated by RISL.

4.3 WATER, SEWER, AND STORMWATER DRAINAGE INFRASTRUCTURE

4.3.1 Potable Water Supply

The potable water supply to the Site is sourced from Irish Water mains water supply via a metered connection in accordance with Irish Water requirements and as approved under MCC Reg Ref.: RA15/0605 and MCC Reg Ref.: RA18/0671. The Installation has a demand for general potable supply, for cleaning, drinking and sanitary facilities, cooling water, and firefighting.

The water main is distributed throughout the site following typically the routes of the internal roads. There are storage tanks that will act as break tanks and buffer demand on the public watermain infrastructure. Fire water sprinkler tank are filled from the potable main and stored until required, there will not be a regular water demand for fire-fighting purposes.

The use of process water on site is only for cooling and humification of the IAC / SPLC units, all other domestic consumptive water is direct from the mains supply. The volume of water used is related to ambient temperature and fluctuates accordingly.

The Buildings CLN1, CLN2, CLN3 have an average annual water use of c. 30 l/s with a predicted annual water consumption of approximately 928,000 m^3, with a peak demand of 57 L/s (inclusive of potable water and cooling water).

The CLN5 and CLN6 have an average annual water use of c. 4.4 l/s with a predicted annual water consumption of approximately 137,000 m^3, with a peak demand of 50.5 L/s (inclusive of potable water and cooling water).

4.3.2 Stormwater Drainage Network

Stormwater runoff generated from impermeable surfaces (i.e. hardstanding, car parking, building roofs and internal roads, loading bays and footpaths) is collected, conveyed via a piped gravity system, and attenuated on site before discharging to local drainage ditches, Pace Stream and Portan Stream depending upon their location, as approved under MCC Reg Ref.: RA15/0605 and MCC Reg Ref.: RA18/0671.

The stormwater collection system has sump manholes to minimise solids deposition in pipes and the passing of solids to the attenuation ponds. Drainage of the main car park areas will enter the ground via permeable paving. There are 12 no. attenuation ponds as follows:

- Attenuation Pond No.1A = discharges to emission point SW1
- Attenuation Pond No.2A, No.3A, and No.4A = discharges to emission point SW2
- Attenuation Pond No.5A = discharges to emission point SW3
- Attenuation Pond No.6A = discharges to emission point SW4
- Attenuation Pond No.7A = discharges to emission point SW5
- Attenuation Pond No.1B, No.2B, and No.3B = discharges to emission point SW6
- Attenuation Pond No.4B = discharges to emission point SW7
- Attenuation Pond No.5B = discharges to emission point SW8

An isolation valve is provided on the outlet of the each of the attenuation ponds, this allows for the attenuation ponds to intercept runoff in the event of a fire or major spill event at the site.

For the purposes of this IE application areas of the road network and reinforced grass roads that are collected in filter and carrier drains, and small underground attenuation tanks (< 150 m^3 including outflow controls) that outfall directly to the local watercourses are at comparatively lower risk of contamination (due to there being no storage of chemicals in these areas). The outfalls have not been identified as emission point locations for this IE Licence.

All surface water from the generator yards, loading docks and car parking areas are treated for possible hydrocarbon content prior to the attenuation ponds. The hydrocarbon interceptors at the generator yards drainage systems are class 1 full retention and have been designed to contain the largest volume of oil held in any individual tank within the yard area drained (40,000 litres or 40,050 litres dependant on the location) plus an allowance for a 1 in 25 year rainfall event across the full yard area feeding into the drainage system. In addition, these full retention interceptors are installed with a high oil level float valve which will isolate the drainage outlet from the interceptor, hence containing fuel oil should a major spill occur. These full retention interceptors are equipped with oil level detection and connect to the BMS alarm. There are also shut off / isolation valve from the generator yard drainage to the external surface water drainage system that are used during unloading.

The surface water runoff from the Site is limited to a pre-development greenfield run off rate which are limited by means of a hydrobrake flow control at each discharge point.

The local drainage ditches, Pace Stream and Portan Stream in which the stormwater is directed to ultimately culminates off site in the Tolka River, which outflows to the Dublin Bay 15 km downstream of the Site.

The surface networks and emission points locations are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1100, 1101, and 1102 included with this application.

4.3.3 Domestic and Process Wastewater Drainage Network

Domestic (sanitary) wastewater is collected from staff welfare areas, showers and toilets etc. and is drained to the onsite foul wastewater network, due to the relatively flat topography of the Site a series of pumping stations and rising mains are used to transport wastewater to the terminal pumping station within the Site. All wastewater coming from the canteen area discharges via a non-biological grease trap prior to joining the site wide sanitary drain.

Process wastewater from the Data Center cooling plant equipment is collected in a separate onsite process wastewater network and is combined with the Domestic (sanitary) wastewater at the on-site pumping stations as stated above. A Trade Effluent Discharge Licence (TEDL) has been issued by Irish Water for the process wastewater; a copy of this is included with the application in Section 7; Attachment-7-1-2-Discharge Licence-CLN1-3 and Attachment-7-1-2-Discharge Licence-CLN5-6.

