

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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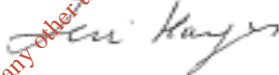
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1.0 INTRODUCTION

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 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 discharges off site at 6 no. Emission Points (SW1, SW2, SW3, SW4, SW5 and SW6). Site drainage is shown on Drawing 21_123E-00-XX-DR-C-1100 Surface Water Layout Plan included with this application. Stormwater is discharged to the 450 mm diameter, 600mm diameter or 900mm diameter public storm sewer that is located to the east of the site that flows north to south.

The stormwater from the site ultimately discharges off site within the 900mm diameter public storm sewer to the south-west of Building A, this public stormwater sewer discharges to the Tymon River which flows through Bancroft Park. The Tymon River goes on through Tymon North, turning northeast. It flows into the River Liffey as the Poddle River at Wellington Quay in central Dublin 10.2 km downstream 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 will 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 bulk diesel tanks.

2.0 ASSESSMENT OF STORMWATER EMISSIONS

2.1 METHODOLOGY

This assessment of the stormwater emissions assesses 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 T Greenhills Business Park, Tallaght, Dublin 24 Due Diligence Report ADSIL, Clifton Scannell Emerson Associates (CSEA), 29th November 2010.
- Disinvestment Site Assessment Tesco Distribution Warehouse, Greenhills Road, Tallaght, Dublin. For Tesco Ireland Ltd., Delta Simons Environmental Consultants 14th August 2008.
- Initial Report on Deisel Spillage at Power Imports and Wholesale, Project No. 98/74 13th July 1998, Carew Associates, Construction Engineering Consultancy.
- Progress Report Deisel Spillage at Power Imports and Wholesale, Project No. 98/74 15th July 1998, Carew Associates, Construction Engineering Consultancy.
- Initial Report on Clean Up Process at Power Imports and Wholesale, Project No. 98/76 20th July 1998, Carew Associates, Construction Engineering Consultancy.
- Report on Deisel Spillage to Tymon/Poddle River at Tesco Distribution Centre Tallaght, Project No. 98/76 3rd August 1998, Carew Associates, Construction Engineering Consultancy.
- Building B Site Due Diligence Report ADSIL, Clifton Scannell Emerson Associates (CSEA), 1st August 2014.
- Ground Investigations Ireland Ltd. Building B – Due Diligence, Greenhills Business Park Ground Investigation Report 31st July 2014.
- Phase 1 Environmental Due Diligence Assessment Greenhills Business Park, Tallaght, Dublin 24. 30th July 2014 AWN Consulting

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 Tymon River which runs approximately 50m south of the site flowing in an easterly direction toward Tymon Park. The River then flows northwards through Tymon Park crossing beneath the M50 where it feeds into the River Poddle. The Poddle passes through Willington, Templeogue, Kimmage in a north-easterly direction towards the River Liffey.

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

The nearest downstream EPA monitoring station on the River Poddle at 'the Priory' Kimmage Road (RS09P030400) obtained a Q rating of 3 - Poor Status (in 2007).

Currently, the EPA classifies the WFD Ecological Status for the Poddle and Dodder waterbodies as having 'Poor Status' (Cycle Status 2007-2009 and Cycle Status 2013-2018 respectively) with a current WFD River Waterbody risk of 'At risk of not achieving good status' for both rivers. The assessment which determined 'at risk' status was completed in 2020 and was primarily based on 2018 monitoring data. Pressure on these water bodies was determined 'significant' as part of the assessment.

