

Microsoft Operations Ireland Ltd

Non Technical Summary

Attachment-1-2

**December 2022 (Updated March
2023)**

Licence Application (LA010454)

CONTENTS

1.0	Introduction	2
2.0	General Information	3
2.1	Activities To Be Licensed.....	3
2.2	Site Context	3
3.0	Description Of Activity	4
3.1	Site Overview	4
3.2	Primary Processes/Activities.....	4
3.3	Secondary Process/Activities.....	5
3.4	Water, Sewer, And Stormwater Drainage Infrastructure.....	5
4.0	Best Available Techniques And Commission Implementing Decision	8
5.0	Emissions And Abatement Treatment Systems	8
5.1	Air Emissions	9
5.2	Emissions to Sewer	10
5.3	Stormwater Emissions	10
5.4	Noise Emissions	11
6.0	Management Of Raw Materials, Intermediaries And Wastes	12
6.1	Energy Efficiency And Resource Use	12
7.0	Prevention Of Accidents	12
8.0	Management And Process Control Systems.....	13
8.1	Building Management System (BMS)	13
8.2	electrical power management system (EPms)	13
8.3	Standard Operating Procedures and emergency response plan	13
8.4	Fire Management.....	13
8.5	Site Closure	14
9.0	Environmental Impact Assessment	14
9.1	Alternatives.....	15
10.0	Conclusions	16

1.0 INTRODUCTION

Microsoft Operations Ireland Limited ('the operator') is applying to the Environmental Protection Agency ('the Agency') for an Industrial Emissions (IE) Licence for an existing Data Storage installation located in Grange Castle South Business Park, Dublin 22. The Data Storage installation will provide secure data storage services, and distribution of information to individuals, businesses and organisations.

The facility consists of seven datacentres, Dub 6, 7, 8, 9, 10, 12 and 13. The 7 no. data storage buildings have a total combined building footprint of c. 150,000 m² on an overall site of approximately 30 hectare site with associated support buildings. Ancillary elements of the development include:

- Reception and security area;
- Administration Offices for staff and management;
- Staff cafeteria;
- Sanitary facilities;
- Waste compound;
- Internal road network and car and cycle parking;
- Bicycle Shelters;
- Sprinkler Tanks and Pump House;
- Security fencing; and
- Drainage infrastructure including underground attenuation.

The power requirements for the development are currently provided via a connection to an existing substation on the site and the utility 110 kV Corkagh Substation. See Attachment 4-8-1 (Operational Report) for further information.

The permitted site layout is shown on A1000 Site Location Map and A1002 Site Plan included with this application.