The terminal pumping stations pump the combined domestic and process wastewater to Irish Water wastewater network located on the R147 road, which then discharges into the 9C sewer. The Irish Water sewer network ultimately discharges to Ringsend Wastewater Treatment Plant (WWTP). There are no on-site wastewater treatment systems.

Due to the hydraulic restriction on the 9C sewer, the network does not have capacity to cater for the sanitary and process effluent discharge at times of high flow and therefore, a wastewater buffer tank is provided at each pumping station to store the equivalent peak volume of discharge over a 24 hour period.

The outfall into the offsite mains foul sewer network is at two locations, emission point SE1 and SE2. The domestic wastewater and process wastewater networks and emission points locations are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1200, 1201, 1202, and 1203 included with this application.

CLN1, and CLN2 and CNL3 holds Trade Effluent Discharge License (TEDL) (License number TE-10213-01) issued by Irish Water for the discharge of this water to foul sewer at emission point SE1. CLN5, and CLN6 holds Trade Effluent Discharge License (TEDL) (License number TE-10245-01) issued by Irish Water for the discharge of this water to foul sewer at emission point SE2.

Under the TEDL; SE1 has a maximum allowable outflow of 1,296 m^3/day limited to 15 l/sec, and SE2 has a maximum allowable outflow of 1,348 m^3/day, limited to 15.6 l/sec. The domestic (sanitary) wastewater, and process wastewater network is installed as permitted under MCC Reg Ref.: RA-15/0605 and MCC Reg Ref.: RA-18/0671.

5.0 BEST AVAILABLE TECHNIQUES AND COMMISSION IMPLEMENTING DECISION

Section 86A(3) of the EPA Act 1992 as amended, requires that the Agency shall apply 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 6.1:

Table 5.1 Applicable BAT documents

Horizontal BREF	Publication date	Attachment
Best Available Techniques (BAT) Reference Document for Large Combustion Plants	2017	Attachment-4-7-1-BREF - Large Combustion Plants
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 on Emissions from Storage	2006	Attachment-4-7-3 BAT REF - Emissions from Storage
Reference Document on the application of Best Available Techniques to Industrial Cooling Systems	2001	Attachment-4-7-4 BAT REF - Industrial Cooling Systems

The assessment within these submitted attachments has demonstrated that the Installation will comply with all applicable BAT Conclusion requirements specified in the Commission implementing Decision EU 2021/2326 (CID) and will be in line with the guidance specified in the other relevant BREF Documents and relevant national BAT notes.

It is noted that; the individual emergency back-up generators are less than 15 MW_{th} and the Medium Combustion Plant (MCP) Regulations (S.I No. 595 of 2017), which transposed the Medium Combustion Plant Directive ((EU) 2015/2193), applies to the individual plant. The diesel generators are for emergency back-up only and are not anticipated to operate in excess of 500 hours per annum. Therefore, the emergency back-up generators as proposed are exempt from complying with the emission limit values subject to Section 13(3) of the Medium Combustion Plant (MCP) Regulations.

6.0 RAW MATERIALS, INTERMEDIARIES, PRODUCTS AND WASTES

A list of all raw materials in use on the site is provided in Attachment 4-6-2. There are no intermediaries or products at this facility. All tanks, bunded storage and pipelines have been designed for the specific purpose and contents.

The deliveries of these liquid materials to site are undertaken via the generator yard – deliveries are undertaken in accordance with Standard Operating Procedures (SOP). Each of the generator yard areas is covered in impermeable concrete hardstanding and provided with appropriate upstands and profiling to contain spillage. The hardstanding areas are installed with drainage channels, which collect any surface water (or spillages) and direct them into the generator yard surface water drainage system. These systems are subject to scheduled inspection and maintenance to ensure that they provide an impermeable barrier to pollution. An isolation valve is present on each of the drainage systems and this is closed during all delivery activities to isolate the generator yards from the surface water drains.

Any accidental spillage within this unloading area is contained within the generator yard. In the event of a major spill, the run-off will be contained within the generator yard acting as a bund until such time that the spill can be cleaned for appropriate disposal. The generator yard drains to the attenuation ponds (via hydrocarbon interception) which can also be isolated / shutoff from discharging to surface water, until sampling is undertaken to determine whether water is suitable for discharge or requires appropriate disposal.

Spill kits are located across the Site in highly visible and mobile units. These include absorbent socks, mats, pads, disposable bags, and PPE. Spill kits are utilised in the event of a spill and staff are trained in the use of spill management materials. Staff are fully trained in site procedures, including all SOPs and emergency response and safety procedures in relation to the storage and handling of all substances being used at the Installation.