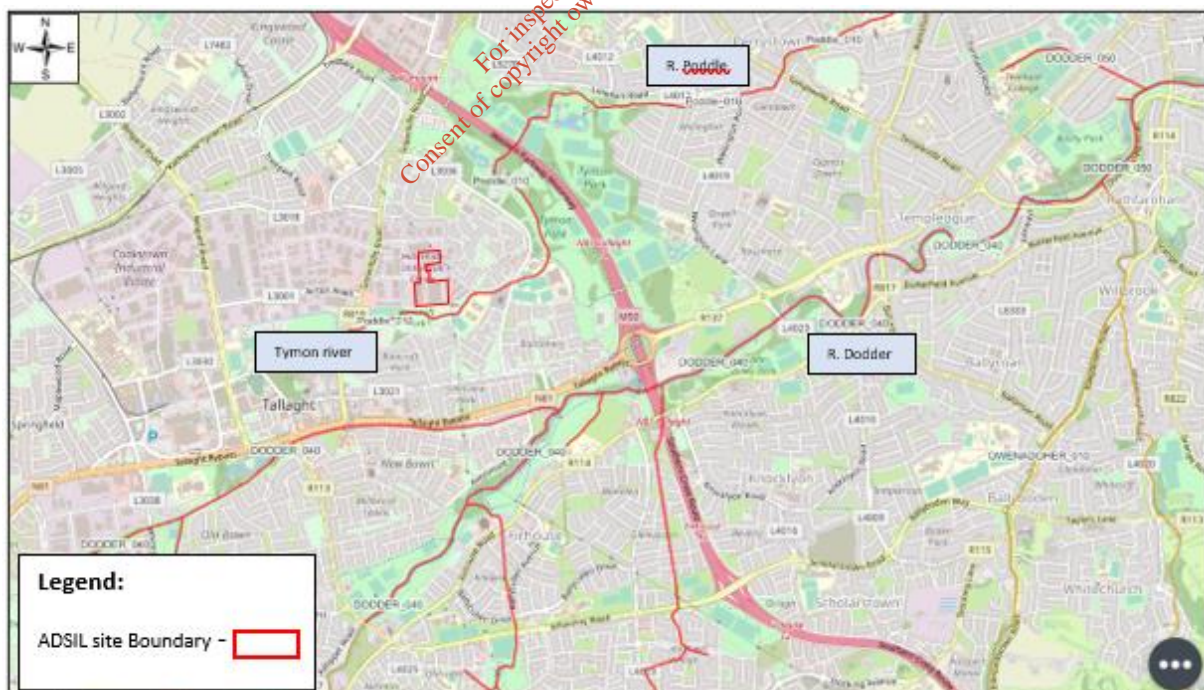


Figure 2.1 Hydrological Environment, illustrating the River Poddle and the River Dodder flowing in a easterly direction and classified as 'at risk of not achieving good status'. (indicative site location shown in red).

2.2.1 Sensitive areas or areas of special interest

An Appropriate Assessment (AA) Screening Report (Attachment 6-3-4) has been prepared by Moore Group and has been submitted with the licence 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 Glenasmole Valley SAC, approximately 3.82km to the south, and the two Wicklow Mountains sites, Wicklow Mountains SAC and SPA, both over 6km to the south. However, these three European sites are located on elevated ground to the south of the development and that there is no connectivity to the proposed Project. The closest sites with potential connectivity to the Project are those associated with Dublin Bay, which are located approximately 11 km to the east of the Project and indirectly linked via Ringsend WWTP. Based on distance and the low probability of an accidental release there is no likelihood of an impact on the Natura habitat status. There is no connectivity to any other European sites.