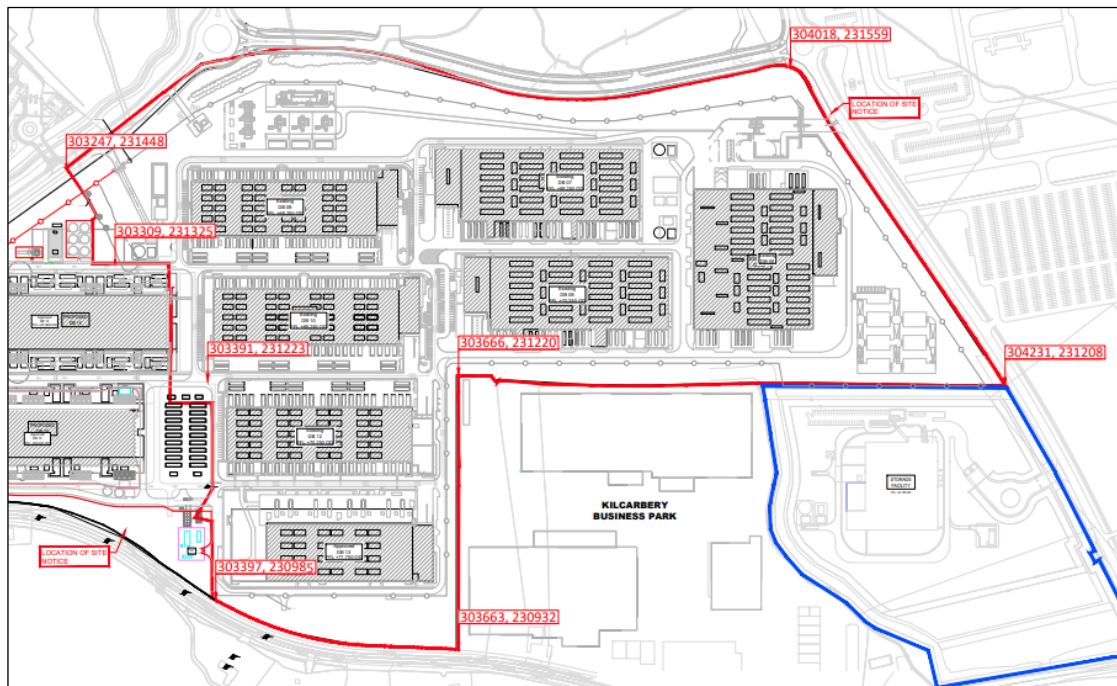


Figure 1 Site Layout Plan

In the event of a loss of power supply i.e. power outage, there are 95 no. back up generators which have 95 no. flues either 23.5m, 24m or 25m high. All generators are supplied by belly tanks. The capacity of the standby generation plant is 579.28MW_{th}.

These generators provide backup electrical supply to power the data centre in the event of mains failure, during occasional breakdown or other maintenance/testing scenarios.

2.0 GENERAL INFORMATION

The requirement for an IE Licence is outlined within 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' specifically relates to this installation.

2.1 ACTIVITIES TO BE LICENSED

The installation will include a total of 97 no. generators comprising:

- 95 no. emergency backup generators ranging from 1.29 to 7.51 MW_{th} to be used in the event of a loss of power supply to the data storage buildings;
- In addition there are 2 no. 0.5 MW_{th} fire pumps.

The capacity of the back up generators is above the requirement for an Industrial Emissions (IE) Licence as outlined within 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*' specifically relates to this facility. The applicant is therefore, applying to the Environmental Protection Agency (EPA) for an IE Licence to operate the facility under Activity Class 2.1.

2.2 SITE CONTEXT

The site comprises lands directly north of the New Nangor Road (R134) within the Grange Castle International Business Park, Clondalkin, Co Dublin and is located in the central and eastern part of the larger Microsoft Ireland data centre campus. The site is c. 30 ha and is bound to the west by the permitted Dub 14 and 15 facilities currently under construction, to the east by PRL – P&G Ireland Warehouse, BWG Foods NDC and an internal access road for Grange Castle International Business Park, to the south the New Nangor Road, BWG Foods NDC and the operational Dub 11 facility, and to the north by an internal access road for Grange Castle International Business Park, Grifols Ireland and Takeda Ireland Ltd. Prior to the construction of the facility the site was an unmanaged greenfield. Construction for the facility has been completed in three phases, in line with the planning permissions detailed below in Section 3.0 – *Planning Status*.

The wider context of the proposed development is defined primarily by commercial and industrial development, with the remainder of the Microsoft Data Centre Campus in the immediate vicinity to the west. The surrounding 5 km of the site also includes IE and IPC Licenced sites including:

- Microsoft Ireland (P1190) located c. 500m to the west of the site
- Microsoft Ireland (P1187) Located adjacent and to the west of the site
- Takeda Ireland Limited (P0693-02) located immediately north-west of the site.

- Amazon Data Services Ireland Ltd (P1170) located immediately Southwest of the site.
- Adsil Grange Castle South (P1184) located c. 570m south-west of the site.
- Google Ireland Limited (P1189) Location c. 600m south of the site
- Data and Power Hub Services Limited (P1165) located c. 1.5km to the south west
- Pfizer Ireland Pharmaceuticals (P0652-01) located immediately north-east of the Site.
- Grange Backup Power Limited (P1033) located c. 590m North of the site.
- Rilta Environmental (W0185) located approximately c. 2.8km south-west of the site.
- Rilta Environmental (W0192) located approximately c. 2.8km south-west of the site.
- Starrus Eco Holdings Limited (Greenogue) (W0188) located approximately c.3 km south-south-west of the site.
- BBALP Limited (P0275) located approximately c.3 Km South of the site.

The site layout is presented in Drawing A1000 Site Location Plan included with this application.

