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Attachment-7-1-3-2

Surface Water and Ground Emissions Impact Assessment

Report Prepared For

Amazon Data Services Ireland Limited

Report Prepared By

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Our Reference

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1.0 INTRODUCTION

This report presents the assessment of emissions from the Site to water and ground as a result of the operation of the data storage facilities to support the Industrial Emissions Licence Review Application. Due to the interrelationships between these aspects a combined single impact assessment report has been prepared. Additionally, for this same reason the wider impacts of emissions to surface water and foul sewer have also been discussed herein.

This report was completed in a format consistent with the *Environmental Protection Agency's (EPA) Licence Application Form Guidance – Industrial Emissions (IE), Integrated Pollution Control (IPC) and Waste (EPA, 2018).*

The Application Form Guidance states that: *The expectation is for the 'receiving environment report' to be separate from the 'emissions impact assessment' but they are interrelated. Information may be combined in the 'impact assessment report', where it is logical to do so. In this case the reason for combining the reports should be clearly stated in the submitted report.*

Due to the nature of the localised impacts of the Installation and the completion of baseline assessment and separate modelling reports for emissions (air and noise), it is logical to combine the receiving environment report' and 'emissions impact assessment' into one report.

The Installation has no process emissions to ground, groundwater, or surface water.

The emission to storm sewer consists of stormwater runoff from building roofs, yards and the road network. Residual cooling water, associated with the evaporative cooling process (clean water applied for cooling), is also discharged from the cooling systems to the storm sewer. There are no additives to the water during the cooling process.

The stormwater from the existing Installation is discharged at 2 no emission points. SW1 discharges to a 450mm business park storm sewer which is located to the south of the existing Installation and SW2 connects to a 900 mm diameter business park storm sewer, which is located to the east of the existing Installation that flows north to south.

The stormwater from the extended Installation is discharged at 1 no emission point. SW3 discharges to a 900 mm diameter business park storm sewer, which is located to the east of the existing Installation that flows north to south.

The stormwater passes through Hydrocarbon Interceptors on site to ensure that the quality of the stormwater discharge is controlled. This network is shown on Drawing 21_123F-00-XX-DR-C-1100 Surface Water Layout Plan. The business park storm sewer(s) outfall to the Santry River, located to the south of the Site; the Santry River flows 5.15 km east, to the North Bull Island transitional water body, and ultimately the Dublin Bay.

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

Domestic effluent arising from occupation of the existing and extended Installation is discharged to the public foul sewer (at Emission Points SE1 through SE5). The foul network ultimately coveys the wastewater for final treatment and disposal at Ringsend Wastewater Treatment Plant (WWTP) in Dublin.

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

The main substance of concern in respect of impacts on ground or surface water bodies is hydrocarbons from car park run-off or the unlikely event of an overspill from refilling the emergency generator tanks.

2.0 ASSESSMENT OF STORMWATER EMISSIONS

2.1 METHODOLOGY

This assessment of the stormwater emissions looks at the potential impact on the surface water environment. It includes a review of both the known stormwater emissions from the site as well as potential emissions through spills, accidents etc.

The existing surface water environment is described in terms of water quality with reference to environmental quality objectives and standards and any objectives and standards laid down for protected areas. This is followed by a summary and an assessment into the impacts of any existing or proposed emissions on the environment, including environmental media other than those into which the emissions are to be made.

This assessment has been prepared from both a desktop review of existing information, and a site specific investigation. The following is a list of sources of information consulted for use in this section:

- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- Environmental Protection Agency (EPA) – www.epa.ie on-line mapping and database information;
- Project C-Unit AF1, Clonshaugh Business and Technology Park, Dublin 17. Due Diligence Report, ADSIL 24th November 2010
- Site 1 Cahill Printers Facility Due Diligence Report ADSIL, 22nd February 2013.
- Site 2 Acco Rexel Facility Due Diligence Report, ADSIL, 22nd February 2013.
- Environmental Audit (Phase 1 – Historical Review and Site Walkover) for Clifton Scannell Emerson Associates by AWN ref TH/12/6520 7th February 2013
- Complete Baseline Report 2024 IED Licence Review Application, ADSIL, AWN Consulting.
- Site Investigation Report. DUB090 Data Centre & Ski Lodge Clonshaugh, Dublin 17. Site Investigations Ltd, September 2021;
- Due Diligence Report DUB090 - JCD Clonshaugh. ARUP, January 2021;
- Environmental Assessment Report. Clonshaugh Business Park. Ground Investigations Ireland, February 2020;
- Engineering Planning Report - Drainage & Water Services. Proposed Data Centre Development Clonshaugh Business and Technology Park. Clifton Scannell Emerson Associates, October 2021;
- Flood Risk Assessment. Data Centre Development Clonshaugh Business and Technology Park. Clifton Scannell Emerson Associates, September 2021.

2.2 RECEIVING ENVIRONMENT

The existing surface water environment in terms of water quality with reference to environmental quality objectives and standards and any objectives and standards laid down for protected areas is described in Section 7.3 of the Baseline Report (Attachment 4-8-3).

The Site is within the catchment of the Santry River which runs approximately 50m south of the site flowing in an easterly direction toward North Dublin Bay.

There are no streams on the site itself or along its boundaries. Stormwater run-off is collected and discharged to the public storm sewer which eventually discharges to the Santry River c. 50 meters to the south.

There is one water quality monitoring station located on the Santry River downstream of the proposed site which has quality ratings available within the last ten years. This monitoring location (Clonshaugh Road Bridge RS09S010300) obtained a Q rating of 2-3 - Poor Status (in 2022). There is also a station downstream on the River Mayne at the Hole-in-the-Wall Bridge (RS09M030500). This also obtained a Q rating of 2-3 (in 2022) which also denotes a "poor" rating for the same period.

Currently, the EPA classifies the WFD Ecological Status for the Santry River as having '*Poor Status'* (Cycle Status 2016 - 2021) with a current WFD River Waterbody risk of '*At risk of not achieving good status' for both rivers'.*

