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ATTACHMENT-4-8-3 COMPLETE BASELINE REPORT

Technical Report Prepared For
Amazon Data Services Ireland Limited

Prepared By

Conor McKeon

Environmental Consultant

Our Reference

CMK/21/1056WR01

Date of Issue

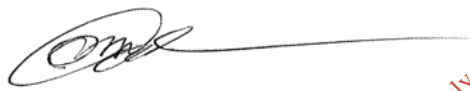
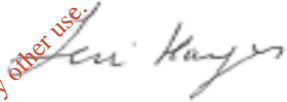
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Title	Senior Environmental Consultant	Director
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EXECUTIVE SUMMARY

This soil and groundwater quality baseline report has been completed as part of the ADSIL IED licence application. The report has been prepared in compliance with *European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions*.

The only relevant bulk hazardous substances (substances stored or used onsite and which are classified as hazardous by the EPA under the Groundwater Regulations and contained in bulk storage) is diesel for backup generators. The diesel store was of sufficient volume to be identified as a hazard present at the site which has the potential to impact soil and groundwater if not adequately mitigated during storage and operation at the plant.

A review of containment and mitigation measures at the facility confirms that the risk of a contamination event resulting in soil or ground water contamination is low. These measures include hard standing, adequate bunding, tank level alarms, double lined transfer lines, spill management procedures and hydrocarbon interceptors on stormwater lines.

The site is located in Blanchardstown Business Park 2km from the N3 Road and 2.5km from the M50. The park is situated 9km from Dublin City Centre. Ballycoolin Business Park is located to the north of the site comprising of various technology businesses. To the west and south of the site are various manufacturing facilities. Beyond the Snugborough Road to the west of the site is the National Sports Campus. South of the IDA Business and Technology Park is the residential area of Corduff. Access to and from the site at present is from the main road through the IDA Business Park. The site has a total area of circa 13.08ha.

A review of the site history confirmed that the original 'Hexagon' building was constructed at the centre of the site by Mostec in 1979 to 1981 during the development of the Business and Technology Park. The building changed ownership to Fujitsu in 1989 to 1990 and subsequently changed ownership to the Hexagon Partnership in 2002. Prior to ADSIL occupying the building in 2010, Siemens had occupied the building which was utilised as an office. The site was occupied by ADSIL from 2010 and the existing Hexagon building was commissioned as a data storage facility in 2011. ADSIL continued to develop further data storage capacity at the site. In 2018, the site expanded to include the former Kingston Technologies site and building in the southwest of the site. There was a new 110kV EirGrid Substation constructed in east of the site and associated pylons to the northwest of the site between 2011 and 2012.

Receptors include the underlying aquifer, which is poor and generally unproductive except in local zones and River Tolka located 1.6km to the south of the site which discharges to River Liffey Estuary (c. 10km) and Dublin Bay (c. 15km) .

Due to the extensive development at the site in recent year much of the site is hard paved reducing the potential for vertical migration to ground during operation. In the unlikely event of a leakage outside of the storage bunds, the primary pathway would be through the stormwater drainage system which ultimately discharges through hydrocarbon interceptors and attenuation systems with flow control.

In the event of a fire, run-off would be to the site attenuation ponds where water would be held until tested and removed off site if required. As such the potential for an off-site impact to the Tolka catchment is very low. The potential for impact to the underlying aquifer is also low due to paving and drainage on site. In the unlikely event of contamination to ground it would be partially attenuated within the shallow soil and there would be limited off site impact due to the low connectivity of fracturing in the underlying bedrock.

A conceptual site model (CSM) has been presented for the site which includes assessment of limited site investigation data collected in 2012 and 2018. The source pathway qualitative risk assessment concludes that the risk of an impact to soil or water receptors is low.

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1.0 INTRODUCTION

AWN Consulting Limited (AWN) was appointed by ADSIL to complete this Baseline Report to accompany an application to the Environmental Protection Agency (EPA) for an Industrial Emissions (IE) Licence for the installation.

The following Baseline Report relates to the Amazon Data Services Ireland Ltd. ("ADSIL" or 'the applicant') data storage facility (the subject 'installation' under this licence application) located in the Blanchardstown Industrial Park, Snugborough Road, Dublin 15, located 2km from the N3 Road and 2.5km from the M50. The Industrial Park is situated 9 km from Dublin City Centre. The site context is shown on Drawing Ref: 21_123D-CSE-00-XX-DR-C-0001 Site Location Plan included with this application. The application relates to the installation, that covers 13.08 hectares (ha) in total ('the Site')

The applicant is applying to the Environmental Protection Agency (EPA) for an Industrial Emissions (IE) Licence principally relating to the operation of diesel-powered emergency back-up generators under Activity Class 2.1.

It is necessary from the outset of a licence application that the operator of a facility has a record of the existing conditions of the site prior to development. This allows for a comparison of contamination at the beginning and end of a site's operational history.

1.1 DISCLAIMER

The conclusions presented in this report are professional opinions based solely on the tasks outlined herein and the information made available to AWN. They are intended for the purpose outlined herein and for the indicated site and project. Furthermore, this report is produced solely for the benefit of ADSIL to address the EPA requirement for a licence application.

This report may not be relied upon by any other party without explicit agreement from AWN. Opinions and recommendations presented herein apply to the site conditions existing at the time of the completed field work and subsequent assessment.

They cannot apply to changes at the site of which AWN is not aware and has not had the opportunity to evaluate. This report is intended for use in its entirety; no except may be taken to be representative of this baseline assessment. All work carried out in preparing this report has utilised and is based on AWN professional knowledge and understanding of the current relevant Irish and European Community standards, codes, and legislation.

1.2 LEGISLATIVE CONTEXT AND GUIDANCE

Under the Industrial Emissions Directive¹ it necessary to prepare a Baseline Report in conjunction with an Industrial Emissions Licence Application, as stated in Article 22(2) Chapter 2 of the directive:

"Where the activity involves the use, production or release of relevant hazardous substances and having regard to the possibility of soil and

¹European Union. Directive 2010/75/EE of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control). EU: November 2010.

groundwater contamination at the site of the installation, the operator shall prepare and submit to the competent authority a baseline report before starting operation of an installation....”

Article 22(2) specifies that the Baseline Report should contain at least the following information:

- a) Information on the present use and, where available on past uses of the site;
- b) Where available, existing information on soil and groundwater measurements that reflect the state at the time the report is drawn up or, alternatively, new soil and groundwater measurements having regard to the possibility of soil and groundwater contamination by those hazardous substances to be used, produced or released by the installation concerned.

The Industrial Emissions Directive was transposed Into Irish law under the European Union (Industrial Emissions) Regulations 2013². The Environmental Protection Agency Act 1992 was subsequently amended to include aspects of the conditions outlined in Article 22(2); this included the requirement for an applicant for a license to furnish to the Agency a baseline report. *The applicant in preparing the baseline report shall include any information prescribed in regulations under section 89 which includes:*

- a) The current use and, where available, the past use of the site,
- b) Any available information.
 - i. On soil or groundwater measurements that reflect the state of the site at the time that the baseline report is drawn up, or
 - ii. On new soil and groundwater measurements, having regard to the possibility of soil and groundwater contamination by the hazardous substances proposed to be used, produced or released by the installation concerned.

This report has been prepared to address the requirements of legislation and in accordance with the EU Guidance³ for baseline reports. The EU Guidance outlines a number of key tasks that should be undertaken to both determine whether a baseline report needs to be produced for a particular situation and in order to produce the baseline report itself. The EU Guidance sets out 8 individual Stages to be considered; this report addresses the elements in accordance with Stages 1 to 8.

- Stage 1: Identifying the potential hazardous substances that are currently used, produced, or released at the site
- Stage 2: Identifying the relevant hazardous substances i.e. those which have the potential to cause soil and groundwater contamination
- Stage 3: Assessment of the site-specific pollution risk
- Stage 4: Site History
- Stage 5: Environmental Setting
- Stage 6: Conceptual Site Model
- Stage 7: Site Investigation – Soil & Water Quality Assessment
- Stage 8: Production of the Baseline Report

²Ireland. European Union (Industrial Emissions) Regulations 2013 (S.I. No. 138 of 2013).

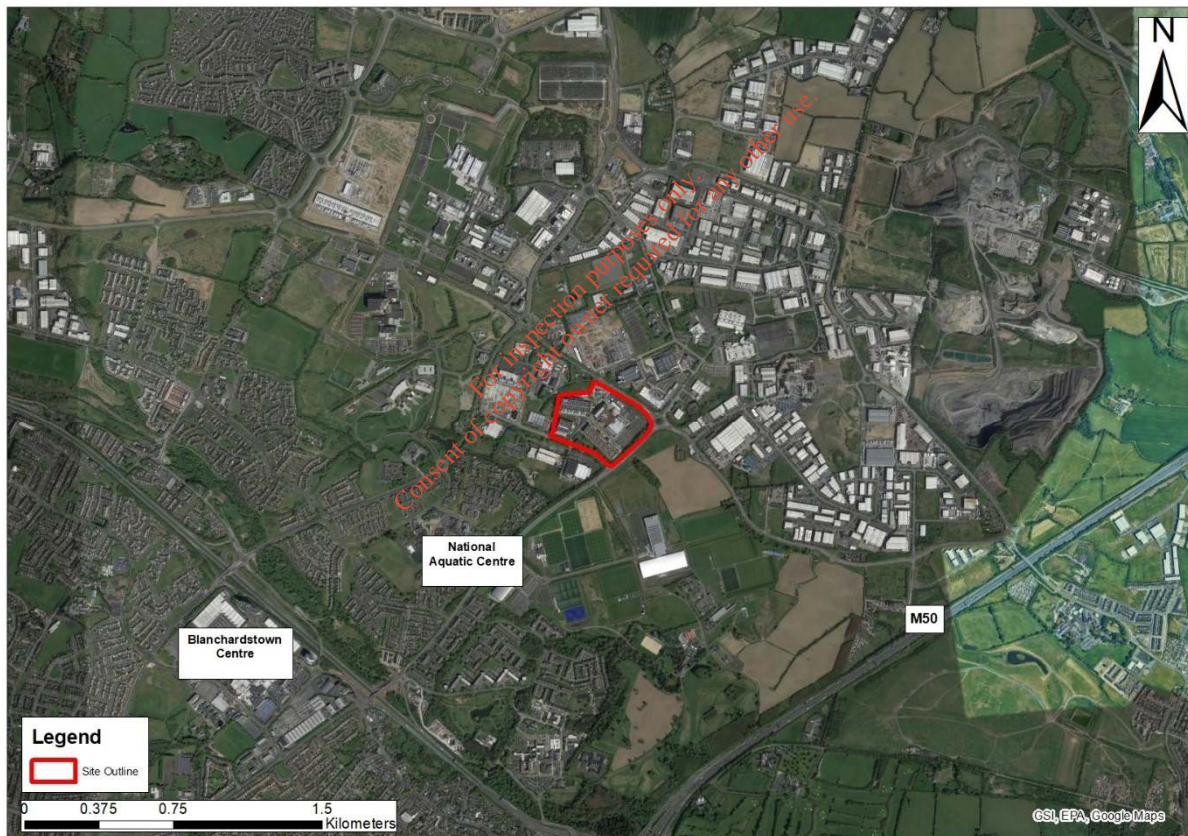
³European Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on Industrial Emissions. EU: 2014/C 136/03