3.0 DESCRIPTION OF ACTIVITY

Attachment 4.8.1 (Operations report) presents the project description as it relates to the IE Licence.

3.1 SITE OVERVIEW

The facility will consist of seven datacentres, Dub 6, 7, 8, 9, 10, 12 and 13. The 7 no. data storage buildings have a total combined building footprint of 150,000 m² on an overall site of approximately 30 hectare site with associated support buildings. A sprinkler tank and 2 no. fire pumps serving the site are located to the north of the site. Attachment 4-8-1 (Operational Report) presents the detailed description as it relates to the IE Licence.

3.2 PRIMARY PROCESSES/ACTIVITIES

3.2.1 Backup Generators

The facility is supported by containerised backup generators with belly tanks that are located north and south of Dub 6, south of Dub 7, south of Dub 8, south of Dub 9, south of Dub 10, north of Dub 12 and north of Dub 13. These generators provide the necessary power to ensure the data hall can operate optimally in the event of a failure of electricity supply.

The overall site includes 95 backup generators. Each individual generator includes an exhaust flue which is either 25, 24 or 23.25 meters high. The two fire pump engines have flues that are 3 metres high. There are therefore 97 minor emission points in total associated with the backup generators at Dub 6, 7, 8, 9, 10, 12 and 13.

Attachment 4-8-1 (Operational Report) presents further details on the Emergency Backup Generators as it relates to the IE Licence.

3.2.2 Data Storage Building(s)

The data centre facility consists of seven buildings containing hardware needed to store the data, deliver this content when requested, and allow quick and efficient communication between customers. The data storage facility (involving systemised racks of hundreds/thousands of server units), offers significant advantages (and economies of scale) over traditional in-house data storage systems.

3.2.3 Data Storage Cooling Systems

The data centre hardware and associated ancillary equipment produces heat which must be managed by the cooling systems. The data centres are cooled primarily utilising outside air, via roof mounted Air Handling Units (AHU) . Conditions in Ireland are conducive to this free cooling strategy, which essentially moves outside air across the servers to cool and then exhaust the higher temperature air to atmosphere. There are other small areas in the building which require additional cooling, i.e. the PCCR Rooms, but the majority of the building is serviced by outside air cooling. In order to achieve such high levels of optimisation the Cooling units operate on two different modes dry cooling and evaporative cooling mode. The AHUs primarily operate in a dry cooling mode air from inside the data hall is cooled using external air via an air-to-air heat exchanger before being supplied back to the data hall. It is expected that the AHUs will operate in dry mode for c.95% in a typical year.

Attachment 4-8-1 (Operational Report) presents further details regarding the cooling systems in operation at the site. It is anticipated that the evaporative cooling system will be required very infrequently, however water used within the system is flushed from the system periodically to mitigate against legionella.

3.3 SECONDARY PROCESS/ACTIVITIES

3.3.1 Ancillary infrastructure

. The ancillary infrastructure comprises the following main components;

- Reception and security area;
- Administration Offices for staff and management;
- Staff cafeteria;
- Sanitary facilities;
- Waste compound;
- Internal road network and car and cycle parking;
- Bicycle Shelters;
- Sprinkler Tanks and Pump House;
- Security fencing; and
- Drainage infrastructure including underground attenuation.

3.4 WATER, SEWER, AND STORMWATER DRAINAGE INFRASTRUCTURE

3.4.1 Potable water

The facility has both domestic water and cooling water demand. The potable water supply is supplied through a 100mm diameter main which is connected to the existing Irish Water watermain. The use of rainwater harvesting will be implemented for Dub 9, 10, 12 and 13 in 2024 to support the demand for cooling water.

3.4.2 Foul and Process Sewer

The sanitary effluent from the washroom facilities and break room areas from the data centre buildings is collected in gravity foul sewers and discharge at four outfalls (SE-1, SE-2, SE-3 and SE-4). SE-1, SE-2 and SE-3 collect foul effluent from Dub 6 and are located to the south, east and north respectively of the Dub 6 building. Foul effluent from each of the remaining buildings, Dub 7, 8, 9, 10, 12 and 13, is collected and discharged to SE-4 to the north of the site. Each of the four outfalls discharge to the existing local foul sewer network to the north, east and south of the site. The proposed maximum wastewater flow from the permitted development across all 4 no. emission points combined is c. 40 m³ per day.