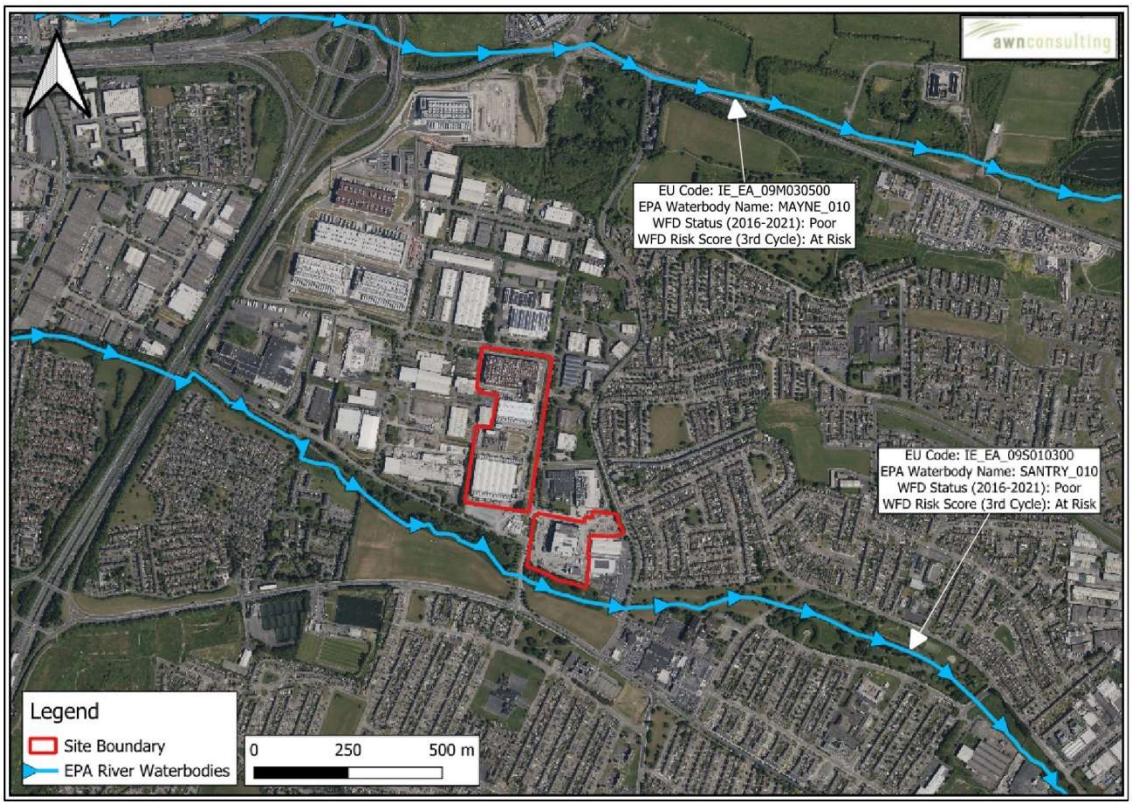

Figure 2.1 Hydrological Environment, illustrating the Santry River flowing in an easterly direction and classified as 'at risk of not achieving good status'.

2.2.1 Sensitive areas or areas of special interest

Appropriate Assessment (AA) Screening Reports (Attachment 6-3-4) have been prepared by Moore Group and has been submitted with the licence review application. Figure 2.2 below presents the Site in relation to nearby European sites.

This analysis found that the nearest European sites to the Project are the Dublin Bay sites, with the nearest being South Dublin Bay and River Tolka Estuary SPA (Site Code 004024) situated almost 3.92km to the south. Other sites with potential connectivity to the Project are the North Dublin Bay SAC (000206) and North Bull Island SPA (Site Code 004006); these are located over 4km to the east of the Project and indirectly linked via stormwater discharge to the Santry River. There is no connectivity to any other European sites.