1.3 SITE LOCATION AND CONTEXT

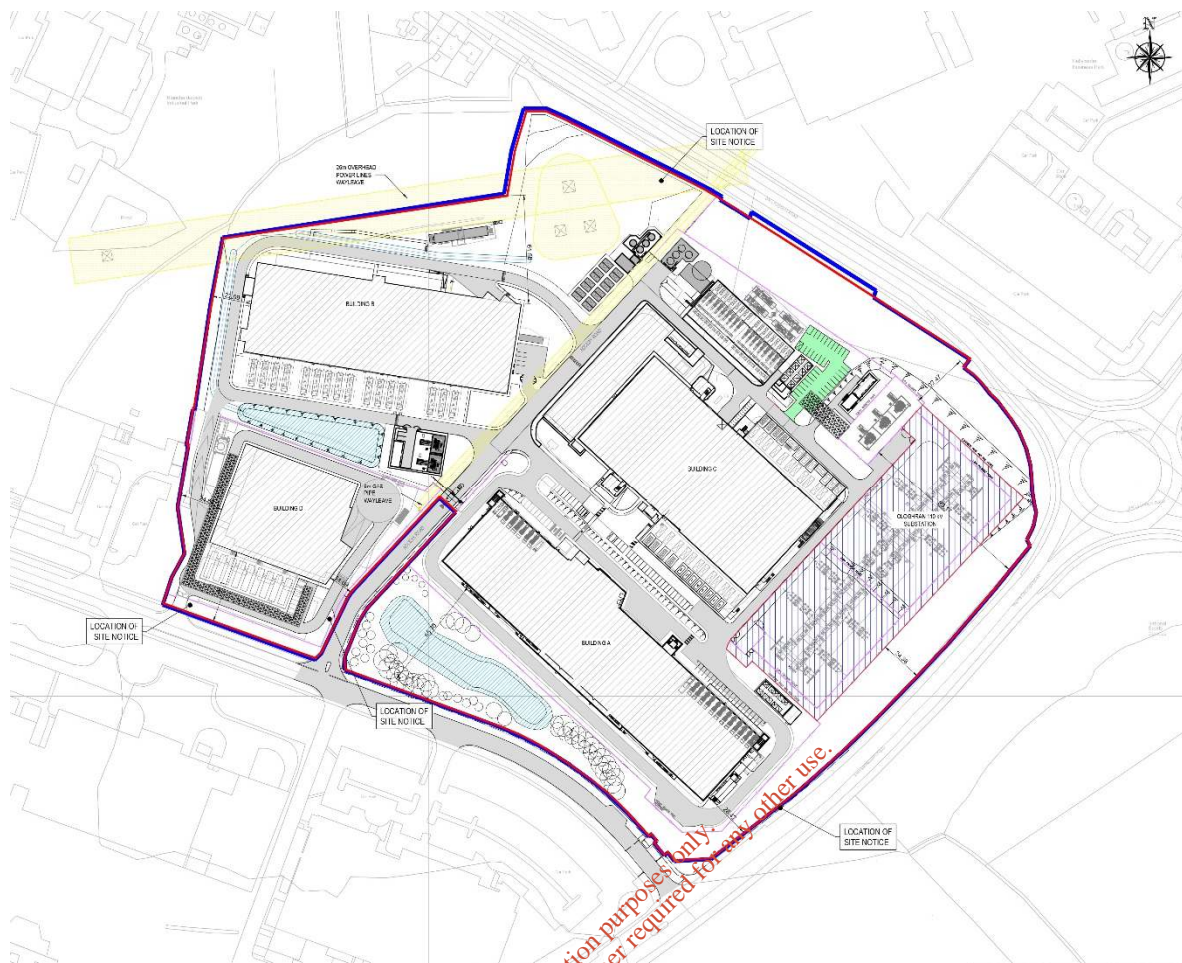
This soil and groundwater baseline report relates to the entire site subject to the proposed IE licence, referred to as 'The Site' in this report. The Site is located in IDA Business and Technology Park Blanchardstown located 2km from the N3 Road and 2.5km from the M50. The park is situated 9km from Dublin City Centre. The Site is comprised of Buildings A through to D, and an EirGrid 110KV Sub-Station.

The land immediately surrounding The Site is predominantly industrial (consisting of different manufacturing, logistic and technology facilities) and some sparse pockets of undeveloped land, with the exception of some residential dwellings c. 220 m to the north west along Ballycoolin Road. There are other residential dwellings to the south-east of The Site along Ballycoolin Road, to the south of The Site within the Westway and Sheephill estates, and to the west of the site along Blanchardstown Road North. The location of The Site and the neighbouring buildings are presented in insert 1.1.

Access to and from The Site at present is from the Snugborough road through the IDA Business Park.



Insert 1.1: The site location



Insert 1.2: Illustrating the overall Site (c. 13.08 hectares)

Ipsen Manufacturing Ireland Ltd, (IE License ref: P0117-02) is located immediately to the west of The Site. Ipsen produces generic tableted pharmaceutical products. 550 meters (m) to the west of the Installation is the Equinix Hyperscale 1 (DB5) Limited, a Data Centre campus that is has an IE licence currently under consideration by the EPA (IE Ref: P1168-01). The Jellybean factory (food production) is located adjacent to the southwest boundary, and a number of technology business, including software and data storage are located to the north of The Site. Inna labs a specialised engineering and manufacturing business, Securisppeed, a logistics business and Edwards Technology Centre, a vacuum and abatement technology business, are located immediately to the south of the campus.

Within the Ballycoolin IDA Business Park, 450 m to the north is K2 Strategic Infrastructure Ireland Limited, a Data Centre campus that is has an IE licence currently under consideration by the EPA (IE Ref: P1143-01).

To the north and northwest of The Site are 3 IE Licenced pharmaceutical facilities within the College Business and Technology Park; which includes Alexion Pharma International Operations Unlimited Company (IE Ref: P0552); Swords Laboratories Unlimited Company Trading As Bristol Myers Squibb Cruiserath Biologics (IE Ref P1030); and Mallinckrodt Pharmaceuticals Ireland Limited IE Ref: P1060).

The area to the west and south of the site generally comprises residential areas (Corduff), and educational and recreational facilities with areas of open space and parks. Specifically, this area includes Technological University Dublin Blanchardstown

Campus, Riversdale Community College, and Saint Patricks Senior School, as well as the Sport Ireland National Campus located to the of the site which houses a wide range of Sport Ireland facilities.

The generally site layout and wider context is presented in Drawing Reference: 21_123D-CSE-00-XX-DR-C-0002 Site Layout Plan included with this application.

1.4 SOURCES OF INFORMATION

Reference is made in this report to information from a number of existing data sources and reports including the following:

- Ordnance Survey Ireland – aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- Environmental Protection Agency (EPA) on-line mapping and database information;
- Environmental Protection Agency (EPA) – www.epa.ie on-line licence information.

Other relevant documentation consulted as part of this assessment included the following:

- Environmental Report for Building C site located in the IDA Blanchardstown Business & Technology Park, ADSIL Clifton Scannell Emerson Associates CSEA (16th May 2013).
- Building B - Blanchardstown Due Diligence Report ADSIL, Clifton Scannell Emerson Associates CSEA (20 February 2015).
- Amazon Web Services Phase 1 Environmental Site Assessment Proposed Building B - Blanchardstown, Snugborough and Ballycoolin Road, Co. Dublin, Ireland, ERM, (January 2015).
- Environmental Impact Assessment Screening Report Data Storage Facility at the Former Kingston Technology Building, IDA Blanchardstown Business and Technology Park, Ballycoolin Road and Snugborough Road, Blanchardstown, Dublin 15. AWN Consulting (5th June 2018).
- IDA Industrial Estate Snugborough Road Dublin, Proposed Data Centre, IGSL Report No. 20963, Geotechnical Report July 2018.
- Phase 1 Environmental Site Assessment Report – Blanchardstown Business and Technology Park, Snugborough Road, Dublin AECOM, (December 2017).

1.5 SCOPE OF WORK UNDERTAKEN

The scope of the work undertaken for this assessment included the following:

- A desktop review of regional and site geology and hydrogeology.
- Review of available soil and groundwater quality data.
- Review of bulk liquid storage at the site and assessment in terms of likely impact to receiving waters.

2.0 STAGE 1: IDENTIFYING THE POTENTIAL HAZARDOUS SUBSTANCES

This section of the report identifies a list of all hazardous substances dealt with inside the installation boundary (either as raw materials, products, intermediaries, by-products, emissions or wastes).

This includes all hazardous substances associated with both the IED Annex I activities and directly associated activities which have a technical connection to the activities carried out and which could have an effect on soil or groundwater pollution.