3.4.3 Stormwater Drainage Systems

The surface water measures have been designed in relation to Sustainable Urban Drainage Systems in accordance with the guidelines of the Greater Dublin Strategic Drainage Strategy. All stormwater passes through retention fuel separators with carbon monitors and control valves linked to the facilities BMS, prior to discharge to the existing stormwater sewers from 7 no. outfalls, SW1, SW2, SW3, SW4, SW6, SW7 and SW8. Discharge from Dub 6, 7 and 8 drains to SW1 to the north east of the site. Discharge from the roof of Dub 6 drains to SW2 to the east of the site. Discharge from the car park east of Dub 6 drains to SW3 to the east of the site. SW1, SW2 and SW3 drain to the existing stormwater sewer to the east of the site. The existing stormwater sewer to the east of the site discharges to the Grange Castle Business Park attenuation pond, which ultimately discharges to the River Griffeen. Discharge from the onsite substation drains to SW4 to the north west of the site. Rainwater discharge from Dub 9 drains to SW5 to the north west of the site. Stormwater discharge from Dub 9 and Dub 10 drains to SW6 to the north west of the site. SW4, SW5 and SW6 drain to the existing stormwater system to the west of the site, which in turn discharges into the River Griffeen. Rainwater discharge from Dub 10 drains to SW7 to the west of the site. SW7 drains to the rainwater harvesting network of the neighbouring Microsoft Dub 14 and 15 facility immediately to the west of the site (see Licence Application LA010221), which ultimately drains to the River Griffeen. Stormwater and Rainwater discharge from Dub 12 and 13 drains to SW8 to the west of the site. SW8 drains to the stormwater network of the neighbouring Microsoft Dub 14 and 15 facility immediately to the west of the site, which ultimately drains to the River Griffeen.

The control measures in place ensure only clean uncontaminated surface water will enter the existing stormwater sewer and be subsequently discharged to the River Griffeen. The outfall from the site into the existing stormwater system is via a hydrobrake flow control device (limited to 83m³ per hour) at SW5 and SW6 which is downstream of the attenuation and rain water harvesting tanks in place along the western boundary of Dub 9 and 10. Stormwater flow from Dub 7 and 8 is controlled by silt traps. Outflow from SW7 and SW8 enters the neighbouring Microsoft Dub 14 and 15 facility's stormwater system. Outflow from this site is restricted by way of Hydrobrake (limited to 21.6l/s), as per Licence Application LA010221. A series of control valves are provided across the site to isolate the stormwater network, this allows for the attenuation systems and fuel separators to intercept runoff in the event of a fire or major spill event at the site.

3.4.4 Environmental Conditions

3.4.4.1 Soil

The Baseline Report (Attachment 4-8-3) concluded that there is no evidence of any residual contamination beneath the site.

The only chemical stored on site in significant quantities is diesel/HVO. However, the risk prevention measures planned at the installation significantly reduce the potential for an environmental impact to soil or water to occur. Each of the 95 emergency generators has double contained belly tanks with level gauges (high and low) within the fuel tanks connected to an onboard controller which will alarm to prevent overfilling and identify a sudden loss of fuel within the tank.

Source-pathway-receptor linkages were assessed for the bulk storage areas. It was concluded that there are no direct pathways to either the soil or groundwater environment.

3.4.4.2 Groundwater

Attachment 4-8-3 of this application provides a Baseline Report which identifies no historic contamination of groundwater.

3.4.4.3 Surface Water

The installation is located within the Eastern River Basin District (ERBD), as defined under the European Communities Directive 2000/60/EC. Surface water quality is monitored continuously by the EPA at various regional locations along principal and other smaller watercourses. The closest EPA surface water quality station downstream to the site is the 'Griffen in Lucan Village' (EPA Code: RS09G010600) which is located in the Griffen River c. 4 Km to the north (i.e., downstream) of the subject site, just before its junction with the River Liffey. Its most recent data (2019) show records which are consistently below the threshold values defined to achieve 'Good Status' (EU Environmental Objectives Regulations, SI 272/2009 and amendment SI 77/2019). However, a moderate status has been found for nitrogen and nitrate conditions.