6.1 MANAGEMENT OF RAW MATERIALS

6.1.1 Generator Fuel Oil

The generator fuel is stored within belly storage tanks incorporated into the containerised emergency back-up generators at located in the generator yard at CLN1, CLN2, CLN3, CLN5, and CLN6. These tanks have an integrated double skin with a 110% capacity, a retention bund within the container, and leak detection systems in the base. The belly tanks are equipped with monitoring and alarm systems, with internal level gauge sensor (high-high, high, low, and low-low) these are connected to an onboard controller which will alarm (audible) to prevent overfilling or a sudden loss of fuel within the tank. The onboard controller for individual generators is connected to the Building Management System (BMS). These control systems exceed the minimum requirements of the EPA Agency guidelines “Storage and Transfer of Materials for Scheduled Activities” (EPA, 2004).

The usable diesel storage capacity for each of the 54 no. emergency back-up generator belly tank at CLN1, CLN2, and CLN3 is 30 m^3, which equates to a total of 1,620 m^3.. The diesel capacity for the 36 no emergency back-up generator belly tank at CLN5, and CLN6 is 30m^3, which equates to a total of 1,080 m^3 of diesel stored. Therefore, the total diesel stored on site is approximately 2,700 m^3, or 2,214 tonnes (assumed density of 820 kg/m^3 (at 15°C)).

There is no bulk tank farm or separate storage of diesel on site, and no diesel pipelines, other than what is required to transfer from the belly tank to the generator itself.

There are individual fill points at each belly tank, at each individual emergency back-up generator. The deliveries of fuel to site are undertaken by HGV via the impervious generator yard – deliveries are undertaken in accordance with the fuel delivery SOP. When deliveries of fuel occur at the site, the stormwater system for the generator yard, where the deliveries occur, is shut off.If spills occur on the generator yard hardstanding during unloading this can be rectified without contamination entering the stormwater network.

6.1.2 Water Treatment CLN1, CLN2, and CLN3

Water treatment for scale and bacteria prevention, and pH adjustment is undertaken on Site to treat the incoming water supply for the process cooling water at CLN1, CLN2, and CLN3. At each of the 6-no. water treatment rooms, chemicals are stored and used as set out in table 6.1 below.

Table 6.1 *Water Treatment Chemicals CLN1, CLN2, and CLN3*

Water Treatment Chemical	Number of Tanks	Tank Volume (L)	Total Site Storage (m^3)
Chlorine Dioxide Precursor 1 (Sodium Chlorite 5 - < 10%)	2 no per water treatment room (6 no. total)	500L	6 m^3

Water Treatment Chemical	Number of Tanks	Tank Volume (L)	Total Site Storage (m^3)
Chlorine Dioxide Precursor 2 (Hydrochloric Acid (10%)	2 no per water treatment room (6 no. total)	500L	6 m^3
Scale Inhibitor	1 no per water treatment room (6 no. total)	500L	3 m^3
Sulfuric Acid	1 no (external) per water treatment room (6 no. total)	5000L	30 m^3
Inhibitor for scale and corrosion	1 no per water treatment room (6 no. total)	50L	0.3 m3

The Chlorine Dioxide Precursors and the Inhibitors are stored internally within the water treatment rooms within double contained vessels, with leak detection systems in the void between the primary and secondary containment.

The Sulfuric Acid is stored externally adjacent to the water treatment rooms within the generator yard. The tanks are stored within a concrete bund. There are leak detection systems within the bund.

Deliveries are completed by specialist contractor via the impervious generator yard. When deliveries of water treatment chemicals occur at the site the stormwater system for the generator yard is shut off. If spills occur on the generator yard hardstanding during unloading this can be rectified without contamination entering the stormwater network.

The storage vessels, retention systems, and pipelines have been designed for the specific purpose and contents. Furthermore, the water treatment rooms have internally bunded floors to contain leaks inside the treatment rooms. The water treatment is a highly controlled process and leaks or pressure changes in the system are detected almost immediately. The water treatment room has a series of sensors and alarms connected to the BMS to ensure optimal performance. A comprehensive maintenance program is in place to ensure that the water treatment room remains in optimal operation and good repair.

6.1.3 Water Treatment CLN5, and CLN6

Water treatment for scale and bacteria prevention is undertaken on Site to treat the incoming water supply for the process cooling water at CLN5, and CLN6. At each of the 4-no. water treatment rooms, chemicals are stored and used as set out in Table 6.2 below.

Table 6.2 *Water Treatment Chemicals CLN5, and CLN6*

Water Treatment Chemical	Number of Tanks	Tank Volume (L)	Total Site Storage (m^3)
Chlorine Dioxide Precursor (Sodium Chlorite 25 - < 30%)	1 no per water treatment room (4 no. total)	500L	2 m^3
Scale Inhibitor	2 no per water treatment room (8 no. total)	1000L	8 m^3

Water Treatment Chemical	Number of Tanks	Tank Volume (L)	Total Site Storage (m^3)
(Phosphoric Acid (2.5-5%) and Sulfuric Acid (1-2.5%))			
Biocide	2 no. per water treatment room (8 no. total)	1000L	8 m^3
Chlorine Dioxide (dissolved in water <0.054% w/w)	2 no. per water treatment room (8 no. total)	1000L	8 m^3

The Chlorine Dioxide Precursor, Biocide, Sodium Chlorite and the Scale Inhibitor are stored within the water treatment rooms within double contained vessels, with leak detection systems in the void between the primary and secondary containment.

