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Attachment-7-1-3-2

Surface Water and Ground Emissions Impact Assessment

Report Prepared For

Amazon Data Services Ireland Limited

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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 Application. Due to the interrelationships between these aspects both thematic have been combined into a single Impact Assessment report, 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 will have no proposed process emissions to ground, groundwater, or surface water.

The only planned emission to surface water consists of clean stormwater from building roofs, yards and the road network.

The outfall from the Site network to the Landlords network is at 2 no. Emission Points (SW1 and SW2) as shown on Drawing 21_123J-CSE-00-XX-DR-C-1100 Surface Water Layout Plan. The Landlords stormwater system discharges attenuated flows to the to the existing South Dublin County Council (SDCC) surface water sewer, located to the northwest in the Baldonnel Road. This stormwater sewer flows north to the River Griffeen. The River Griffeen flows in a northerly direction and confluences with River Liffey at Lucan >4 km north of the site.

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 Installation is be collected in foul drains within the site and discharged to the existing foul drainage network. The foul network ultimately discharges into a regional pumping station before 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 this respect of impacts on ground or surface water bodies is hydrocarbons from car park run-off or in the unlikely event of an overspill from refilling the emergency generator diesel 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;
- IGSL Ltd. Cyrus One – Grange Castle Business Park South, Geotechnical Investigation Report, Project No. 20544 January 2018

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 7.3.1 of the Baseline Report (Attachment 4-8-3).

The drainage from the site is directed to the River Griffeen, a tributary of the River Liffey located 200 meter to the west of the site however the drainage outfalls C. 500 meters north of the site. There are no streams on the site itself or along its boundaries. The River Griffeen flows north and drains into the River Liffey at Lucan. The River Liffey lies >4km north of the site and discharges in to River Liffey Estuary transitional water body and ultimately Dublin Bay. The hydrological environment is presented in insert 2.1 below.

There are three water quality monitoring stations located on the River Griffeen, one upstream of the site and two downstream of the site. The upstream location (Griffeen first Bridge E of Milltown) has a Q rating of 3, ‘Poor’ status (in 1991), the two down stream locations (Griffeen – Esker Bridge and In Lucan Village) both have a Q rating of 3, ‘Poor’ status in 1991 and 2019 respectively.

The Lucan Bridge monitoring station on the River Liffey downstream of the River Griffeen has a Q rating of 3 – 4 ‘Moderate’ status.

In accordance with the Water FrameWork Directive (WFD), each river catchment within the former ERBD was assessed by the EPA and a water management plan detailing the programme of measures was put in place for each. Currently, the EPA classifies

the WFD Ecological Status for the River Griffeen and the River Liffey waterbody as having '*Moderate Status*' (Cycle Status 2013-2018) with a current WFD River Waterbody risk score of 1a, '*At risk of not achieving good status'.*