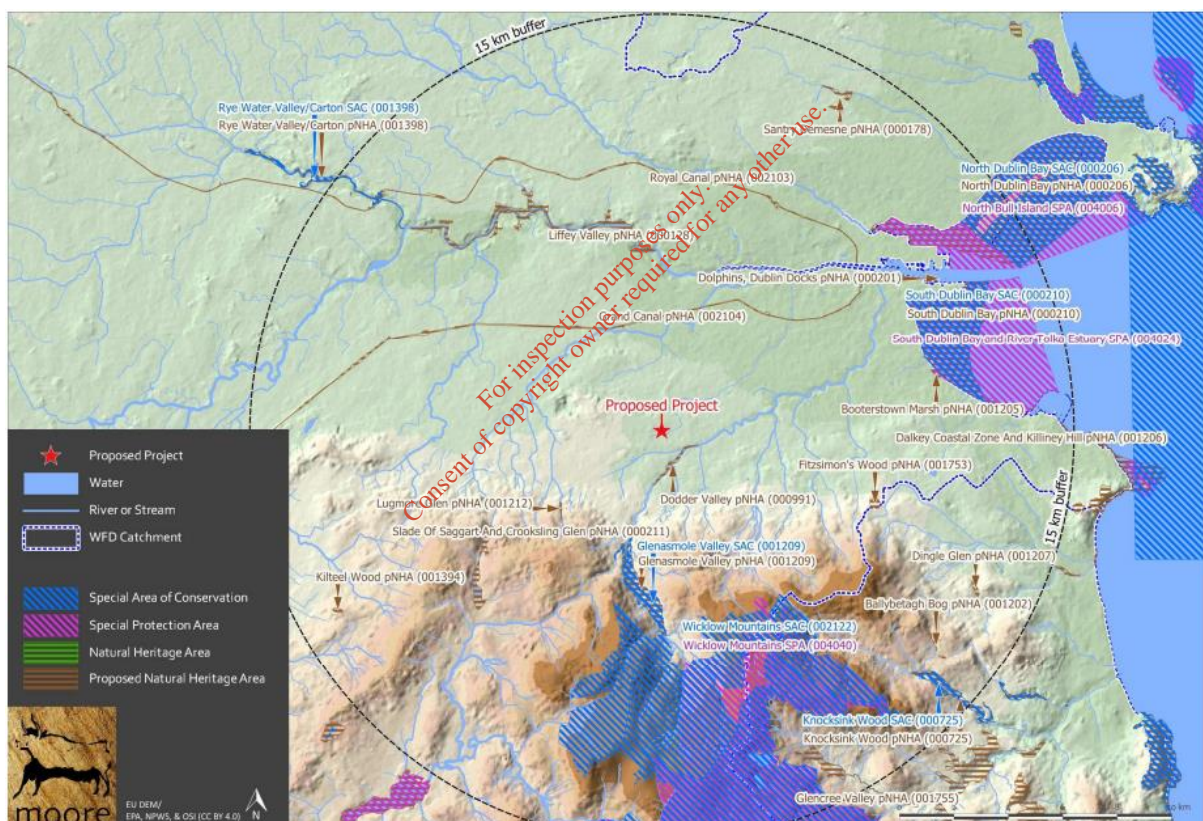


Figure 2.2 Site Location, Showing European sites and NHA's/pNHS's in the vicinity of the Project

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

The AA Screening Report 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 site is unlikely to either directly or indirectly significantly affect the Qualifying interests or Conservation Objectives of the European sites considered in the report

3. The Site, alone or in combination with other projects, is not likely to have significant effects on the European sites considered in the assessment.
4. It is possible to rule out that the site is likely to have significant impacts on any European sites considered in the assessment.

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

- Bulk diesel is supplied to the Building A generators from 4 no. 54,000L tanks located in the tank farm facility in the southeast of the Site.
- Bulk diesel is supplied to the Building B and C generators from 4 no. 52,000L tanks located in the tank farm facility in the northeast of the Site.
- Each of the 24 no. emergency backup generators at Buildings A are accompanied by a double skinned day tank (2,500 litres each).
- Each of the 13 no. emergency backup generators at Buildings B are accompanied by a double skinned day tank (4,000 litres each).
- Each of the 9 no. emergency backup generators at Buildings C are accompanied by a double skinned day tank (4,000 litres each).
- The 2-no. diesel powered fire pumps at Building A which have 3 x 1m³ day tanks.
- The 2-no. diesel powered fire pumps at Building B and C which have 3 x 1m³ day tanks.
- Diesel fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

There is a total diesel storage capacity on site of 545,000 litres, 545 m³ or approximately 468 tonnes (assumed density of 0.86 l/kg). The tanks on site are filled to 80% capacity under normal conditions; therefore, the total diesel storage on site is 436,000 litres, 436 m³ or approximately 375 tonnes (assumed density of 0.86 l/kg).

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 in place, the Site maintains spill kits at all storage areas.

The stormwater from the site is discharged at the 6 no emission points to the 450 mm diameter, 600mm diameter or 900mm diameter public storm sewer that is located to the east of the site that flows north to south. The stormwater passes through Hydrocarbon Interceptors (with the exception of SW4 and SW6) to ensure that the quality of the stormwater discharge is controlled. This network is shown on Drawing 21_123E-00-XX-DR-C-1100 Surface Water Layout Plan. The stormwater network

discharging to SW6 collects surface water from roof run off from Building B, and the stormwater network discharging to SW 4 includes general site drainage from a car parking area to the north of Building A.