Deliveries will be completed by specialist contractor via the impervious generator yard. When deliveries of water treatment chemicals occur at the site the stormwater system for the generator yard is shut off. If spills occur on the generator yard hardstanding during unloading this can be rectified without contamination entering the stormwater network.

The storage vessels, retention systems, and pipelines have been designed for the specific purpose and contents. Furthermore, the water treatment rooms have internally bunded floors to contain leaks inside the treatment rooms. The water treatment is a highly controlled process and leaks or pressure changes in the system are detected almost immediately. The water treatment room has a series of sensors and alarms connected to the BMS to ensure optimal performance. A comprehensive maintenance program is in place to ensure that he water treatment room remains in optimal operation and good repair.

6.1.4 Urea /Ad-Blue

The Urea / Ad-Blue (aqueous solution) is used for the SCR abatement system located at each emergency back-up generator at CLN5 and CLN6. The Urea / Ad-Blue is stored within a storage tank incorporated into the containerised emergency back-up generators. The urea tanks are equipped with monitoring and alarm systems, with internal level gauge sensor (high-high, high, low, and low-low) these are connected to an onboard controller which will alarm (audible) to prevent overfilling or a sudden loss of fuel within the tank. The Urea / Ad-Blue tanks and pipelines have been designed for the specific purpose and contents. The structures will be rendered impervious to the materials stored therein.

The storage tanks each contain 1.7 m^3 of Urea / Ad-Blue, which equates to a total of storage of 61.2 m^3.

There is no bulk urea storage, and no urea pipelines, other than what is required to transfer from the tank to the SCR system. There are individual fill points at each urea tank, at each individual emergency back-up generator. Deliveries will be completed by specialist contactor via the impervious generator yard. When deliveries of urea occur at the site the stormwater system for the generator yard is shut off If spills occur on the generator yard hardstanding during unloading this can be rectified without contamination entering the stormwater network.

6.2 INTERMEDIATES OR PRODUCTS

There are no intermediates or products produced as part of the Data Center operations.

6.3 WASTE GENERATION

The site produces minimal amounts of waste. Details of waste volumes, types, disposal/recovery techniques are provided in Attachment-8-1 (Waste) and Attachment 8-1-2 (Waste Hierarchy) of this application.

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

Wastes with the greatest potential for impact are waste oils from generator equipment. The waste oil, filters, etc from the emergency back-up generators are not stored on site, this waste is removed by the maintenance contractor the same day as removal. Waste sludge from the hydrocarbon interceptors are removed directly from each interceptor by a specialised and appropriately licensed contractor by means of a vacuum tanker.

Other smaller amounts of domestic waste are produced at the offices and other staff areas including the canteens. This includes paper and office waste as well as dry mixed recyclables and compost food wastes. Very small quantities of mixed municipal wastes may also be produced from time to time. These are separated at each of the individual Data Center buildings and Administration areas and then are emptied into skips/larger bins externally for collection by the nominated waste contractor. The quantities are small due to the number of staff present onsite on a daily basis.

The small amounts of hazardous waste generated are stored internally in appropriate waste receptacles on bunds, or externally to each building in appropriate waste receptacles in covered bunds. The waste is collected from this area by an authorised waste management contractor for disposal off-site.

7.0 EMISSIONS AND ABATEMENT TREATMENT SYSTEMS

This section describes the emissions from the operations above and the abatement or treatment system in place for those emissions and summarises any monitoring controls in place. There are no planned emissions of contaminated materials to ground, or ground water from the Installation therefore this has not been described.

7.1 AIR EMISSIONS

7.1.1 Installation Emission Locations

Main Air Emissions

There are no main air emissions proposed.

Minor emissions

The emissions to air from the emergency back-up generators at the Installation are classified as minor emission points due to each combustion plant being greater than 1 $MW_{th.}$ These generators are not continuously operating and will only be run for periodic testing and maintenance, they are operated only during abnormal operating conditions i.e. in an emergency event where the supply of electricity to equipment on the site was interrupted, is unstable, or is at high risk of interruption or becoming unstable.