Where hazardous substances are listed under trade names the chemical constituents have also been identified. For mixtures or compounds the relative proportion of the largest constituent chemicals are identified.

Table 2.1 Substances stored on site

Substance	Area Served/Purpose	Expected Volume of storage
Diesel Fuel Oil	Emergency Generator Fuel source	760.4 m ³
R407C	Refrigerant for cooling systems	0.975 tonnes
R410A	Refrigerant for cooling systems	0.298 tonnes

There are no other raw materials held onsite other than domestic cleaning chemicals for cleaning of the staff facilities. These are managed by the cleaning company.

All oils, paints, adhesives or other materials required are brought onsite and removed from site by the relevant contractors.

Refrigerant is held within the VRF system for the offices. No refrigerants are stored onsite. R407C and R410A is held within this system on a continuous basis and would only be removed during decommissioning.

The small amounts of hazardous waste generated are stored in a designated storage area in each building. The waste is covered, and a mobile retention bund is in place to contain any liquid waste that requires storage, where required. The waste is collected from this area by an authorised waste contractor for recovery and / or disposal off-site.

Waste oil and filters and waste batteries are not stored onsite and are removed by the maintenance contractors during maintenance operations and change outs.

Waste sludge from the oil separators is removed directly from each separator by a specialised contractor by means of a vacuum tanker.

3.0 STAGE 2: IDENTIFYING THE RELEVANT HAZARDOUS SUBSTANCES

This section identifies which of the hazardous substances from Stage 1 are 'relevant hazardous substances' as defined by European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions.

'Relevant hazardous substances' are those substances or mixtures defined within Article 3 of Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation) which, as a result of their hazardousness, mobility, persistence and biodegradability (as well as other

characteristics), are capable of contaminating soil or groundwater and are used, produced and/or released by the installation.

Table 3.1 Hazard statements for substances on site

Substance	Hazard Statement(s)	Hazard Statement Description
Diesel Fuel Oil	H226, H304, H332, H315, H351, H373, H411	Very toxic to aquatic life, Toxic to aquatic life with long lasting effects

The table above summarise the Hazard Statement and description of the hazards for the identified chemicals identified, these statements identify the ability of these substances to contaminate soil or groundwater.

The only bulk liquids stored on site is diesel which is stored for emergency back-up operation of generators. The storage arrangements are described further in Section 4.3 below. Diesel fuel oil if leaked to ground it is considered to be capable of contaminating soil and/or groundwater.

4.0 STAGE 3 – ASSESSMENT OF SITE-SPECIFIC POLLUTION RISK

This section addresses the actual possibility in the context of the site for soil or groundwater contamination, including the probability of releases and their consequences. Taking particular account of:

- The quantity of each hazardous substance handled, produced or emitted in relation to its environmental effects.
- The location of each hazardous substance on the site e.g., where it is or will be delivered, stored, used, moved around the site, emitted etc., in particular in view of the characteristics of the soil and groundwater at that part of the site.
- The method of storage, handling and use of relevant hazardous substances and containment mechanisms to prevent emissions occurring; e.g. bunds, hard-standing, handling procedures.

As with every site there is the risk of accidents and incident due to tanker overturning on site roads; vessel rupturing; leaking tanks; seal breaking; accidental discharge; leaks from drain ruptures; or fire. As well as identified risks during routine operations such as spills during delivery or from pipe joints, small spills during decanting/transfer of product, leaks from blocked or broken drains, cracks in concrete hard-standing.

The only planned emissions from the site that hold a risk of including these relevant substances is the discharge to stormwater network. There are no planned discharges of process and/or contaminated waters to land or ground.

4.1 DIESEL FUEL OIL STORAGE

Fuel (diesel) for the emergency back-up generators is stored in multiple locations across The Site; that includes bulk diesel tanks and 'top up' tanks. The emergency back-up generators have 'day' tanks and/or 'belly' tanks located within the generator container.

All fuel tanks, bunded storage and pipelines have been designed for the specific purpose and contents. As required the structures will be rendered impervious to the materials stored therein. All fuel tanks, bunded storage and pipelines are integrity tested following installation by vendor. 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 950,500 litres, 950.5 m³ or approximately 807.9 tonnes (assumed density of 0.85 l/kg). The tanks on site are filled to 80% capacity under normal conditions; therefore the total diesel storage on site is 760,400 litres, 760.4 m³ or approximately 646.3 tonnes (assumed density of 0.85 l/kg).

There are 2 no. diesel unloading bays located on site: 1 no. at the bulk diesel tank farm to the north of the site, and 1 no. in place for the top-up tank located to the east of Building D.

In accordance with the Commission for Energy Regulation (CER) regulations, low sulphur diesel is used.

Buildings A and Buildings C Extension

Bulk diesel is supplied to the emergency backup generators at Building A and the Building C Extension from 4 no. 55,000 litres steel bulk storage tanks located in a bunded tank farm to the north of the site. The bund has a capacity of 312 m³. The bund capacity exceeds the EPA guidance for 110% of the capacity of the largest tank or drum within the bunded area, or 25% of the total volume of the substance which could be stored within the bunded area.

The bund is constructed of suitable concrete and have undergone testing for their integrity during the commissioning phase. All bunds and pipelines are integrity tested following installation by the vendor. The bunds and delivery bays are equipped with hydrocarbon probes in the bund sump which detects diesel in the bund. This triggers closure of the sump discharge should hydrocarbon be detected in the sump and sends an alarm signal to the BMS to alert EOTs.

The bulk fuel tanks are fitted with automated level gauges and the online readings from these gauges are fed back into the facility's BMS/EPMS. The bulk tanks also have high/low level alarms (90% high, 30% low) and a high-level switch at 95% which alarm to the BMS/EPMS critical alarm.

Fuel delivery to the bulk storage tanks will take place within the designated unloading areas in accordance with strict Standard Operating Procedures. Diesel will then be piped from the bulk storage tanks to the emergency backup generator day tanks or belly tanks. Diesel fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

Each of the 22 no. emergency backup generators at Buildings A are accompanied by a double skinned day tank (2,500 litres each) for immediate supply to the generator. These day tanks are equipped with level gauges with high/low alerts which will also alarm to BMS/EPMS critical alarm.

Each of the 4 no. emergency backup generators at the Buildings C Extension are accompanied by a double skinned day tank (4,000 litres each) for immediate supply to the generator. These day tanks are equipped with level gauges with high/low alerts which will also alarm to BMS/EPMS critical alarm.

Buildings B

Bulk diesel is supplied to the emergency backup generators at Buildings B from 4 no. 55,000 litre steel bulk storage tanks located in a bunded tank farm to the north of the site. The bund has a capacity of 335 m³. The bund capacity exceeds the EPA guidance for 110% of the capacity of the largest tank or drum within the bunded area, or 25% of the total volume of the substance which could be stored within the bunded area

The bund is constructed of suitable concrete and have undergone testing for their integrity during the commissioning phase. All bunds and pipelines are integrity tested following installation by vendor. The bunds and delivery bays are equipped with hydrocarbon probes in the bund sump which detects diesel in the bund. This triggers closure of the sump discharge should hydrocarbon be detected in the sump and sends an alarm signal to the BMS to alert EOTs.

The bulk fuel tanks are fitted with automated level gauges and the online readings from these gauges are fed back into the facility's BMS/EPMS. The bulk tanks also have high/low level alarms (90% high, 30% low) and a high-level switch at 95% which alarm to the BMS/EPMS critical alarm.

Fuel delivery to the bulk storage tanks will take place within the designated unloading areas in accordance with strict Standard Operating Procedures. Diesel will then be piped from the bulk storage tanks to the emergency backup generator day tanks or belly tanks. Diesel fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

Each of the 17 no. emergency backup generators at Buildings B are accompanied by a double skinned day tank (3,500 litres each) for immediate supply to the generator. These day tanks are equipped with level gauges with high/low alerts which will also alarm to BMS/EPMS critical alarm.

Buildings C

Diesel is supplied to the 18 no. emergency backup generators at Buildings C by direct filling to the individual belly tanks, there are 17 no. 10,000 litre upright double skinned tanks; and 1 no. 15,000 litre upright double skinned tank located externally to the northeast of the generation building. The individual 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.

Buildings D

Bulk diesel will be supplied to the emergency backup generators at Buildings D from 1 no. 40,000 litre bulk storage tank each (a total of 1 no tanks) located to the east of Building D. The bund capacity for this tank is 51 m³. The bund capacity exceeds the EPA guidance for 110% of the capacity of the largest tank or drum within the bunded area, or 25% of the total volume of the substance which could be stored within the bunded area.

The bund is constructed of suitable concrete and have undergone testing for their integrity during the commissioning phase. All bunds and pipelines are integrity tested following installation by vendor. The bunds and delivery bays are equipped with hydrocarbon probes in the bund sump which detects diesel in the bund. This triggers

closure of the sump discharge should hydrocarbon be detected in the sump, and sends an alarm signal to the BMS to alert EOTs.

The top up tank is fitted with automated level gauges and the online readings from the gauges will feed back into the facility's BMS/EPMS. The bulk tanks will also have high/low level alarms (95% high, 20% low based on analogue level sensor) and a high-level switch at 95% which alarm to the BMS/EPMS critical alarm.

Fuel delivery to the top up tank will take place within the designated unloading areas under strict Standard Operating Procedures. Diesel will then be piped from the top up tank to the emergency backup generator day tanks or belly tanks. Diesel fuel pipelines above ground are Carbon Steel, and below ground are Close Fit PLX (dual-contained pipe system).

Each of the 9 no. emergency backup generators at the Buildings D are accompanied by a double skinned day tank (1,000 litres each) for immediate supply to the generator, and a double skinned belly tank (16,000 litres each). These day and belly tanks are equipped with level gauges with high/low alerts which will also alarm to BMS/EPMS.