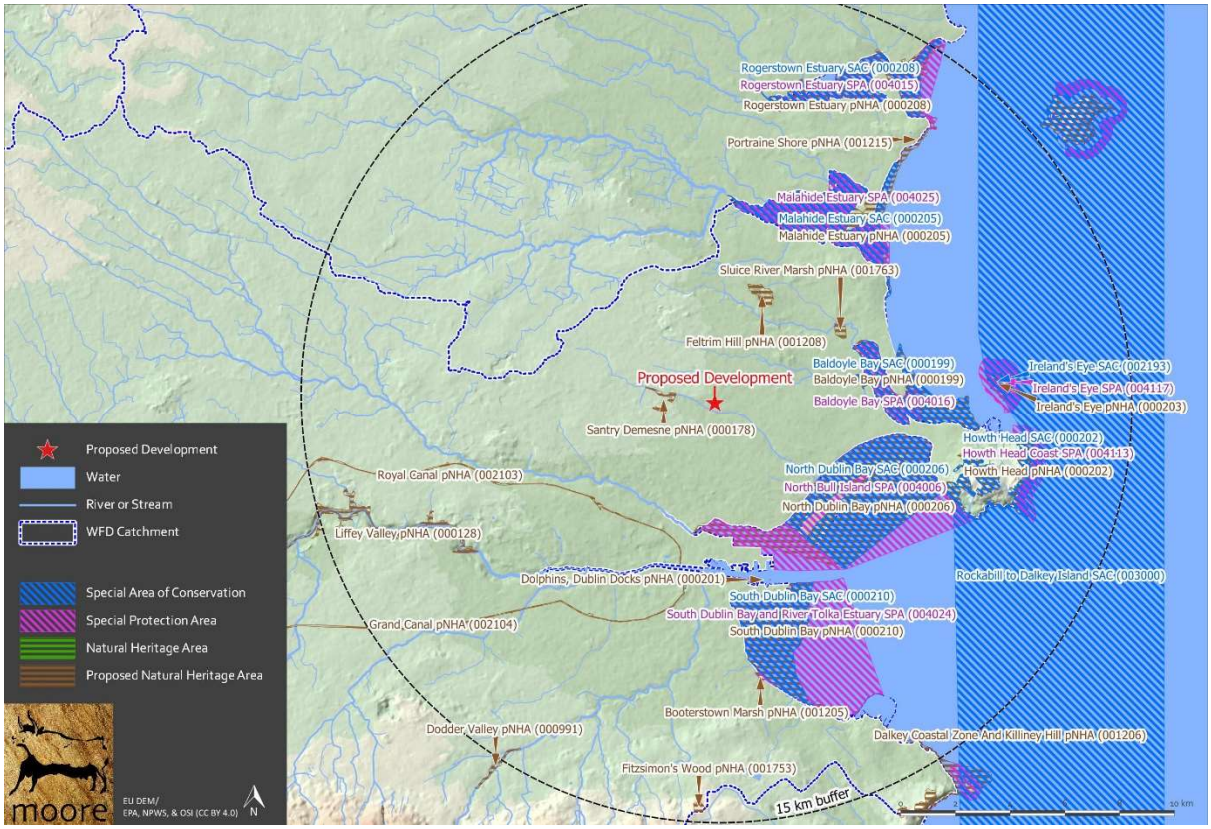

Figure 2.2 Site Location, Showing European sites and NHA's/pNHS'a in the vicinity of the Project

The lands in which the installation is located have no formal designations.

The AA Screening Reports concluded that:

1. The Site is not directly connected with, or necessary to the conservation management of the European sites considered in the assessment.
2. The Project is unlikely to either directly or indirectly significantly affect the Qualifying interests or Conservation Objectives of the European sites considered in this assessment.
3. The Project, alone or in combination with other projects, is not likely to have significant effects on the European sites considered in this assessment in view of their conservation objectives.

4. It is possible to conclude that significant effects can be excluded at the screening stage.
5. It can be excluded, on the basis of objective information, that the Project, individually or in combination with other plans or projects, will have a significant effect on a European site.

2.3 EMISSIONS TO SURFACE WATER AND ABATEMENT MEASURES

Details of the proposed stormwater drainage are presented in Attachment 4.8.1 (Operational Report). Any accidental emissions of oil, petrol or diesel could cause contamination to stormwater if the emissions enter the water environment unmitigated.

The primary potential impact relates to a failure or accidental spill of fuel oil which is stored and used on site for the emergency backup generators. Fuel oil is stored in multiple locations across the Site:

Existing Installation:

- Bulk Fuel Oil Storage
  - 3 no. 52,000 litre (Building W) fuel storage tanks
  - 5 no. 54,000 litre (Building X ,Y) fuel storage tanks
- Emergency Back-up Generator Fuel
  - 13 no. day tanks (Building W), each 2,500 litres
  - 20 no. day tanks (Building X), each 2,500 litres
  - 7 no. day tanks (Building Y), each 2,500 litres
- Fire Sprinkler Pump Fuel
  - 3 no. tanks each 1,000 litres(located between Building W and Y)
  - 3 no. tanks each 1,000 litres (located at Building W)

Extended Installation:

- Top Up Fuel Oil Storage
  - 1 no. 40,000 litre (Building U, V) fuel storage tank
- Emergency Back-up Generator Fuel
  - 10 no. belly tanks (Building U), each 16,000 litres
  - 1 no. belly tank (Building U), 4,700 litres
  - 1 no. belly tank (Building V), 8,500 litres
  - 1 no. day tank (Building V), 1,000 litres
- Fire Sprinkler Pump Fuel
  - 2 no. tanks, each 460 litres (Building U, V)
  - 1 no. tank, 900 litres (Building U, V)

Fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

There is a total fuel storage capacity on site of 748,250 litres or 748.25 m^3. If storing only diesel, this would be approximately 643.50 tonnes of diesel (assumed density of 0.86 kg/l). If using HVO, this would be approximately 582.14 tonnes (assumed density of 0.846 kg/l. The tanks on site are filled to up to approximately 90% capacity under normal conditions; therefore, the expected fuel storage on site is 673,425 litres, 673.425 m^3, which is approximately 579.15 tonnes of diesel, or 523.92 tonnes HVO. A combination of both may be used.