All stormwater passes through retention fuel separators with carbon monitors and control valves linked to the facilities BMS, prior to discharge to the existing stormwater sewers located to the east and west of the site. The existing stormwater drains discharge into the River Griffen west of the site and to the Grange Castle Attenuation pond to the northeast of the site.

3.4.4.4 Air

Ambient air quality monitoring was not undertaken as part of the preliminary assessment for this site. Reference has been made to the latest air quality monitoring programs that have been undertaken in recent years by the EPA and Local Authorities.

Attachment 7-1-3-2 – Air Emissions Impact Assessment of this application provides a summary of the relevant air quality that has been used as a baseline for the air dispersion modelling completed for the project.

3.4.4.5 Noise

The primary source of noise arises from the building service plant which are required to service the Data Centre (i.e. the AHU air intake and the AHU air exhaust), routine testing of the back-up generators, and in the event of a power failure there is noise produced by the generators.

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 and the results are summarised in Attachment 7.1.3.2 (Noise Impact Assessment) of this application.

4.0 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 4.1:

Table 4.1 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 has demonstrated that the installation will comply with all applicable BAT Conclusion requirements specified in the CID and will be in line with the guidance specified in the other relevant BREF Documents and relevant national BAT notes.

5.0 EMISSIONS AND ABATEMENT TREATMENT SYSTEMS

This section describes the emissions from the unit operations above and the abatement or treatment system in place for those emissions and summarises any monitoring controls in place.

5.1 AIR EMISSIONS

Minor Emissions

The site will have 95 no. standby generators with 95 no. flues and two fire pump with 2 no. flues. The generator flues have been installed to a height of 23.5m, 24m or 25m above ground level and the fire pump flues have been installed to a height of 3m above ground level resulting in a total of 97 emission points. The generators are only used during testing, maintenance and in the event of other abnormal operating events including emergency power outages. The generators and fire pumps are classified as minor emission points due to their periodic testing and infrequent use. The environmental impact of these minor emissions are set out in Attachment-7-1-3-2 - Air Emissions Impact of this license application.

The backup generators are not expected to run in excess of 500 hours per year. Generators are fitted with a data logger which tracks the number of hours the generators operate.

Potential Emissions

These are emissions which only operate under abnormal process conditions. Typical examples include bursting discs, pressure relief valves, and backup generators.

The back up generators and tanks at the facility each include two-way normal pressure (breather) and pressure relief vents on the belly tanks. These produce minor fuel oil vapour (trace) emissions.

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.

5.1.1 Treatment and Abatement Systems

The emissions from the backup generators have been considered against the Industrial Emissions Directive (IED) (Directive 2010/75/EU) was adopted on 7 January 2013 and is the key European Directive which covers the regulation of the majority of processes in the EU. As part of the IED Article 15 - Paragraph 2 requires Emissions Limit Values (ELVs) are based on best available techniques (BAT) and the relevant sector Reference Document of Best Available Techniques (BREF documents).

The most relevant BAT sector document for the activities at the installation is the Best Available Techniques (BAT) Reference Document for Large Combustion Plants LCP. ELVs set out in the LCP BAT are applicable to individual combustion plant greater than 15 MWth. However, the individual generators are below the 15 MWth threshold and therefore does not apply in this case. 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 in this case.

Air dispersion modelling has been undertaken as discussed in Attachment 7.1.3.2 (Air Emissions Impact Assessment) 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.

The stack heights of the back-up generators for the facility have been designed to ensure that an adequate height was selected to aid dispersion of the emissions and achieve compliance with these ambient air quality standards at all off-site locations (including background concentrations). There is no SCR abatement or treatment systems in place or required for the back up generators.

5.1.2 Control and Monitoring

The generators are for backup 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.

5.2 EMISSIONS TO SEWER

The foul drainage includes domestic effluent from the seven data halls Dub 6, 7, 8, 9, 10, 12 and 13. The proposed maximum wastewater flow from the permitted development across all 4 no. emission points combined is c. 40 m³ per day.

The environmental impact of these sewer emissions are set out in Attachment-7-1-3-2 – Stormwater, Ground and Sewer Emissions Impact of this license application.