4.2 STORM WATER DRAINAGE

Rainwater runoff from impermeable areas of the site will be collected via the onsite stormwater drainage network. The stormwater drainage network will convey the stormwater via various hydrocarbon interceptors to one of 4 no. stormwater attenuation systems (See Drawing 21_123D-CSE-00-XX-DR-C-1100).

The attenuated stormwater discharges offsite at 4 no. Emission Points (SW1, SW2, SW3, SW4) as shown on Drawing Reference: 21_123D-CSE-00-XX-DR-C-1100 Surface Water Layout Plan.

The 4 no. emissions points discharge stormwater to the 1200 mm diameter existing surface water drainage main located to the south in the public road and runs through the IDA Blanchardstown Business and Technology Park. This stormwater main flows east to the man-made attenuation and detention structure (artificial lake) located in College Business Park, from here it drains westwards to the Ballycoolin Stream, the Ballycoolin Stream flows 1.2 km downstream in a southerly direction and conflues with River Tolka.

The surface water outflow will be limited to a greenfield runoff rate of 2l/s/Ha as the runoff from the site is to be attenuated and a flow control device used to limit the discharge rate.

The Class 1 Hydrocarbon interceptors are located down gradient of each attenuation basin and storm cell to ensure the quality of stormwater discharge is controlled prior discharge offsite. The interceptors are equipped with level detection and will connect to the BMS/EPMS critical alarm. Stormwater discharge from the offloading areas for the top up tank at Building D also discharge through the Class 1 hydrocarbon interceptor upgradient of the Attenuation storm cell no. 3.

It is intended to install a penstock on the outfall of each Attenuation Systems prior to the discharge into the stormwater main (Emission Point SW1, SW2, SW3, and SW4). Once installed, the penstock will allow the outfall of the stormwater network(s) to be closed off to inhibit the outflow in the event of a spill or a fire. Potentially polluted rainwater that reaches the stormwater attenuation basins(s) (for example, in the case of a fire) shall be tested before release to the receiving storm water main. Any

stormwater of unacceptable quality will be pumped out or otherwise removed of the attenuation basin and disposed of appropriately. In the highly unlikely event of a major spill that entered the storm cell(s), inspection would be undertaken to ensure there is no subsurface contamination.

4.3 WASTEWATER DRAINAGE

Domestic effluent arising from occupation of the data storage facilities will be discharged to the public foul sewer (at Emission Points SE1, SE2, SE3, and SE4) and from the transformer compound and control building located adjacent to the AIS Substation to the public foul sewer (at Emission Point SE5). Refer to Drawing 21_123D_CSE-00-XX-DR-C-1200 for the foul drainage layout.

This foul sewer discharges to a 450mm diameter public foul sewer located on the south side of the main access road which serves the IDA Blanchardstown Business and Technology Park. The foul network ultimately discharges into a regional pumping station before final treatment and disposal at Ringsend Wastewater Treatment Plant (WWTP) in Dublin.

Domestic Effluent (Buildings A to D)

A gravity piped foul drainage network comprising of 225 mm pipes will take effluent from internal sanitary locations and outfall into the external foul network. The outfall into the existing public foul network will be at four locations, one to the southwest (SE1), two in the south (SE2 and SE3) and one in the southeast (SE4). The location of these are illustrated on Drawing 21_123D_CSE-00-XX-DR-C-1200.

Diesel Tank Farm

Drainage of rainwater from the diesel tank farm and associated loading bays to the north of the site is directed to foul sewer and connects to the foul main at emission point SE3. The drainage sumps at the fuel unloading bays and in the bulk tank concrete bunds contain hydrocarbon detectors which automatically shut off drainage from these sumps if diesel is detected in the sump, preventing any contaminated stormwater from exiting the bund. These probes are also connected to the BMS/EPMS critical alarm.

Drainage from the bulk tank farm is equipped with a Class 2 full retention hydrocarbon interceptor. The location of these is illustrated on Drawing 21_123D_CSE-00-XX-DR-C-1200. This hydrocarbon interceptor is equipped with an oil warning system which is connected to the BMS/EPMS critical alarm.

Transformer Compound

The transformer compound and control building located adjacent to the AIS Substation is directed to foul sewer and connects to the foul main at emission point SE5.

Drainage from the transformer compound is equipped with a Class 2 full retention hydrocarbon interceptor. The location of this is illustrated on Drawing 21_123D_CSE-00-XX-DR-C-1200. This hydrocarbon interceptor is equipped with an oil warning system which is connected to the BMS/EPMS critical alarm.

5.0 CONCLUSION - STAGES 1 TO 3

Stages 1 to 3 of the Baseline Assessment concluded that there are relevant hazardous substances stored that are capable of contaminating soil or groundwater.

The potential pollution risk is low based on the likelihood of releases of such substances occurring. However, due to the volume of the diesel fuel oil, which is a relevant hazardous substance, 'used, stored and transported' to the site it is considered that a Complete Baseline Assessment is required.

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6.0 STAGE 4 – SITE HISTORY

The purpose of this section is to determine which of the relevant hazardous substances identified by Stage 3 have the potential to be present on site in the soil and groundwater already as a result of activities to date and to determine whether they are coincident with potential future emission points.

The EU Commission guidance requires the following activity to be undertaken for Stage 4;

- Provide a site history. Consider available data and information:
- In relation to the present use of the site, and on emissions of hazardous substances which have occurred, and which may give rise to pollution.
- Consider accidents or incidents, drips or spills from routine operations, changes in operational practice, site surfacing, changes in the hazardous substances used.
- Previous uses of the site that may have resulted in the release of hazardous substances, be they the same as those used, produced or released by the existing installation, or different ones.
- Review of previous investigation reports may assist in compiling this data.

6.1 SUMMARY OF PRIOR USE

This section includes an evaluation of the likelihood of the presence of any historic contamination of soil/ groundwater at the site and an overview of the site history.

The historic mapping below indicates the prior use of the site from the earliest mapping available 1837-1842 through to present day.

The site was historically agricultural lands with no dwellings and no watercourses. Based on information available the IDA developed the 'Blanchardstown IDA Business and Technology Park' in 1978/1979 therefore the site ceased being used as agricultural land in 1979.

The original 'Hexagon' building was constructed at the centre of the site by Mostec in c. 1979 to 1981. The building changed ownership in c. 1989 to Fujitsu with a single-story extension to the 'Hexagon' building constructed in c. 1989 to 1990. The Hexagon Partnership took ownership of the facility in 2002 and had modified and or refurbished the building prior ADSIL occupying the building in c. 2010. The site was occupied by ADSIL from c. 2010 and a data storage facility within the existing Hexagon building was commissioned in 2011. Siemens utilised the hexagon building as office prior to 2010.

A second building in the southwest section of the site appears on aerial images in 1995. The building was owned by Elliot Construction and leased to Kingston Technologies. Kingston Technologies produced Printed Circuit Boards at this premises from c. 1997 to 2004 after which the building was used as distribution hub by the company.

These buildings were located on two separate sites that ADSIL developed as a larger data storage facility site in 2018.

The Cloghran 110kV Substation constructed in east of the site and associated pylons to the northwest of the site in c. 2011-2012.

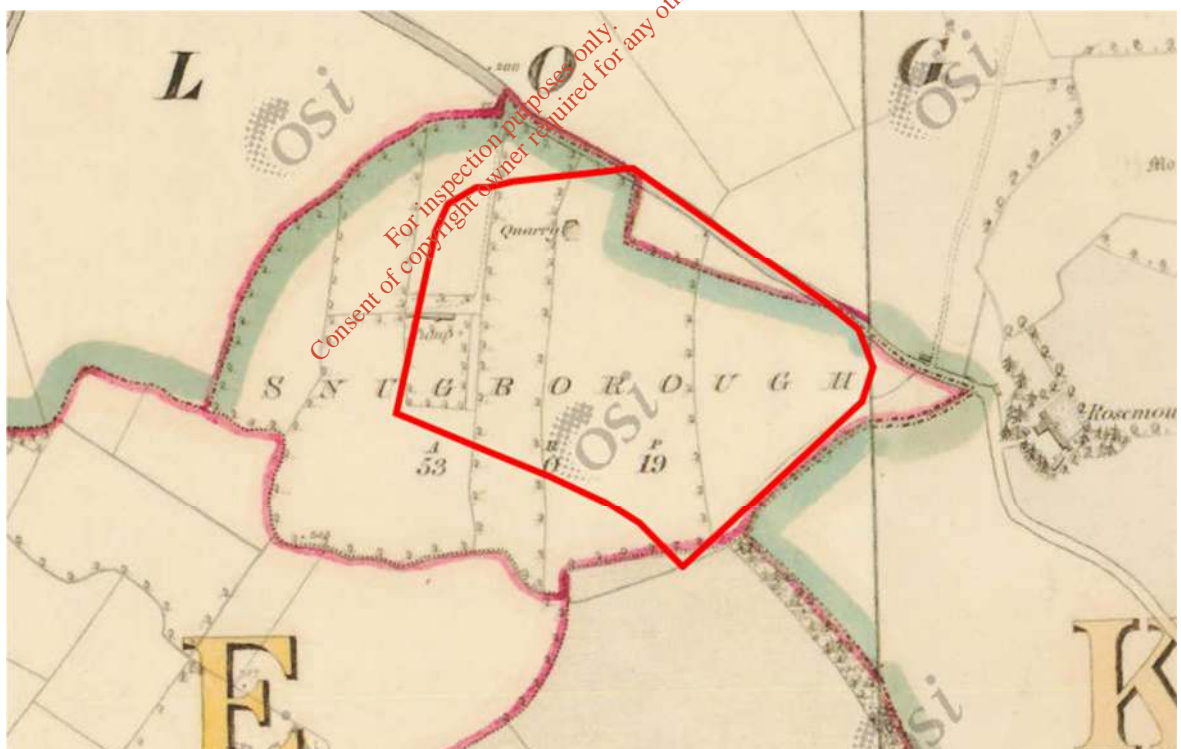
ADSIL initially occupied the larger section of the site in 2010 and commenced data storage operations within the Hexagon Building (Building C) in 2011 and continued with the development of Building A, B and C. The site expanded in 2018 to include former Kingston Technologies site to the southwest of the site where Building D was subsequently constructed.