In order to minimise any impact on surface water environment from material spillages, the fuel storage tanks are located above ground and there is full containment. All containers are designed to be suitable for the chemicals stored within and in accordance with the EPA's guidelines for the storage and transfer of materials for scheduled activities (EPA, 2004). The design of all bunds conforms to standard bunding specifications - BS EN 1992-3:2006 *Eurocode 2 - Design of concrete structures - Part 3: Liquid retaining and containment structures*. The Operational Report (Attachment 4.8.1) outlines the fuel storage systems in detail.

A standard operating procedure for fuel unloading is in place at the Site to reduce the risk of spills. An on-site Emergency Response Plan (ERP) is in place. The Site maintains spill kits at all storage areas.

The stormwater from the existing Installation is discharged at 2 no emission points. SW1 discharges to a 450mm business park storm sewer which is located to the south of the existing Installation and SW2 connects to a 900 mm diameter business park storm sewer, which is located to the east of the existing Installation that flows north to south.

The stormwater from the extended Installation is discharged at 1 no emission point. SW3 discharges to a 900 mm diameter business park storm sewer, which is located to the east of the existing Installation that flows north to south. The business park storm sewer(s) outfall to the Santry River, located to the south of the Site; the Santry River flows 5.15 km east, to the North Bull Island transitional water body, and ultimately the Dublin Bay.

The stormwater passes through Hydrocarbon Interceptors on site to ensure that the quality of the stormwater discharge is controlled. This network is shown on Drawing 21_123F-00-XX-DR-C-1100 Surface Water Layout Plan.

The interceptors are equipped with online hydrocarbon detection and alarm system that connect to the BMS/EPMS critical alarm. These measures will prevent discharge of oils/fuels which may potentially be present in stormwater run-off from heavily trafficked areas, delivery zones, dock levellers and turning areas.

There are 3 no. Attenuation Storm Cells located on site that are designed to attenuate waters from the built areas:

<u>Existing Installation</u>

- Attenuation Storm cell 1 (170 m^3 capacity) is located to the south of the site. From there, the stormwater is discharged at emission point SW1, which connects to the existing 450 mm business park storm sewer located to the south of the existing Installation and subsequently to the Santry River.
- Attenuation Storm cell 2 (1,351 m^3 capacity) is located to the south of Building Y. From there, the stormwater is discharged at emission point SW2 which connects to the existing 900 mm business park storm sewer located to the east of the existing Installation that flows north to south, and subsequently to the Santry River.

<u>Extended Installation</u>

- Attenuation Storm cell 3 (800 m^3 capacity) at the north east corner of the extended part of the site, close to Building U. From there, the stormwater is discharged at emission point SW3, which connects to the 900mm diameter

storm sewer running north to south beneath the entrance road to the Business Park and subsequently to the Santry River.

There are stormwater flow control devices on the stormwater drainage system to reduce to the maximum permissible flow rate designed to have minimal impact on the hydrology of the surface water network.

Trapped gullies are utilised in all stormwater systems in the roads, turning bays and car park infrastructure so that sediment pollution to the local watercourses is minimised.

In accordance with BAT, clean stormwater will be kept separate from contaminated wastewater and there will be no inherent risk of cross-contamination.

The only chemical stored onsite, that is hazardous to the environment, is fuel oil. The stormwater drainage network has interceptors installed, which have level alarms that will be triggered if the interceptor is overloaded or malfunctions.