5.2.1 Treatment and Abatement Systems

There is no requirement for onsite treatment or abatement for foul effluent produced from the facility. The foul effluent comprises of sanitary waste only. The effluent is treated offsite at the Ringsend Wastewater Treatment Plant.

Flow volume monitoring of the overall sewer discharge is in place with flow meters at each foul sewer outfalls SE-1, SE-2, SE-3 and SE-4. The location of the monitoring equipment SE1-1, SE2-1, SE3-1 and SE4-1 are identified on Drawings Ref. A1011, A1011-1 to A1011-8 included with the application.

5.3 STORMWATER EMISSIONS

The surface water is ultimately discharged to the stormwater network to the north, east and west, via Emission Points SW1, SW2, SW3, SW4, SW5, SW6, SW7 and SW8. Stormwater discharging from SW1, SW2 and SW3 flows to the Grange Castle Business Park attenuation pond, which ultimately discharges to the River Griffeen. Stormwater discharging from SW4, SW5 and SW6 flows into the stormwater system to the west of the site and into the River Griffeen. Stormwater from SW7 and SW8 drains to the stormwater system and attenuation tanks located in the neighbouring Microsoft Dub 14 & 15 site to the west, ultimately discharging to the River Griffeen. The stormwater emission points are shown in Drawing A1011, A1011-1 to A1011-8 included with the application. The foul water is separated from all stormwater lines in accordance with BAT.

The only bulk chemicals stored are hydrocarbons (Diesel/HVO) and there is a low risk of contamination of stormwater, this would only be from complete containment failure resulting in a major leak or spill or emergency situation such as fire. The implemented mitigations below are will further reduce that risk.

Excess cooling water used in the AHU's is periodically discharged to the stormwater sewer. The excess water is unused clean mains water which has not been subject to

any addition of chemicals. An average of 8.2m³ of excess cooling water is discharged from Dub 6, 7 and 8 while currently an average of 7.4m³ is discharged from Dub 9, 10, 12 and 13. Following the commissioning of the water treatment plant at the site the excess cooling water from Dub 9 and 10 will be recycled through the water harvesting system thus significantly reducing the discharge volumes. Dub 6, 7 and 8 will not be serviced by the water treatment plant and will continue to operate as is currently the case.

The environmental impact of these stormwater emissions are set out in Attachment-7-1-3-2 – Stormwater, Ground and Sewer Emissions Impact of this license application.

5.3.1 Treatment and Abatement Systems

The generators are housed within a generator yard with various designed control measures in place. The individual belly tanks are double skinned tanks, with level gauges (high and low) within the fuel tanks connected to an onboard controller which will alarm to prevent overfilling and identify a sudden loss of fuel within the tank. The containerised generator housing includes retention bunding in the base of the container, there are leak detection systems within the bund to alert in the event of a leak from the generator fuel tank or lubricating oil tank. The onboard controller for individual generators is connected to the Building Management System (BMS).

The hardstanding areas that drain surface water from the generator yard, loading dock, and fuel delivery areas pass through retention fuel separators prior to entering the existing surface water drainage system. The carparking areas also pass through retention fuel separators prior to entering the existing surface water. The fuel separators treat rainfall and prevent hydrocarbon spillages entering the existing stormwater sewer and stormwater attenuation tanks. There are level alarms connected to the BMS within the separators to alarm when they are full and require maintenance.

Potentially contaminated stormwater (e.g. in the event of a fire) that enters the stormwater attenuation tanks and system will be tested prior to discharge to the off-site storm water network/River Griffeen. Any stormwater of unacceptable quality will be pumped out of the attenuation tanks and system and disposed of appropriately.

5.3.2 Control and Monitoring

It is proposed that weekly visual inspections for discolouration and odour are undertaken of the stormwater discharge monitoring point (SW1-1 to SW8-1).

5.4 NOISE EMISSIONS

The primary source of noise arises from the building service plant which are required to service the Data Centre (i.e. the AHU air intake and the AHU air exhaust), routine testing of the back-up generators, and in the event of a power failure there is noise produced by the generators.

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 and the results are summarised in Attachment 7-1-3-2 (Noise Impact Assessment).

5.4.1 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 backup generator is contained within an acoustic container.

The noise mitigation measures incorporated into the site design includes the installation of either acoustic louvres, or low noise equipment to the data facades, as set out in Attachment 7-1-3-2 (Noise Emissions Impact Assessment).