The commencement of the construction of the ADSIL Building A commenced in 2013 and was operational in September 2018 and Building B commenced in 2016 and was operational in August 2018. Construction of Building C commenced 2018 and was fully operational in August 2019. Building D commenced construction in 2018 and was fully operational in November 2020.

The 1995 aerial images show industrial buildings to the west, south and northeast of the site had been constructed, many of these are likely to have been built in the 1980's as part of the IDA development.

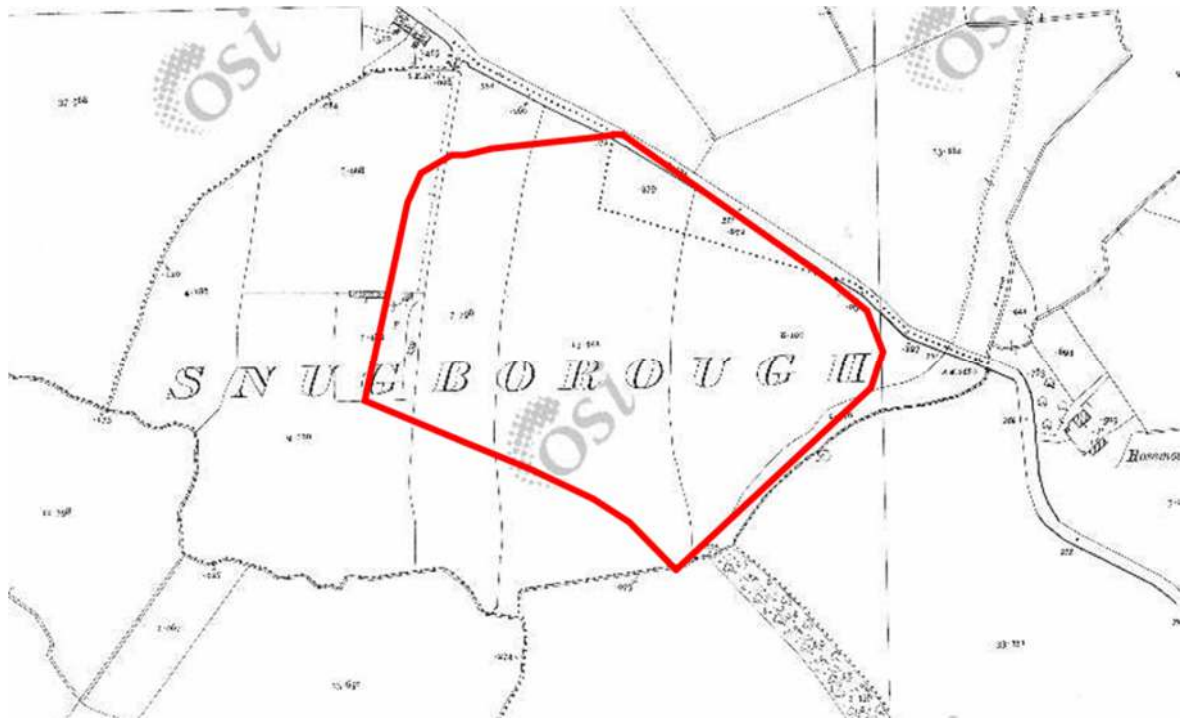
6.2 HISTORIC MAPPING

Historical Ordnance Survey maps were examined for the purpose of this report to identify any historical sources of contamination. The available OSI mapping from the 1830s through to the 1930s (insert 6.1 – 6.2) shows no indication of historic land usage that would result in contamination.



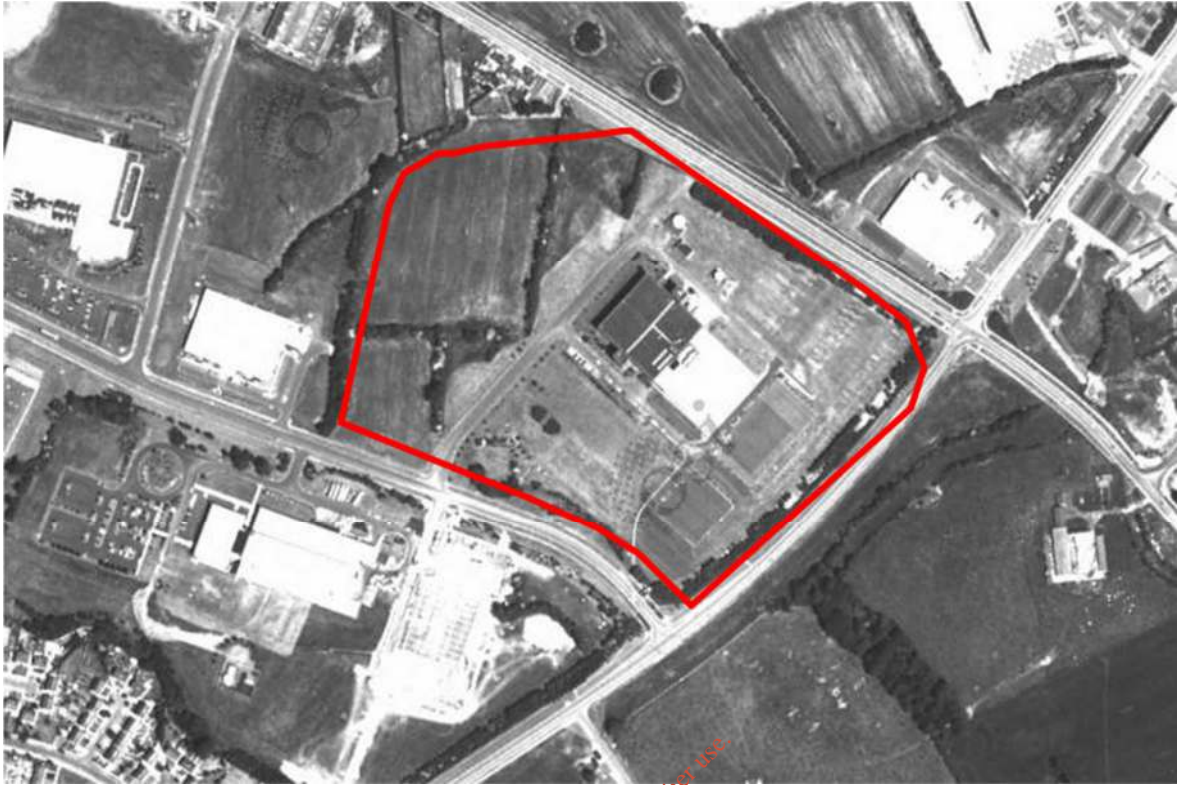
Insert 6.1 Historic Map 6 inch Colour (c. 1837-1842) (source www.osi.ie) (Indicative site boundary shown in red)

Insert 6.1 (1837-1842) shows a single dwelling Rosemount located immediately to the east with the site consisting of agricultural land of various plot sizes with a small quarry located in the northern section of the site. Insert 6.2 (1888-1913) illustrates the land use remains unchanged and represents a typical of the rural setting at the time, except for small residential cottages immediately northwest of the site.



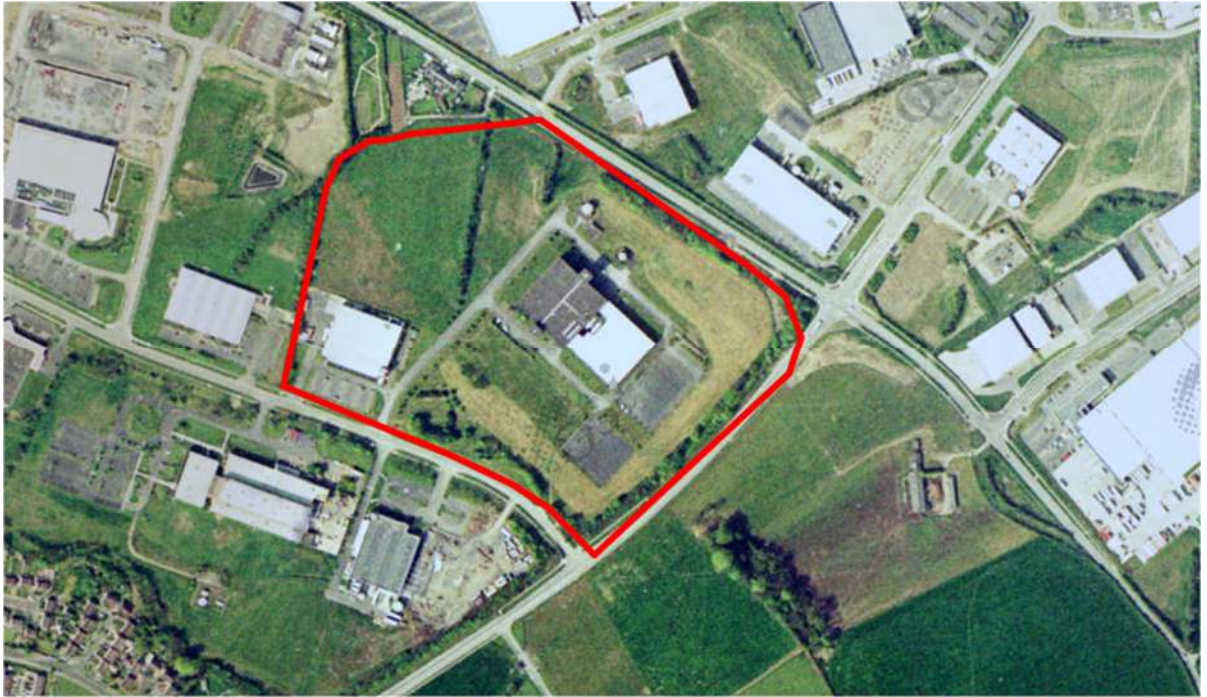
Insert 6.2 Historic Map 25 inch (c. 1888-1919) (source www.osi.ie) (Indicative site boundary shown in red)

The most notable changes occur on the 1995 aerial imagery (Insert 6.3) with the construction of the Snugborough Road and the expansion of the Ballycoolin Road to the east and north of the site. Industrial premises are present both on the site and the sites to the north, northeast, east and south. Residential estates are now present to the southwest of the site. The building located on the site is the hexagon building. Most of the current site remains greenfield.