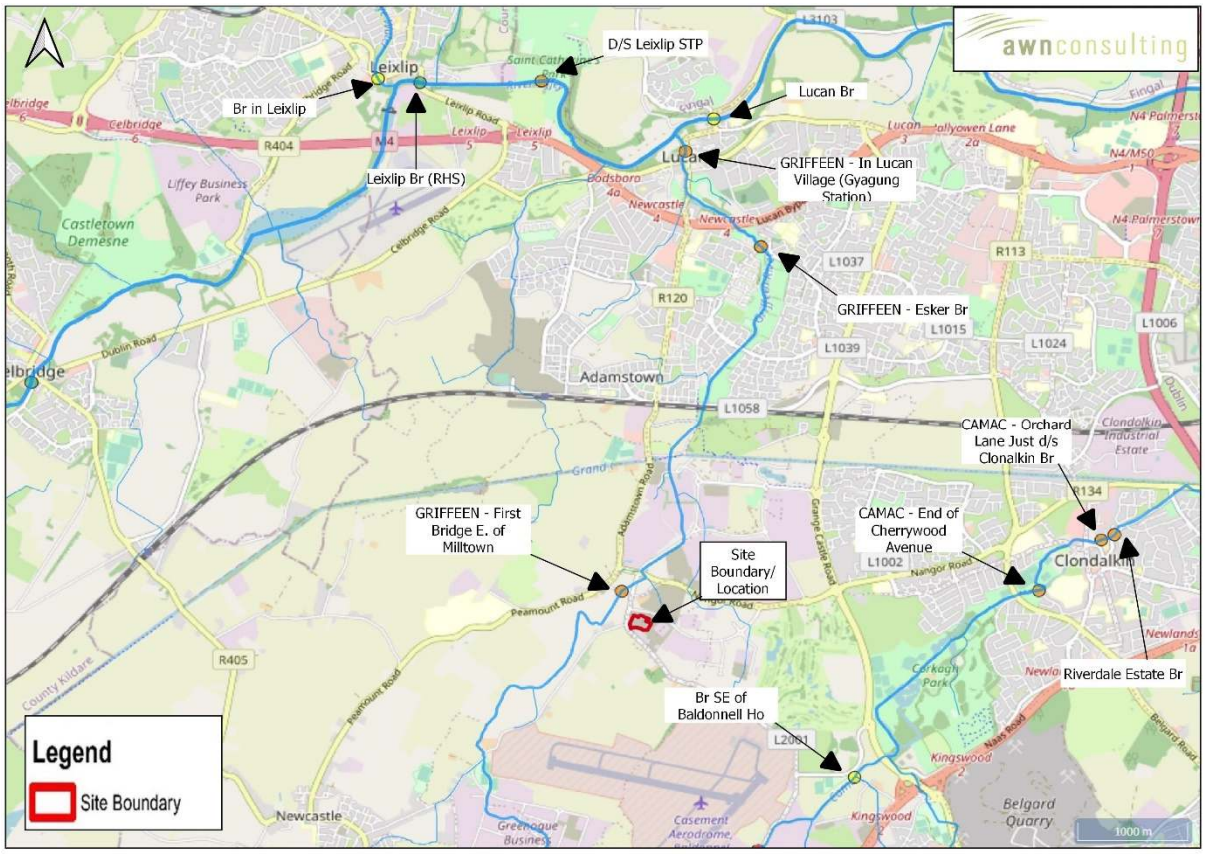
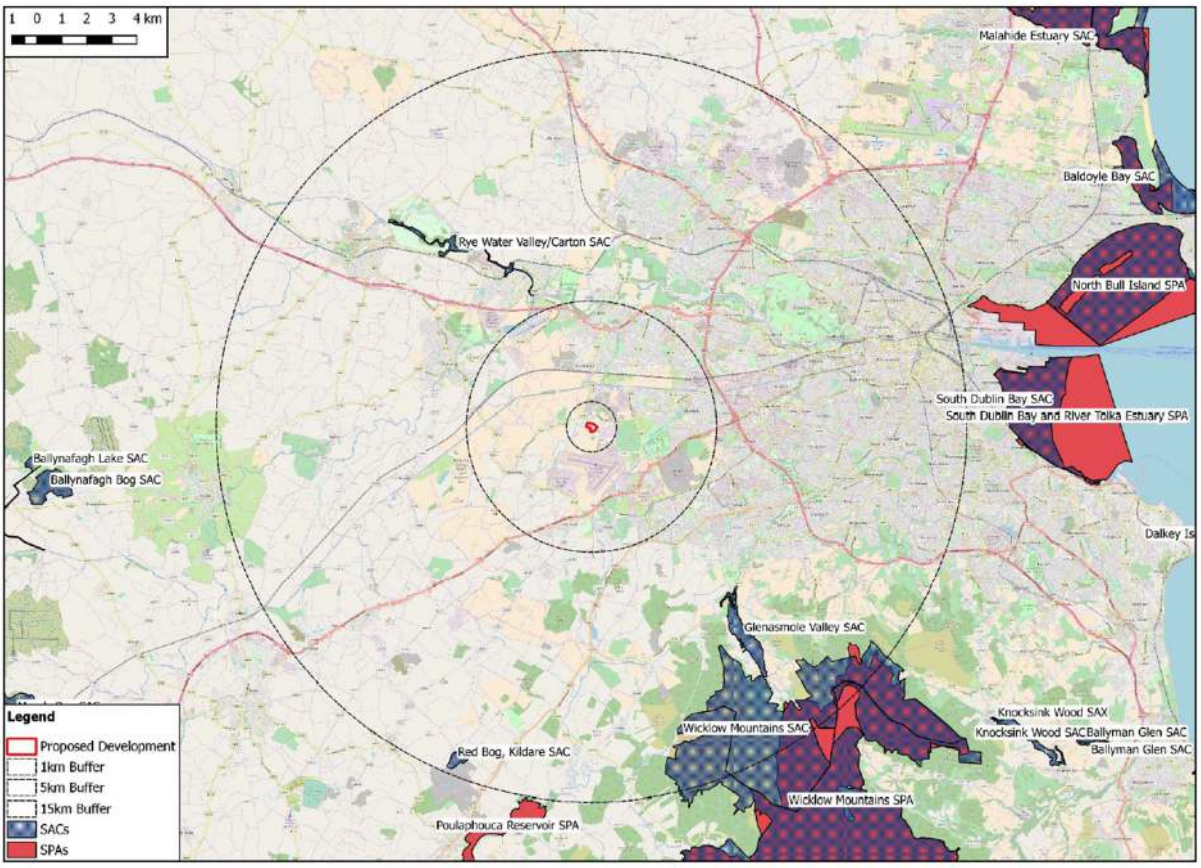