5.4.2 Control and Monitoring

Annual day time, evening and night-time monitoring will be undertaken in accordance with the IE licence requirements.

6.0 MANAGEMENT OF RAW MATERIALS, INTERMEDIARIES AND WASTES

A list of all raw materials in use on the site is provided in Attachment 4.6.2.

The site produces minimal amounts of waste. Details of the estimated waste volumes, types, disposal/recovery techniques are provided in Section 8 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.

6.1 ENERGY EFFICIENCY AND RESOURCE USE

The operation of the installation will involve the consumption of electricity, fuel and mains water. The estimated quantities to be used when the installation is operational are specified in Attachment 4.6.1 The applicant will employ a variety of technologies to maximise the efficient use of energy within the installation. The installation is operated in accordance with an Energy Efficient Management System (EEMS), which is compliant and certified with the requirements of ISO50001, as well as the requirements of BAT.

7.0 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 this site.

The only substance stored on site controlled under Seveso/COMAH will be diesel for the backup 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 development has the capacity to store a maximum of approximately 2,957.1 m³ of fuel oil (diesel and/or HVO) at any one time.

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 are implemented to reduce the likelihood of accidents and mitigate the effects of the consequences of an accident at the installation.

8.0 MANAGEMENT AND PROCESS CONTROL SYSTEMS

8.1 BUILDING MANAGEMENT SYSTEM (BMS)

The facility operates a Building Management System (BMS) this is a highly sophisticated automation system for control, monitoring, data collection and alarm/reporting of all site wide process and conditions, electrical and mechanical systems. Within each mechanical plantroom or service area a wall or control panel mounted operator HMI touchscreen is to be provided. These are to be used by the operations team to access the BMS system remotely whilst attending to any breakdowns or planned service works within the plantrooms. These control panels are connected via ethernet to the local Network Switch within the BMS.

Overall, the BMS enables the operator to more promptly respond to problems as well as to identify, diagnose and address potential problems before they affect operations.

8.2 ELECTRICAL POWER MANAGEMENT SYSTEM (EPMS)

The electrical distribution services is provided with a dedicated Electrical Power Management System (EPMS) with interface facilities for the BMS to monitor, alarm and display the status of the plant for the Critical Environment (CE) Team. Data shall be stored in the Microsoft Cloud Infrastructure Health (CIH).

8.3 STANDARD OPERATING PROCEDURES AND EMERGENCY RESPONSE PLAN

The facility has a number of Standard Operating Procedures (SOPs) in place. These address all relevant operational process and environmental matters onsite including, but not limited to;

- Emergency Response Plan, including fire and explosion response, incident, spill response procedures,
- Generator testing
- Operational Waste Management;
- Chemical and fuel delivery, storage and handling;
- Water treatment plant processes;
- Maintenance schedule;
- Reporting on, investigating, and documenting incidents;

8.4 FIRE MANAGEMENT

There is a system for detection, alarm and fire suppression systems 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 system incorporates fire alarm panels strategically located throughout the building to provide both Fire Fighters and operational staff detailed indications of the fire alarm status and report any alarm or fault events and to provide detailed device address information including an active graphical display. Detection comprises manual call points, smoke and/or heat detectors and aspirating detection.

The fire detection and alarm system is subject to routine checks by site personnel and is inspected and tested by the external service provider on a regular basis.

There is a fire/sprinkler main supplied from a dedicated set of firewater storage tanks and associated pumps which will pressurise a separate firemain network.

8.4.1 Data Processing Areas

The fire alarm and detection system incorporates Aspirating Smoke Detection systems within the data processing facility for high sensitivity technical/pre-alarm only. The system interfaces to the main fire alarm systems.

Fire alarm interfaces are provided for all security doors and access control equipment. The fire alarm releases all doors in the event of a fire condition or by manual and automatic programmed override control from the fire alarm panel. The fire alarm interfaces with the building management system.

The data halls have gas fire suppression system installed integrated with the fire alarm system to operate upon a fire condition. After a pre-determined time, delay period following the required operation of smoke detectors the gas is released.