Insert 6.3 Aerial Image (1995) (source www.osi.ie) (Indicative site boundary shown in red)

The most notable change between the 1995 image above and the 2000 and 2005-2012 images (Insert 6.4 and 6.5) below is the increase in commercial properties on and surrounding the site. There was expansion of the existing building on site in a south-easterly direction. Based in planning history Hexagon Partnership operated an electrical and electronic business comprising of workshops and offices from 2002. The construction of a new building at the southwest of the site prior to 1995 is evident from 1995 aerial image and was operated by Kingston Technology prior to the purchases of this site this site by ADSIL. The site comprised of a warehouse/distribution area and offices. This building has been since demolished and Building D of the ADSIL site constructed at its location. The site immediately south of the site had been developed with large industrial building and car park. The Ballycoolin IDA Business Park was developed to the north of the site with industrial premises. Rosemount Business Park located to the northeast of the site between the Business and Technology Park Road and Ballycoolin Road had been developed with industrial premises also.



Insert 6.4 OSi Aerial Map (2000) (source www.osi.ie) (Indicative site boundary shown in red)

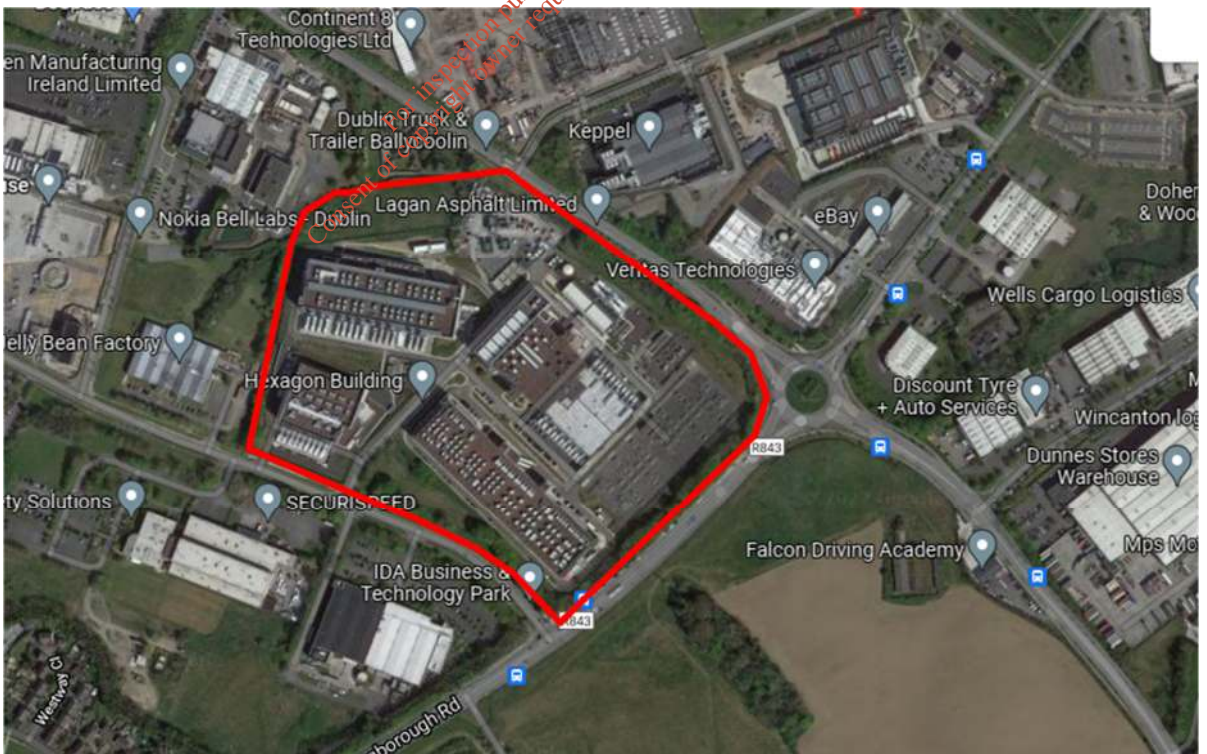


Insert 6.5 OSi Aerial Map (2005-2012) (source www.osi.ie) (Indicative site boundary shown in red)

The imagery dated 2012-2018 (Insert 6.6) shows the further expansion of the site with the addition of the buildings to the southeast and northwest of the site and the expansion of a hardstanding areas to the north and east of the site.



Insert 6.3 OSi Aerial Map (2012-2018) (source www.osi.ie) (Indicative site boundary shown in red)



Insert 6.4 Aerial Map 2018-2020 (source Google Maps) (Indicative site boundary shown in red)

The most recent imagery, (Insert 6.7) dated 2018-2020 shows the completed Buildings A through D.

6.2.1 Planning History

The Fingal County Council Planning Department website was consulted in order to generate a list of granted planning permissions from the development site within the years 2013 to 2021 show in Table 6.1 below.

Table 6.1 Planning Permission

Application Details	Description of Development
<p>Applicant: Hexagon Partnership Reg. Ref.: FW10A/0099 Final Grant Date: 14 September 2010</p>	<p>Permission to refurbish the existing Hexagon manufacturing facility, to construct screening of mechanical plant and to carry out ancillary site works. The proposed works will consist of the following:</p> <ol style="list-style-type: none"> 1/ Construction of a louver screening to external Mechanical Air Handling and Chiller Units. The screen is proposed to be constructed on the East and the West elevations of the single storey building of the facility. 2/ Construction of a generator compound to the Northeast of the site, linked to the existing facility by an overhead cable service bridge. 3/ The rehabilitation and extension of an existing screening to new mechanical plant on the single storey roof of the existing facility. 4/ The construction of a temporary external single storey structures. 5/ The internal works to the existing single storey facility will consist of 6 No. rooms for electrical and electronic operations, Workshop, Offices and Staff Welfare area.
<p>Applicant: Hexagon Partnership Reg. Ref.: FW11A/0113 Final Grant Date: 20 February 2012</p>	<p>1. Retention of the existing Generator Building, fuel loading area and compound to the Northeast of the Hexagon site. 2. Construction of an extension to the existing Generator Building to the Northeast of the Hexagon site.</p>
<p>Applicant: Hexagon Partnership Reg. Ref.: FW11A/0104 Final Grant Date: 18 Jan 2012</p>	<p>To construct a new AIS (Air Insulated Switchgear) 110kV electricity substation and to carry out ancillary site works. The proposed works will consist of the following:</p> <ol style="list-style-type: none"> 1. Excavation and fill of the proposed 110kV substation site to formation level, diversion of existing services and construction of a stoned compound area. 2. Construction of a substation control building within the compound area for the 110kV substation. 3. Construction of two number transformer bays and control building for the transformers to the north of the existing Hexagon facility with a 2.4m high powder coated perimeter palisade fence. 4. Construction of a 4m wide concrete access road within the compound area and fencing of the compound area. 5. Construction of a car parking compound for users of the substation. 6. Installation of all substation structures within the developed compound area. 7. Installation of 1 no. line interface mast and 2 no. down masts within the adjoining IDA lands to the northwest of the Hexagon facility. 8. Installation of a 2.4m high powder coated perimeter palisade fence to the AIS substation.
<p>Applicant: Hexagon Partnership Reg. Ref.: FW11A/0118 Final Grant Date: 28 May 2012</p>	<p>Permission for the installation of boundary fencing/ railings and access gates, new security hut and upgrading of the site security system to include red-wall system, CCTV, public lighting poles and associated underground services to the Hexagon site.</p>

<p>Applicant: Hexagon Partnership Reg. Ref.: FW12A/0024 Final Grant Date: 15 June 2012</p>	<p>Refurbish the existing two storey Hexagon manufacturing facility. The proposed works will consist of the following:</p> <ol style="list-style-type: none"> 1. Construction of new louvre facade to replace sections of existing glazing and brick facade to all four sides of the building elevation. 2. The internal works to the two-storey facility and basement will consist of 12 no. rooms for electrical and electronic operations, workshop, offices and staff welfare area. 3. Re-roofing to the entire existing flat roof area of the two-storey facility to include the installation of extractor fans and associated louvre clad housing.
<p>Applicant: Amazon Data Services Ireland Limited Reg. Ref.: FW13A/0067 Final Grant Date: 13 September 2013</p>	<p>Permission for a development that will consist of a new 2-storey building for use as electrical rooms for electronic operations, mechanical plant rooms, a double vehicle loading bay, ancillary workshops, and including within the building office and staff facilities, part at mezzanine level over ground floor level. Total plan area 20,995 sq.m. The will include external roof top air handling units with associated visual screening. Other ancillary works comprise (1) diesel fuel storage, loading stance and pump house; (2) water storage tanks and pump house; (3) the construction of new site roadways (4) carparking for 44 cars; (5) new boundary structures comprising fencing on northwest site boundary and fencing set back from the southwest and southeast site, boundaries; and (6) associated structures and landscaping works over the enlarged site.</p>
<p>Applicant: Hexagon Partnership Reg. Ref.: FW12A/0083 Final Grant Date: 19 Nov 2012</p>	<p>Planning retention application for minor adjustments to the 110kV electricity substation as granted planning permission on the 18th January 2012. Planning Reference Number: FW11A/0104. The substation is in IDA Blanchardstown, Business and Technology Park, Snugborough Road, Dublin 15. The work consists of the following:</p> <ol style="list-style-type: none"> 1. Adjustment of substation compound levels between Phase 1 and Phase 2 of the development. 2. Increase in length of the substation compound. 3. Increase in height of the parapet of the control building within the substation compound (Control Building No. 1) 4. Adjustment to the transformer bay area due to the addition of a third transformer bay. 5. Increase in size and repositioning of the client control building (Control Building No. 2)
<p>Applicant: Amazon Data Services Ireland Ltd Reg. Ref.: FW15A/0135 Final Grant Date: 12 Jan 2016</p>	<p>Permission for a new 2-storey building for use as electrical rooms for electronic operations, together with mechanical plant rooms, a double vehicle loading bay and ancillary workshops. Included within the building are associated offices, staff facilities at ground floor level and at mezzanine level. The gross total floor area of the proposed development is 16,065 sq.m.</p> <p>The development will include external roof top air handling units and roof level louvered plenum which will also act as a screening to the roof plant.</p> <p>Other ancillary works comprise (1) new diesel fuel storage; (2) new water storage tanks and pump house; (6) enlarging of existing water tank pump house; (3) new electrical transformer compound; (4) the construction of new site roadways; (5) car parking for 27 cars; (7) new gate entrance and security hut; (6) new boundary structures comprising of fencing to the north and west site boundary and fencing on a retaining wall to the south site boundary; and (7) associated structures and landscaping works over the enlarged site.</p>
<p>Applicant: Amazon Data Services Ireland Ltd Reg. Ref.: FW17A/0034 Final Grant Date: 13 June 2017</p>	<p>The development will consist of a single storey extension of 1,111 sq.m. to the north elevation to the previously granted planning application No. FW15A/0135 for use as mechanical plant space together with the re-alignment of an existing campus loop road, the addition of a new exit door to the west elevation, and the relocation of an existing exit door to the north elevation together with associated site works.</p>