The emission points locations A3-1 through A3-90 are shown in Drawing Ref: 21_123A-CSE-00-XX-DR-C-2000, and 2001 included with this application. The emissions are as follows:

- Building CLN1: 18 no. 8.26 MW_{th} emergency back-up generator stacks with a minimum height of 12.1 m above ground level Locations;
- Building CLN2: 18 no. 8.26 MW_{th} emergency back-up generator stacks with a minimum height of 12.1 m above ground level;
- Building CLN3: 18 no. 8.26 MW_{th} emergency back-up generator stacks with a minimum height of 12.1 m above ground level;
- Building CLN5: 18 no. 8.26 MW_{th} emergency back-up generator stacks with a minimum height of 12.1 m above ground level; and
- Building CLN6: 18 no. 8.26 MW_{th} emergency back-up generator stacks with a minimum height of 12.1 m above ground level.

The emergency back-up generators are not expected to operate in excess of 500 hours per year each (as a rolling average over a period of three years). These are fitted with a fixed unit meter (not manually adjustable) which tracks the no. of hours the generators operate.

It is anticipated, based on the applicants' experience, that emergency back-up generators will rarely be used. They will be tested periodically to maintain operational readiness. These are fitted with a controller which tracks the number of hours the generators operate.

Further detail on the emissions to air is set out in Attachment-7-4-2-Emissions to Air-Minor-Potential. The environmental impact of the emergency back-up generators is set out in Section 7; Attachment-7-1-3-2-Air Emissions Impact of this license application.

Potential Emissions

These are emissions which only operate under abnormal process conditions. Typical examples include bursting discs, pressure relief valves, and emergency back-up generators. The emergency back-up generators are included as minor emission sources due to the routine testing and maintenance.

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.

7.1.2 Treatment and Abatement Systems

The only direct emissions from the installation are from the emergency back-up generators. The emissions from the emergency back-up generators have been

considered against the Medium Combustion Plant (MCP) Regulations (S.I No. 595 of 2017), which transposed the Medium Combustion Plant Directive ((EU) 2015/2193). Under the MCP Regulations 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 (ELV).

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. Air dispersion modelling has been undertaken and demonstrated in Attachment-7-1-3-2-Air Emissions Impact to ensure that the appropriate ambient air quality standards are met. The modelling has been undertaken using the AERMOD air dispersion model in line with EPA Guidance Note AG4.

There is no required abatement or treatment systems for the emergency diesel generators to meet specific ELVs (as there is no ELV set down in the regulations), however as noted earlier in this report the 36 no. emergency back-up generators at CLN5 and CLN6 include SCR abatement systems that reduce the NOx emissions. SCR works by injecting a reagent into engine exhaust gas stream, causing a reaction with the NOx subsequently significantly reducing NOx emissions and producing nitrogen and water vapor.

7.1.3 Control and Monitoring

The emissions from the emergency back-up generators have been considered with respect to the Medium Combustion Plant (MCP) Regulations (S.I No. 595 of 2017), which transposed 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 year as a rolling average. Therefore, the emergency back-up generators are exempt from complying with the emission limit values subject to Section 13(3) of the MCP Regulations.

The emergency back-up generators have onboard controllers that track operational run hours, and diesel use.

The onboard electronic control unit (ECU) for the SCR abatement system continuously monitors all sensors in order to analyse and determine the type and quantity of Urea/AdBlue injections that are necessary to achieve the target reduction in NOx emissions. In order for the chemical reaction to take place, the gases must be heated to an acceptable, which is also controlled by the SCR ECU.

7.2 EMISSIONS TO SEWER (WASTEWATER EMISSIONS)

7.2.1 Installation Emission Locations

A Trade Effluent Discharge Licence (TEDL) has been issued by Irish Water for the process wastewater; a copy of this is included with the application in Section 7; Attachment-7-1-2-Discharge Licence-CLN1-3 and Attachment-7-1-2-Discharge Licence-CLN5-6.

The outfall into the offsite mains foul sewer network is at two locations, emission point SE1 and SE2. Under the TEDL; SE1 has a maximum allowable outflow of 1,296 m^3/day, and SE2 has a maximum allowable outflow of 1,348 m^3/day.

The domestic wastewater and process wastewater networks and emission points locations are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1200, 1201, 1202, and 1203 included with this application.

7.2.2 Treatment and Abatement Systems

There is no requirement for onsite treatment or abatement for foul wastewater (domestic wastewater and process wastewater) from the Installation. This will be treated offsite at the Ringsend Wastewater Treatment Plant.

The process wastewater from the Data Center cooling plant equipment is treated mains water that has passed through the cooling equipment.

All wash water coming from the canteen area will discharge via a non-biological grease trap prior to joining the site wide sanitary drain.

7.2.3 Control and Monitoring

The combined domestic and process wastewater is tested at monitoring locations SE1-1 and SE1-2. The monitoring points locations are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1200, 1201, 1202, and 1203 included with this application.

The monitoring of parameters is undertaken in accordance with the TEDL issued by Irish Water. Continuous monitoring takes place for Flow, pH, and Temperature. Monthly grab samples are taken and analysed for Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended solids (TSS), Chloride (as Cl), Sulphate (as SO4), Total Hardness (ss CaCO3). See Attachment-7-3-1-Emissions-to-Sewer for further details.