8.4.2 Ancillary Office Areas

Detection comprises manual call points, smoke and/or heat detectors as appropriate. Duct mounted smoke probes installed on the supply air to the offices and incorporate interfaces to shut down fresh air intake AHU plant in the event of a fire condition external to the building.

8.5 SITE CLOSURE

A certain amount of environmental risk is associated with the cessation of any licensable activity (site closure). An outline Site Closure Plan has been provided in Attachment 9-2-3 of this application.

It is anticipated that the EPA will impose suitable Conditions to the IE Licence once granted to ensure the proper closure of the activity with aim of protecting the environment.

9.0 ENVIRONMENTAL IMPACT ASSESSMENT

A total of 5 no. Environmental Impact Statements (EIS) relating to this activity have been prepared on behalf of Microsoft Operations Ireland Ltd were previously submitted to SDCC and have been submitted to the Agency as part of this application:

- EIS dated July 2013 submitted to SDCC under Reg. Ref: SD13A/0143 and included in this application as Attachment 6-3-8;
- EIS dated December 2013 submitted to SDCC under Reg. Ref: SD13A/0265 and included in this application as Attachment 6-3-9;
- EIS dated September 2014 submitted to SDCC under Reg. Ref: SD14A/0194 and included in this application as Attachment 6-3-10;
- EIS dated November 2015 submitted to SDCC under Reg. Ref: SD15A/0343 and included in this application as Attachment 6-3-11; and
- EIS dated March 2016 submitted to SDCC under Reg. Ref: SD16A/0088 and included in this application as Attachment 6-3-12.

The installation has been constructed and operates in accordance with SDCC for Reg. Ref: SD13A/0143, SD13A/0265, SD14A/0194, SD15A/0343, SD16A/0087, SD16A/0088, and SD21A/0288. Therefore the various EIS submitted to the EPA detailed above (Attachment 6-3-8 to 6-3-12 of the IE Licence application) are relevant to this IE License activity. Any further information, including reports and advice, relating to the environmental impact assessment of the proposed activity is made available and contained within Section 7 of this licence application .

9.1 ALTERNATIVES

9.1.1 Alternative Locations and Layouts

The facility is ideally located adjacent to other existing Microsoft data halls.

A total of 6 no. alternative project locations with suitable zoning and access to utilities were assessed during the procurement and planning stages of the development in 2013. It was concluded that having considered alternative sites that Grangecastle was a preferred option.

Several iterations of site layout were considered during planning stages of each phase of the development to arrive at the current constructed arrangement of buildings and site infrastructure.

9.1.2 Alternative Processes / Technologies

Alternative technologies are considered on an ongoing basis as part of the ongoing maintenance and improvement to the operational efficiency of the technology at the facility. Technical feasibility, environmental impact, efficiency, security, reliability, and cost are carefully considered when upgrading or replacing elements of the datacentres.

The applicant has a programme in place which continually assesses and improves this technology particularly with respect to minimising power and water consumption. Designs are constantly evolving, and replacement hardware is chosen with energy efficiency central to the decision-making process.

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

9.1.3 Alternative Mitigation

A total of 5 no. Environmental Impact Statements (EIS) relating to this activity have been prepared on behalf of Microsoft Operations Ireland Ltd were previously submitted to SDCC and have been submitted to the Agency as part of this application:

- EIS dated July 2013 submitted to SDCC under Reg. Ref: SD13A/0143 and included in this application as Attachment 6-3-8;
- EIS dated December 2013 submitted to SDCC under Reg. Ref: SD13A/0265 and included in this application as Attachment 6-3-9;
- EIS dated September 2014 submitted to SDCC under Reg. Ref: SD14A/0194 and included in this application as Attachment 6-3-10;
- EIS dated November 2015 submitted to SDCC under Reg. Ref: SD15A/0343 and included in this application as Attachment 6-3-11; and

- EIS dated March 2016 submitted to SDCC under Reg. Ref: SD16A/0088 and included in this application as Attachment 6-3-12.

The mitigation measures are outlined in the EIS completed for the installation at planning phase (operational phase and construction phase). These represent the best practice for achieving minimal impact on the receiving environment.

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.

10.0 CONCLUSIONS

This non-technical summary 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 site.

It should be noted that in order to obtain comprehensive detailed description of the installation and the activities that will be carried out there, the full application should be viewed.