<p>Applicant: Amazon Data Services Ireland Ltd Reg. Ref.: FW17A/0044 Final Grant Date: 27 Jun 2017</p>	<p>The development will consist of upgrade of existing boundary railings and palisade fence by increasing the height of the existing fencing and railings by 0.7 meters to the site boundary.</p>
<p>Applicant: DCF Technology Limited Reg. Ref.: FW17A/0237 Final Grant Date: 26 March 2018</p>	<ol style="list-style-type: none"> 1. The proposed extension of the existing 'Hexagon' data storage facility, with a GFA of 4,055sq.m. over two storeys with plant at roof level and including an additional plant area at roof level of the existing Hexagon Building. The extension will have a maximum overall height of c.24 metres and will accommodate data storage rooms at ground and first floor levels, electrical room and generator transformers at first floor levels, and stair and lift cores. 2. An entrance lobby extension (GFA of 5.5sq.m.) to existing Building C (generator building). 3. The provision of 4 no. emergency generators with associated flues within a new palisade fenced compound to the north of Building C (generator building). 4. The provision of 40 no. car parking spaces to the northeast of the Hexagon Building and adjacent to Building C (in place of 39 no. spaces to be removed to accommodate the proposed extension) and the provision of 2 no. disabled spaces to the south of the Hexagon Building. 5. All associated site works including drainage, lighting, alteration to attenuation areas to the south of the Hexagon Building to cater for the proposed development, and utility cables.
<p>Applicant: Maris Developments LLC Reg. Ref.: FW18A/0078 Final Grant Date: 28 August 2018</p>	<ul style="list-style-type: none"> • Demolition of an existing industrial building on the subject site with a gross floor area (GFA) of 3,988 sq.m, along with 2 no. existing ancillary structures, and all associated site clearance works; • Construction of a new data storage facility with a GFA of 8,657 sq.m over two storeys (including a mezzanine level) with plant at roof level. The data storage facility building has parapet heights of 20.50 metres and 15.13 metres, with flues and lift overrun extending to a maximum overall height of 22.90 metres; the building will accommodate data storage rooms, electrical rooms, mechanical plant rooms, stair and lift cores, office administration areas, and staff facilities; • Provision of emergency generators with associated flues within a fenced compound, diesel top-up tank and fuel piping; • All associated site works including internal access road, new access to the adjacent site to the north, 19 no. car parking spaces, cycle parking, pump room with GFA of 21.3 sq.m, foul and storm water drainage, new boundary treatment, security fencing, lighting, underground cables, upgrading of existing transformers and landscaping.
<p>Applicant: Amazon Data Services Ireland Ltd Reg. Ref.: FW19A/0111 Final Grant Date: 17 Sep 2019</p>	<p>The proposed development comprises of a container compound for the purposes of providing ancillary modular plant, electronic equipment and machinery space. The development comprises provision of 2 no. modular prefabricated containers (stacked to form 2 no. storeys), associated access arrangements and staircases, a boundary fence enclosure around the proposed development with 4 no. access points, the relocation of an existing car parking space, the relocation of the existing bicycle parking, associated plant and all ancillary works.</p>
<p>Applicant: Amazon Data Services Ireland Ltd Reg. Ref.: FW19A/0161 Final Grant Date: 06 Jan 2020</p>	<p>The proposed development comprises of a container compound for the purposes of providing ancillary modular plant, electronic equipment and machinery space. The development comprises provision of 4 no. modular prefabricated containers (arranged to form 2 no. stacks of two storeys), associated access arrangements and staircases, a boundary fence enclosure around the proposed development with associated gated access points, ramped and stepped pedestrian access ways from the existing internal road and footpath to the south (including pedestrian crossing points), associated plant, and all ancillary and construction works.</p>

6.2.2 Prior Uses.

The most notable prior uses of the site are Hexagon Technologies and Kingston Technologies. Both facilities comprised electrical and electronic workshops with associated warehousing and offices. Based on the review of the various reports and previous site uses there would have been hydrocarbon fuel storage associated with the former site use. No other bulk chemical usage is expected.

Neither location was subject to an EPA licence as a result there is no surrender of licence and no detailed site investigation completed at closure. There have been geotechnical site investigations completed at various locations across the site prior to the development of the various buildings. There has been limited soil analysis completed as part of these investigations and no groundwater analysis is available. The limited soil quality data indicated that all samples collected met the “inert” waste acceptance criteria. Although this is relevant to waste acceptance at a landfill site or similar it does give an indication that there were no hazardous parameters identified.

Conclusions

An evaluation of the likely impact of the historical development impacting the site was undertaken by review of the limited environmental assessment information available.

Where the environmental data was collected during the site investigations undertaken at the site the soil analysis indicates there is no evidence of contamination at the site.

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7.0 STAGE 5 - ENVIRONMENTAL SETTING

This section includes an assessment of the likely fate of any spill/leak event based on the topography, soil, and groundwater characteristics at the location. Based on the findings of Stages 1 to 4 above, the location where hazardous substances are stored has also been assessed about confirming source-pathway-receptor linkages i.e., in the unlikely event of a leakage/spillage.

7.1 TOPOGRAPHY

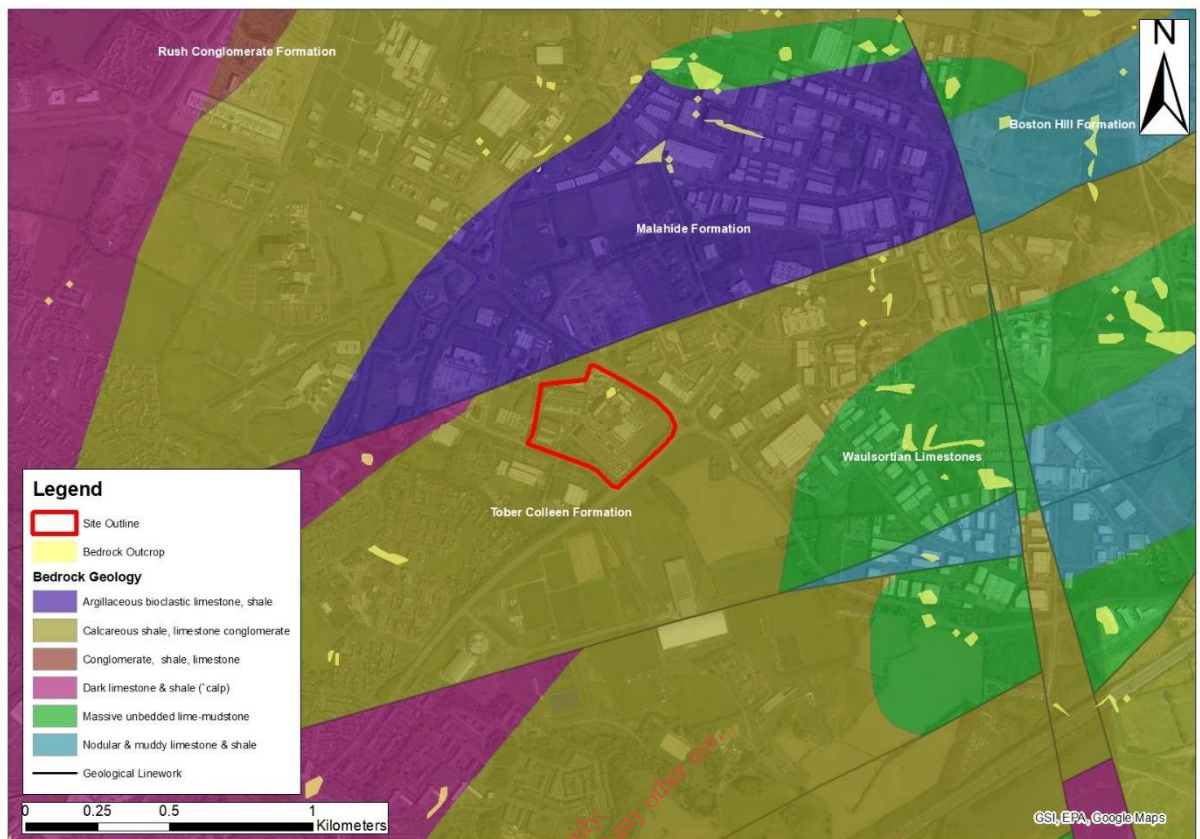
The topography of the site can generally be described as flat, however the site falls from Northeast to Southwest with a gradient difference of circa 7m with an elevation to ordinance datum (AOD Malin) ranging 81m AOD – 74m AOD east to west.