In the event that the 9C Sewer is offline and trade effluent discharge is required to be held on site for 24 hrs then the discharge for the following 48 hrs is allowable up to the maximum loadings. The site includes a 24 hour retention tank for wastewater to be retained on site if requested by Irish Water.

7.3 STORMWATER EMISSIONS TO SURFACE WATER

7.3.1 Installation Emission Locations

The emissions of stormwater to surface water consists of rainwater runoff from building roofs, carparks, and generator yards. For the purposes of this IE application areas of the road network and reinforced grass roads that are collected in filter and carrier drains, and small underground attenuation tanks (< 150 m^3 with flow controls) and outfall directly to the local watercourses and are at comparatively lower risk of contamination (due to there being no storage of chemicals in these areas) have not been identified as emission point locations.

The identified stormwater emissions to surface water discharges off site at 8 no. Emission Points SW1 through SW8. The stormwater network and emission points locations are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1100, 1101, and 1102 included with this application.

7.3.2 Treatment and Abatement Systems

Onsite control and mitigation measures are in place including:

- Double skinned belly tanks, with alarms; to prevent overfill, and detect sudden loss in the tank, hydrocarbon interceptors with level alarms;
- Loading and unloading will be completed in a designated hardstanding areas;
- Standard Operating Procedures (SOP) for diesel and water treatment chemical delivery, including the isolation for the generator yards from the stormwater network when delivery takes place;
- The Class 1 hydrocarbon interceptors are located upgradient of the stormwater attenuation ponds, to ensure the stormwater entering the attenuation ponds is free of hydrocarbons;
- Fire detection and suppression systems are in place;
- The water treatment chemicals are stored internally within the water treatment rooms;
- Foul wastewater and process wastewater are separated from all stormwater lines in accordance with BAT; and
- There is a regular maintenance programme for all plant equipment on site.

There is a low risk of contamination of stormwater, this would only be from a complete containment failure resulting in a major leak or spill or emergency situation such as fire. The Isolation valves allow the outfall of the attenuation ponds to be closed off to inhibit the outflow in the event of a spill or a fire. Potentially polluted water that reaches the attenuation ponds, (for example, in the case of a fire or major spill) shall be tested before release to the receiving storm water main. Any stormwater of unacceptable quality will be pumped out or otherwise removed from the attenuation ponds and disposed of appropriately. In the highly unlikely event of a major spill that entered the stormwater pond(s), inspection will be undertaken to ensure there is no subsurface contamination.

There is no further requirement for abatement of the stormwater from the site.

7.3.3 Control and Monitoring

No online monitoring is proposed for the stormwater discharge. It is proposed that weekly visual inspections for discolouration and odour are undertaken downstream of the attenuation ponds, and upstream of the stormwater discharge points (Monitoring Points SW1-1, through SW8-1). The stormwater network and monitoring point locations are shown on Drawing Ref: 21_123A-CSE-00-XX-DR-C-1100, 1101, and 1102 included with this application.

Due to the limited storage of bulk chemicals on Site, and the robust control measures outlined above it is considered that no further monitoring or control methods are required or proposed for stormwater.

7.4 NOISE EMISSIONS

7.4.1 Emissions

During operational activities, the primary source of noise is expected to arise from building service plant and cooling plant required to service the Data Center, as well as the operation of the emergency back-up generators during routine testing, and emergency operation.

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 AWN and included in Attachment-7-1-3-2-Noise Emissions Impact Assessment.

7.4.2 Treatment and Abatement Systems

Plant items have been selected in order to achieve the required noise levels in order that the plant noise emission levels are achieved on site during emergency operations. Each emergency back-up generator is contained within an acoustic container to dampen the noise.

As outlined in Attachment-7-5-Noise Emissions and Attachment-7-1-3-2-Noise Emissions Impact Assessment, it is anticipated that the designed noise abatement measures are sufficient to ensure that the noise levels comply with the daytime, evening and night-time noise limits, to be stipulated in the IE licence at the nearest noise sensitive receptors.

7.4.3 Control and Monitoring

Day time, evening and night-time monitoring will be undertaken as required by the EPA.

7.5 EMISSIONS TO GROUND

There are no proposed process emissions to ground from the Installation.

8.0 MANAGEMENT AND PROCESS CONTROL SYSTEMS

8.1 ENVIRONMENTAL MANAGEMENT

RISL has a well-developed internal Environmental Management System (EMS) based on corporate environmental procedures and policies, alongside a number of Standard Operating Procedures (SOPs) covering the management of plant and site operations. These procedures will be supplemented to meet the requirements set out in BAT and the IE licence conditions. These address all relevant operational process and environmental matters onsite including, but not limited to;

- Generator testing’
- Incident and spill response procedures;
- Operational Waste Management;
- Fuel delivery, storage and handling;
- Chemical delivery, storage and handling;
- Maintenance Schedule; and
- Reporting on, investigating, and documenting incidents.