All site stormwater from areas where there is a risk of the surface water being impacted by hydrocarbon contamination are drained via Class 1 by-pass interceptors. 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 new build areas:

- Attenuation Storm Cell No. 1 (187.2 m³) located in the southwest of the Installation site designed to cater for runoff from Building A extension.
- Attenuation Storm Cell No. 2 (460 m³) located in the north east of the Installation site, is designed to cater for runoff from Building B.
- Attenuation Storm Cell No 3 (277 m³) in the east of the site, is designed to cater for runoff from Building C.

There is a stormwater flow control device located downstream of the storm cells to reduce to the maximum permissible flow rate designed to have minimal impact on the hydrology of the surface water network.

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.

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 on site, that is hazardous to the environment, is diesel. Diesel will be prevented from entering the attenuation systems by the hydrocarbon interceptors. The interceptors 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*.

It is intended to install a penstock on the outfall prior to the discharge into the stormwater main (Emission Points SW1, SW2, SW3, and SW5). Once installed, the penstock will allow the outfall of the storm cell(s) and drains to be closed off to inhibit the outflow in the event of a spill or a fire.

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 water subsequently 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 Tymon River; there is however, an indirect discharge of stormwater via the public stormwater drain within the industrial estate, which subsequently discharges to the Tymon River. A flow control system where storm cells are in place is used 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 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 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 T Greenhills Business Park, Tallaght, Dublin 24 Due Diligence Report ADSIL, Clifton Scannell Emerson Associates (CSEA), 29th November 2010.

- Disinvestment Site Assessment Tesco Distribution Warehouse, Greenhills Road, Tallaght, Dublin. For Tesco Ireland Ltd., Delta Simons Environmental Consultants 14th August 2008.
- Initial Report on Deisel Spillage at Power Imports and Wholesale, Project No. 98/74 13th July 1998, Carew Associates, Construction Engineering Consultancy.
- Progress Report Deisel Spillage at Power Imports and Wholesale, Project No. 98/74 15th July 1998, Carew Associates, Construction Engineering Consultancy.
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- Ground Investigations Ireland Ltd. Building B – Due Diligence, Greenhills Business Park Ground Investigation Report 31st July 2014.
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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 known historical residual localised ground and groundwater contamination at two locations beneath the southern section of the Site. The historic hydrocarbon contamination is confined locally within fill encased within low permeability boulder clay and based on the 2008 intrusive investigation the historic contamination identified in 1998 has remained immobile.

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.

- Bulk diesel is supplied to the Building A generators from 4 no. 54,000L tanks located in the tank farm facility in the southeast of the Site.
- Bulk diesel is supplied to the Building B and C generators from 4 no. 52,000L tanks located in the tank farm facility in the northeast of the Site.

- Each of the 24 no. emergency backup generators at Buildings A are accompanied by a double skinned day tank (2,500 litres each).
- Each of the 13 no. emergency backup generators at Buildings B are accompanied by a double skinned day tank (4,000 litres each).
- Each of the 9 no. emergency backup generators at Buildings C are accompanied by a double skinned day tank (4,000 litres each).
- The 2-no. diesel powered fire pumps at Building A which have 3 x 1m³ 'day tanks'.
- The 2-no. diesel powered fire pumps at Building B and C which have a 1m³ 'day tank' each.
- Diesel fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

There is a total diesel storage capacity on site of 545,000 litres, 545 m³ or approximately 468 tonnes (assumed density of 0.86 l/kg). The tanks on site are filled to 80% capacity under normal conditions; therefore, the total diesel storage on site is 436,000 litres, 436 m³ or approximately 375 tonnes (assumed density of 0.86 l/kg).

The Operational Report (Attachment 4.8.1) outlines the diesel 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 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 in place, the Site maintains spill kits at all storage areas,

There 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.

The known historical contamination underlying the site does not pose a risk to groundwater as it is immobile and naturally attenuated within boulder clay.

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.

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

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