Figure 2.1 Hydrological Environment

2.2.1 Sensitive areas or areas of special interest

An Appropriate Assessment (AA) Screening Report (Attachment-6-3-4-AA Screening-Planning-Apr-2019) has been prepared by Scott Cawley and has been submitted with the licence application. Insert 2.2 below presents the site in relation to nearby European sites.



Insert 2.2 Site Location in relation to nearby European sites and NHAs/pNHAs within 15 km of the proposed Project.

There is no potential for connectivity between the ADSIL site and the closest European site, Rye Water Valley/Carton SAC (Site Code 001398), which is located approximately 5.6 km to the northwest. There is no potential for connectivity between the ADSIL site and the Glenasmole Valley SAC (Site Code 001209) and the Wicklow Mountains SAC (002122) which are located 8.6 km and 10.2 km to the southeast respectively. The Red Bog Kildare SAC (Site Code 000397) is 14 km to the southwest with no connectivity to the ADSIL site. The Wicklow Mountains SPA (Site Code 004040) is located 13.4 km to the southeast with no connectivity to the ADSIL site.

The closest European sites with potential connectivity to the ADSIL site are those associated with Dublin Bay, including South Dublin Bay and River Tolka Estuary SPA (Site Code 004024), North Dublin Bay SAC (Site Code 000206), and North Bull Island SPA (Site Code 004006), which are located over 18.5 km to the east falling outside the 15km radius illustrated in Insert 2.2.

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

The AA Screening Report (Attachment 6-3-4) concluded that there is no possibility of any significant effects on all European sites. Based on the 2018 Appropriate Assessment Screening report it is the view of Scott Cawley that it is not necessary to undertake any further stage of the Appropriate Assessment process.

2.3 EMISSIONS TO SURFACE WATER AND ABATEMENT MEASURES

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

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

- The 16 no. emergency backup generators at Buildings A are accompanied by a double skinned belly tanks (32,000 litres) and double skinned day tank (1,000 litres each)
- The 1-no. diesel powered fire pump associated with Buildings A is accompanied by a 400 L double skinned day tank.
- Diesel fuel pipelines are above ground and are Carbon Steel.

There is a total diesel storage capacity on site of 528,400 litres 528 m^3 or approximately 454 tonnes (assumed density of 0.86 kg/l). The tanks on site are filled to 80% capacity under normal conditions; therefore, the total diesel stored on site is 422,720 litres, 422 m^3 or approximately 363 tonnes (assumed density of 0.86 kg/l).