Due to the nature of the run-off, (stormwater from buildings and roads only) and the inclusion of hydrocarbon interceptors at key locations, the proposed discharge is unlikely to contain more than trace hydrocarbons and metals. Therefore, it is considered that the emission of stormwater will not contain significant quantities of Principal Polluting Substances *Environmental Protection Agency (Licensing) (Amendment) Regulations 2004 or* Priority Substances or Priority Hazardous Substances of the *EC Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009*.

In the event of a fire at the facility, firewater will be contained to prevent contamination of receiving waters. The onsite attenuation storm cell(s) will be used for retention of potentially contaminated firewater in the event of a fire or accident and the contained water will subsequently be treated on site or disposed of by a licenced contractor.

2.4 SURFACE WATER IMPACT ASSESSMENT

The installation will not have a noticeable impact on the surface water of the receiving environment. There is no direct discharge from the site to the Santry River; there is, however, an indirect discharge of stormwater via the public stormwater drain within the business and technology park, which subsequently discharges to the Santry River. A flow control system on storms cells is in place to achieve the required discharge rate to the stormwater drain.

There is a negligible risk of Principle Pollution Substances, Priority Substances or Priority Hazardous Substances (main polluting substances (as defined in the Schedule of EPA (Licensing)(Amendment) Regulations 2004, S.I. No. 394 of 2004) being discharged from the installation above the limits outlined in the Surface Waters Regulations (S.I. No. 272 of 2009 and amendments) via the stormwater network due to the controls and procedures in place to prevent and minimise spills and the presence of interceptors within the stormwater infrastructure at key locations. Mitigation measures in place to prevent and minimise spills have been implemented as shown in Attachment 4-8-1.

Based on this assessment, with incorporating mitigation measures, the Installation (including the extension to the Installation) will not have a significant impact on the

quality or water body status of the receiving surface water bodies. There is no relevant hydrological connectivity or biological connectivity to other European sites located within the zone of influence of the Project.

3.0 ASSESSMENT OF GROUND AND/OR GROUNDWATER EMISSIONS

3.1 METHODOLOGY

This section addresses the potential for emissions to ground/groundwater. The scope and detail of this assessment is consistent with the extent and type of emissions to ground.

The existing receiving environment is described in terms of the existing groundwater quality. The potential impacts to aquifers, soils, sub-soils and rock environment of the facility are summarised, including any impact on environmental media other than those into which the emissions are to be made. The assessment will be made against emission limit values where relevant.

This assessment has been prepared from both a desktop review of existing information, and a site-specific investigations. The following is a list of sources of information consulted for use in this report:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register;
- Project C-Unit AF1, Clonshaugh Business and Technology Park, Dublin 17. Due Diligence Report, ADSIL 24th November 2010
- Site 1 Cahill Printers Facility Due Diligence Report ADSIL, 22nd February 2013.
- Site 2 Acco Rexel Facility Due Diligence Report, ADSIL, 22nd February 2013.
- Environmental Audit (Phase 1 – Historical Review and Site Walkover) for Clifton Scannell Emerson Associates by AWN ref TH/12/6520 7th February 2013
- Complete Baseline Report 2024 IED Licence Review Application, ADSIL, AWN Consulting.
- Site Investigation Report. DUB090 Data Centre & Ski Lodge Clonshaugh, Dublin 17. Site Investigations Ltd, September 2021;
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- Environmental Assessment Report. Clonshaugh Business Park. Ground Investigations Ireland, February 2020;
- Engineering Planning Report - Drainage & Water Services. Proposed Data Centre Development Clonshaugh Business and Technology Park. Clifton Scannell Emerson Associates, October 2021;
- Flood Risk Assessment. Data Centre Development Clonshaugh Business and Technology Park. Clifton Scannell Emerson Associates, September 2021.

3.2 RECEIVING ENVIRONMENT

The receiving environment with regards to ground/ground water is set out in Section 7.2 of the Baseline Report (Attachment 4.8.3).

3.3 EMISSIONS TO GROUND AND ABATEMENT MEASURES

The installation has no proposed direct emissions to ground or ground water. The only potential impact of the installation to ground and ground water would be from indirect emissions from fuel and other accidental spills that may occur.