In addition to the above, preventative maintenance is undertaken on mechanical moving parts equipment and electrical equipment including pumps, AHUs, humidifiers, generators, power transformers, etc. This maintenance includes all the regular and systematic tasks that the RISL will carry out to ensure that the equipment is in an acceptable working condition, delivering required performance and expected durability.

8.2 BUILDING MANAGEMENT SYSTEM (BMS)

The Installation operates a Building Management System (BMS) automation system for control, monitoring, data collection and alarm/reporting of the air handling systems and mechanical utility systems site wide. Specifically, this includes the cooling systems, electrical supply, emergency back-up generators, water supply, fire alarms, fire detection and suppression systems and diesel use.

The BMS ensures the Installation is running at optimal efficiency and alerts the operators in the event of a malfunction through the use of visual and audible alarms. The BMS controls the changeover in electrical supply from the grid to the emergency back-up generators in the event of an outage. There is an interface between the BMS and EPMS (Electrical Power Management System) for the purposes of building energy optimisation.

8.3 EMERGENCY RESPONSE PLAN

An on-site Emergency Response Plan (ERP) will be developed for the Installation to incorporate any requirements of the Licence. The ERP will detail the required actions to be undertaken in the event of an incident on site and will cover all possible emergency scenarios including fires, explosions, natural disasters, chemical spills, terrorism, etc. The ERP will detail the arrangements for contacting the emergency services and the relevant site personnel.

It should be noted that the Installation will operate 24/7, 365 days a year. There is therefore no additional specific procedure required for emergencies outside normal working hours.

8.4 WASTE MANAGEMENT

All waste leaving site will be recycled or recovered, except for those waste streams where appropriate recycling facilities are currently not available and the waste is disposed of as a last resort. All waste leaving the Site will be transported by suitably permitted contractors and taken to suitably registered, permitted and / or licenced facilities. All waste leaving the Site will be recorded and copies of relevant documentation maintained.

Any waste classed as hazardous will be stored in a designated area (suitably bunded, where required) and will be removed off site by a licensed hazardous waste contractor(s).

Waste oil, filters, waste batteries and waste sludge from the hydrocarbon interceptors will be removed directly by the maintenance contractors as and when generated; however, the Operator will ensure appropriate permits and waste documentation, compliant with relevant legislation are provided by the licensed waste contractors.

8.5 FIRE MANAGEMENT

The Data Centre is equipped with automated fire detection systems (heat and smoke). These will be connected to a main fire panel in the security office which is manned at all times. In the event that a fire is detected, the fire panel will display the location of the detected fire.

A system is 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.

Once detected the location of the potential fire will go into an alarm state. The fire detection and alarm systems will be connected to the sprinkler and suppression systems and these will be triggered in the event of a fire.

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.

8.6 PREVENTION OF ACCIDENTS

The Seveso Directive (2012/18/EU) was developed by the EU after a series of catastrophic accidents involving major industrial sites and dangerous substances. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident. The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), implement the latest Seveso III Directive (2012/18/EU).

The only substance stored on site controlled under Seveso/COMAH will be diesel for the emergency back-up generators. The quantity of diesel which qualifies a given establishment for the application of lower-tier and upper-tier requirements under Directive 2012/18/EU is 2,500t and 25,000t respectively. The amounts proposed to be stored on site do not exceed the relevant thresholds of the Seveso directive.

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. The main risks of the installation include:

- Potential for an accident or hazardous/ emergency situation to arise from activities at the installation
- Potential for fire due to the quantities of fuel stored on site, leading to emissions to air, water and/or soil;
- Spillages/leaks due to accidents on-site;
- Spillages of diesel during delivery and unloading operations;
- Failure of the hydro-brake on the attenuation pond and/or the three Class I interceptors leading to a discharge of contaminated water; and
- Malfunction of the plant including generators leading to spills of diesel or emissions to air.

Preventative/Control measures to reduce the likelihood of accidents and mitigate the effects of the consequences of an accident at the installation.

- Fire detection and suppression systems are in place;
- Loading and unloading will be completed in a designated hardstanding area, with run-off drains and hydrocarbon interceptors;
- A hydrobrake is fitted on the stormwater drainage line from the attenuation pond to the stream to control the flow;
- The outfall(s) from the stormwater are equipped with penstocks, which can be closed at the control room in the event of a major fire or spill;
- Potentially contaminated storm water (e.g. in the event of a fire) that enters the storm water attenuation pond will be tested prior to discharge to the receiving

surface water body. Any storm water of unacceptable quality will be pumped out of the attenuation pond and disposed of appropriately; and
- There is a regular maintenance programme for all plant equipment on site.

9.0 CESSATION OF ACTIVITY

9.1 BASELINE REPORT

A complete Baseline Report for the site has been produced and included in Attachment 4-8-3 Complete Baseline Report. The baseline report provides conditions of the site prior as it existed prior to the construction and operation of the facility.