In order to minimise any impact on surface water environment 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 will conform 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 diesel 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 it place, the site maintains spill kits at all storage areas,

All site stormwater is drained via Class 1 hydrocarbon interceptors attenuation systems following which the stormwater will discharge via a hydrobrake (to control flow) to the storm sewer.

The hydrocarbon 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 and ensure that run-off discharges at greenfield run-off rates as current.

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

The discharge from the stormwater attenuation systems will be controlled to greenfield runoff rates.

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 hazardous to the environment that is stored onsite is diesel. Diesel will be prevented from entering the attenuation system and leaving the site by the hydrocarbon interceptors. The interceptors have level alarms that will be triggered if the interceptor is overloaded or malfunctions.

A penstock will be installed on the outfall of the stormwater attenuation system(s) that will be closed to prevent any overflow of diesel into the attenuation system escaping into the storm sewer.

Due to the nature of the run-off (stormwater from buildings and roads only) and the inclusion of hydrocarbon interceptors, 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 basin will be used for retention of potentially contaminated firewater in the event of a fire or accident and water subsequently treated on site or disposed of by a licenced contractor. The total available capacity afforded by the basin is more than sufficient to accommodate the maximum volume of contaminated fire water anticipated in the fighting of a fire at the installation.

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 to surface water; there is an indirect discharge of attenuated stormwater which is discharged to the existing SDCC surface water drainage main, located to the northeast in the Baldonnel Road. The public storm sewer flow to the north draining into the River Griffeen, which flows in a northerly direction and confluences with River Liffey located to the north of the Site. The River Liffey flows 12 km east, to the River Liffey Estuary transitional water body, and ultimately Dublin Bay.

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) via the stormwater network due to the stringent controls and procedures in place to prevent and minimise spills and the presence of interceptors within the stormwater infrastructure. 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 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 is 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 from site-specific investigation information. The following is a list of sources of information consulted for use in this

- 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;
- 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;
- IGSL Ltd. Cyrus One – Grange Castle Business Park South, Geotechnical Investigation Report, Project No. 20544 January 2018

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).

As outlined in the Baseline Report (Section 7.2 and Section 9.0) there is no known ground and/or groundwater contamination, historical or current, on or under the site. Bedrock is shallow at the site and the aquifer underlying the site is poor to locally important, with extreme vulnerability.

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 diesel fuel which is stored and used on site for the emergency backup generators. Diesel is stored in multiple locations across the site.

- The 16 no. emergency backup generators at Buildings A are accompanied by a double skinned belly tanks (32,000 litres) and double skinned day tank (1,000 litres each)
- The 1-no. diesel powered fire pump associated with Buildings A is accompanied by a 400 L double skinned day tank.
- Diesel fuel pipelines are above ground and are Carbon Steel.

There is a total diesel storage capacity on site of 528,400 litres 528 m^3 or approximately 454 tonnes (assumed density of 0.86 kg/l). The tanks on site are filled to 80% capacity under normal conditions; therefore, the total diesel stored on site is 422,720 litres, 422 m^3 or approximately 363 tonnes (assumed density of 0.86 kg/l).

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 will conform 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 diesel 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 it place, the site maintains spill kits at all storage areas.

There are green areas and areas of permeable paving (car parks) on site, however, potentially contaminating materials i.e., oil or diesel are not contained or stored on these areas. The car parking bays of permeable paving materials allows rainwater to percolate into the substrata and recharge the groundwater. The risk of a hydrocarbon spill within there areas is low, and permeable paving are a proven source control technique in handling surface water run off small amounts of hydrocarbons are bio-degraded in the paving system.

The control measures in place for the storage and transfer diesel fuel any accidental emissions of diesel is more likely to impact on surface water network. Further information on mitigation measures with respect to surface water pollution controls are 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 the soil environment or underlying groundwater body.

There are no proposed process emissions to ground from the installation. 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: April 2022).

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