There is a potential for leaks and spillages from the fuel tank to occur on site. In addition to this there is a potential for leaks and spillages from vehicles along access roads, loading bays and in parking areas. Any accidental emissions of oil, petrol or diesel could cause contamination if the emissions enter the water environment unmitigated.

The primary potential impact relates to a failure or accidental spill of fuel oil which is stored and used on site for the emergency backup generators. Fuel oil is stored in multiple locations across the Site:

- Bulk Fuel Oil Storage
  - 3 no. 52,000 litre (Building W) fuel storage tanks
  - 5 no. 54,000 litre (Building X ,Y) fuel storage tanks
- Emergency Back-up Generator Fuel
  - 13 no. day tanks (Building W), each 2,500 litres
  - 20 no. day tanks (Building X), each 2,500 litres
  - 7 no. day tanks (Building Y), each 2,500 litres
- Fire Sprinkler Pump Fuel
  - 3 no. tanks each 1,000 litres(located between Building W and Y)
  - 3 no. tanks each 1,000 litres (located at Building W)
- Top Up Fuel Oil Storage
  - 1 no. 40,000 litre (Building U, V) fuel storage tank
- Emergency Back-up Generator Fuel
  - 10 no. belly tanks (Building U), each 16,000 litres
  - 1 no. belly tank (Building U), 4,700 litres
  - 1 no. belly tank (Building V), 8,500 litres
  - 1 no. day tank (Building V), 1,000 litres
- Fire Sprinkler Pump Fuel
  - 2 no. tanks, each 760 litres

Fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

There is a total fuel storage capacity on site of 747,720 litres, 747.72 m^3 or approximately 631.82 tonnes (assumed density of 0.86 l/kg). The tanks on site are filled to up to approximately 90% capacity under normal conditions; therefore, the total fuel storage on site is 672,948 litres, 672.95 m^3 or approximately 568.64 tonnes (assumed density of 0.86 l/kg).

The Operational Report (Attachment 4.8.1) outlines the fuel storage systems in detail.

In order to minimise any impact on the underlying subsurface strata from material spillages, the fuel storage tanks are located above ground, there will be full containment and all containers are designed to be suitable for the chemicals stored within and in accordance with the EPA's guidelines for the storage and transfer of materials for scheduled activities (EPA, 2004). The design of all bunds conforms to standard bunding specifications - BS EN 1992-3:2006 *Eurocode 2 - Design of concrete structures - Part 3: Liquid retaining and containment structures*. The Operational Report (Attachment 4.8.1) outlines the fuel storage systems in detail.

A standard operating procedure for fuel unloading is in place at the Site to reduce the risk of spills and an on-site Emergency Response Plan (ERP) is in place and the Site maintains spill kits at all storage areas,

There are green areas on site, however, potentially contaminating materials i.e., oil or fuel oil are not contained or stored on these areas. The risk of a hydrocarbon spill within these areas is low.

There are robust control measures in place for the storage and transfer of fuel. Any accidental emissions of fuel are more likely to impact on the surface water network. Further information on mitigation measures with respect to surface water pollution controls is discussed in Section 2.4 above.

3.4 IMPACT ASSESSMENT

As there is no direct discharge, and no direct pathway to groundwater from this site, there is no likely potential impact on the soil environment or underlying groundwater body.

As there are no planned discharges to ground of processed or contaminated waters, there are no future likely exceedances of the thresholds outlined in the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010).

4.0 REFERENCES

Environmental Protection Agency (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.

Environmental Protection Agency (EPA). (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.

Environmental Protection Agency (EPA). Envision water quality monitoring data, Available at: http://gis.epa.ie/Envision/. (Accessed: Feb 2022).

Geological Survey of Ireland. Available at: http://www.gsi.ie (Accessed: Feb 2022).

National Parks and Wildlife Services (NPWS) – Protected Site Register

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