On the basis of the soil and groundwater investigations undertaken prior to construction of the facility and an assessment of source-pathways-receptors, the following conclusions have been made:

- A review of soil and water quality confirms that there is no evidence of any residual contamination beneath the site.
- The bulk diesel fuel oil and sodium chlorite are the only chemical storage that is of a quantity that has the potential to contaminate soil or water (toxic to the aquatic environment). However, the risk prevention measures constructed at the facility significantly reduce the potential for an environmental impact to soil or water to occur. These measures include bunded and double contained vessels, and containment systems, alarm systems and spill management procedures.
- Source-pathway-receptor linkages were assessed for the bulk storage areas. It was concluded that there are no direct pathways to either the soil and groundwater environment. Interceptors are installed on the surface water drainage. A leakage from a bulk tank would be fully contained in the designated bund or the double skin lining of the tank, with leaks during delivery fully contained within the continuous hard stand delivery area. Any leakage outside of the delivery area would be contained within the drainage system.
- Based on the assessment of the source-pathway-receptor linkages, there is no potential for impact of any downgradient Natura sites including the South Dublin Bay and River Tolka Estuary SPA or the South Dublin Bay and North Dublin Bay SAC's.

9.2 SITE CLOSURE

A certain amount of environmental risk is associated with the cessation of any licensable activity (site closure). An outline Site Closure report has been provided in Section 9 of this application. Details outlined in the Site Closure Plan include the following:

- Decommissioning of equipment will involve disconnecting all electrical connections and decommissioning the IT Hardware, the emergency back-up generators, the transformers, and all other relevant operational equipment at the installation,
- The emergency back-up generators, transformers, IT Hardware, and other equipment will be removed and sold to a third party or scrapped depending on the age/condition at the time of closure,

- Hazardous materials stored in water treatment chemical tanks, raw materials in the operations area, and any other materials on site will either be returned to the suppliers or disposed of as hazardous waste by a suitable waste contractor; and
- All non-hazardous waste will be sent for appropriate recycling, recovery, treatment, or disposal.

A complete Baseline Report for the Site has been produced and included in Attachment-4-8-3 Complete Baseline Report. The baseline report provides conditions of the Site prior as it existed prior to the construction and operation of the facility.

10.0 ENVIRONMENTAL IMPACT ASSESSMENT

The Environmental Impact Statement (EIS) relating to Buildings CLN1, CLN2, and CLN3, was prepared by AECOM et. al. dated June 2015 and was previously submitted to MCC with Reg. Ref.: RA150605 (Attachment-6-3-6-EIAR-Planning-Oct-2015 of the IE Licence application).

The Environmental Impact Assessment Report (EIAR) relating to Buildings CLN5, and CLN6, was prepared by AECOM et. al. dated June 2018 and was previously submitted to MCC with Reg. Ref.: RA180671 (Attachment-6-3-6-EIAR-Planning-Sep-2018 of the IE Licence application).

10.1 CONSIDERATION OF ALTERNATIVES

The EIS (AECOM et. al, 2015), and EIAR (AECOM et. al, 2018) considered the various alternatives to the key project design decisions in the context of environmental impact. The site was suitably zoned for development and it was inevitable that these lands would be developed in some fashion.

Alternative locations and countries were considered, during early design stages. The site location is of a large scale allowing substantial development to occur, but also with the capacity to landscape and improve and minimise the visual impact. The site location was well located relative to suitable utilities, including power supply, water supply road network, telecommunications, and proximity to an international airport.

10.1.1 Emerging Techniques

An ‘Emerging technique’ is defined as a novel technique for an industrial emissions directive activity that, if commercially developed, could provide either a higher general level of protection of the environment or at least the same level of protection of the environment and higher cost savings than existing best available techniques.

The majority of the technology at the Installation, is based on successful and proven technologies and processes already developed and in manufacture and use, is not novel and no specific aspect is considered to represent an “Emerging technique”.

State Point Liquid Cooling (SPLC) is new technology that delivers an advanced evaporative cooling system that that offers high levels of operating efficiency.

10.1.2 Process Alternatives

In terms of the proposed technology, the engineering design team for the proposed development have considered technology that is used by other operators in Ireland and around the world. The design represents state of the art technology.

Power usage effectiveness (PUE) is a measure of a Data Centre's energy efficiency; specifically, it is a ratio of the total energy consumed by the project to the energy used by the computing equipment, which was considered by the applicant in the design process.

The United Sates Environmental Protection Agency has set a best practice PUE value of 1.5 for the technology sector. The applicant has a positive track record for bettering this metric with a number of its owned Data Centres, which are of a similar size to the development..

10.1.3 Alternative Mitigation Measures

The mitigation measures for the environmental aspects considered under this IE licence application (if relevant) are set out in the accompanying emissions impact assessment reports within Section 7 of this licence application.