There are no water courses bounding or traversing the site. All existing and proposed surface water drainage will discharge to the existing storm water system along the Blanchardstown Business and Technology Park Road, following attenuation and treatment. Similarly, all foul drainage is collected in an expanded foul drainage network and discharged to the Blanchardstown Business and Technology Park foul drainage network which ultimately discharges to the municipal Wastewater Treatment Plant (WWTP) at Ringsend.

7.2 GEOLOGY & HYDROGEOLOGY

7.2.1 Regional Geology

According to the Geological Survey of Ireland (GSI) website, the site is underlain by made ground deposits which are further underlain by glacial till derived from carboniferous limestone. The majority of the building D (southwestern part of the site) is underlain by 'Bedrock outcrop or subcrop'. This indicates that the bedrock is close to the surface in the southwestern part of the site. The bedrock geology underlying the site and surrounding area is mapped as *Tober Colleen Formation*, described as "mixed sandstones, conglomerates, shales and limestones". These are heavily interbedded with each other. See Insert 7.1 below.



Insert 7.1 Bedrock Geology Map (Source www.gsi.ie)

7.2.2 Regional Hydrogeology

7.2.2.1 Aquifer Classification

Aquifers are generally classified as rocks or other matrices that contain sufficient void spaces and which are permeable enough to allow water to flow through them in significant quantities. The GSI (2018) classifies the principal aquifer types in Ireland as:

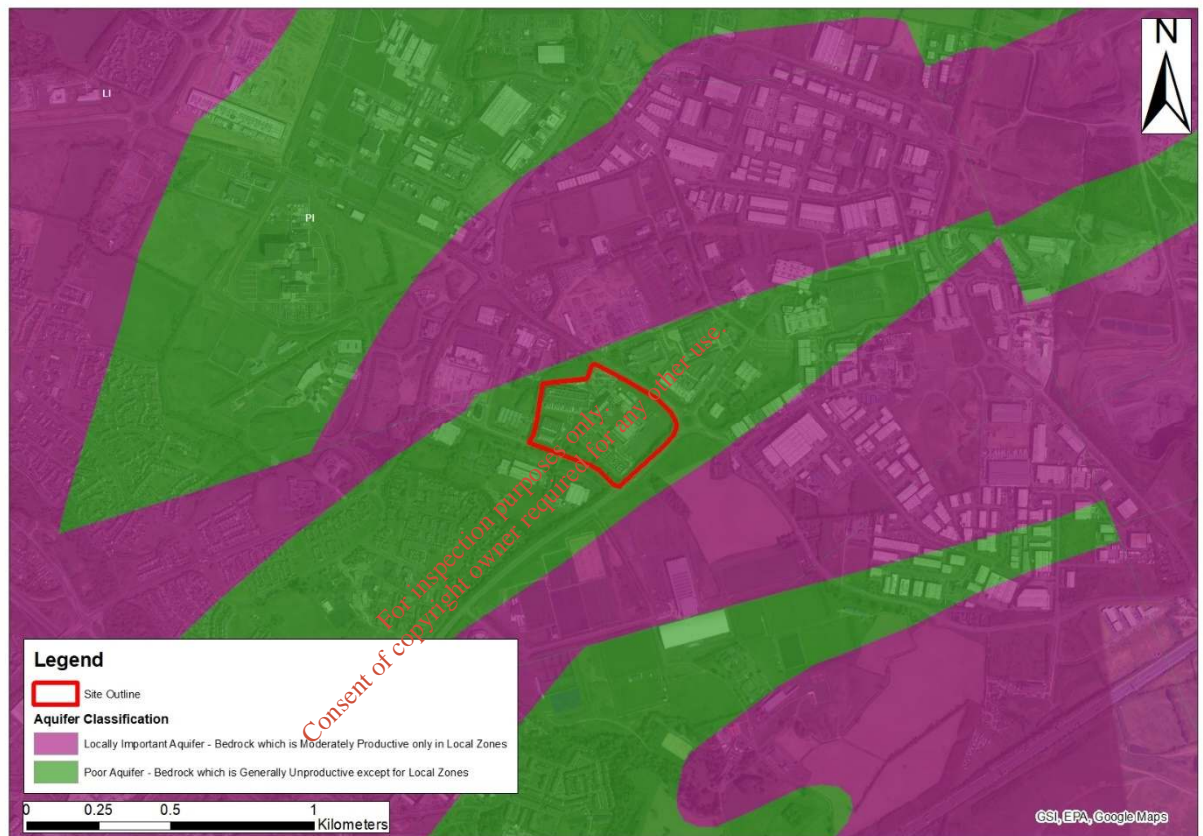
Bedrock Aquifer

- Rkc – Regionally Important Aquifer – Karstified (conduit)
- Rkd – Regionally Important Aquifer – Karstified (diffuse)
- RK – Regionally Important Aquifer – Karstified
- Rf – Regionally Important Aquifer – Fissured bedrock
- Lm – Locally Important Aquifer – Bedrock which is Generally Moderately Productive
- Lk – Locally Important Aquifer – Karstified
- Ll – Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones
- PI – Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones
- PU – Poor Aquifer – Bedrock which is Generally Unproductive

Gravel Aquifer

- Lg - Locally Important Aquifer - Sand & Gravel
- Rg - Regionally Important Aquifer - Sand & Gravel

The underlying bedrock geology at the site (*Tober Colleen Formation*) has been classified by the GSI (www.gsi.ie/mapping) as a 'Poor Aquifer (PI)', this being bedrock which is generally unproductive except in local zones'. No superficial gravel aquifer was mapped at the site. Insert 7.2 presents the current bedrock aquifer map for the area surrounding the site. According to the GSI, the aquifer is not considered to have any primary porosity and flow will be primarily fracture controlled.



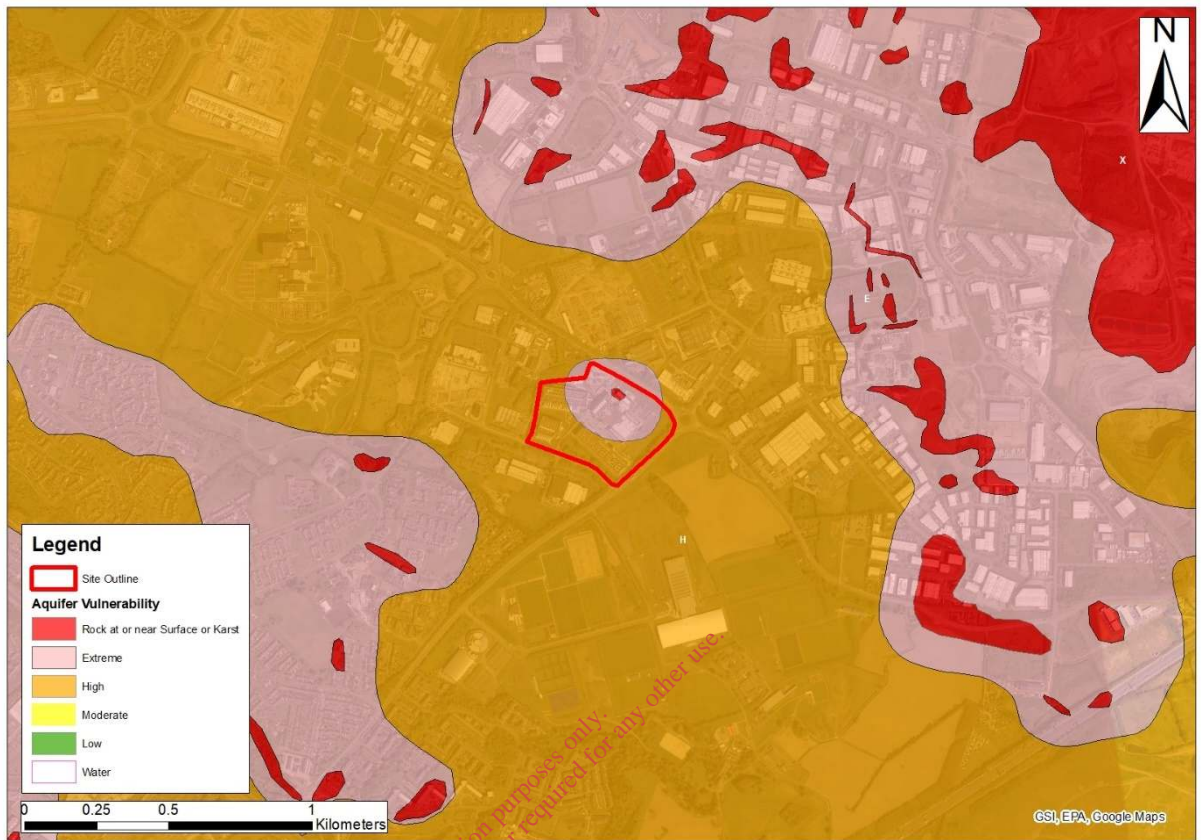
Insert 7.2 Aquifer Classification map (Source: www.gsi.ie)

7.2.2.2 Aquifer vulnerability

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures, the main feature that protects groundwater from contamination, and therefore the most important feature in protection of groundwater, is the subsoil which consists of till derived from limestone across the site with the exception of a local area (0.1km²) of gravels derived from limestone.

The GSI currently classifies the bedrock aquifer in the region of the site as having 'Extreme' (north of the site) and 'High' (south of the site) groundwater vulnerability. This indicates that the underlying bedrock is at or near the surface in the north of the site and within 0 to 3m below ground level across the site. This is confirmed by a number

of geotechnical boreholes in the immediate vicinity of the site where the majority of geotechnical boreholes met rock close to 3m.



Insert 7.3 Aquifer vulnerability

7.2.2.3 Groundwater Wells and Flow Direction

The GSI data indicates that the site does not lie within a drinking water protection area, the nearest public water supplies is Dunboyme C. 7 km northwest of the site.

GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. This current index, however, shows a well / borehole 2.5km to the northwest of the site which is used for industrial use. The well was drilled in 1994 and has a good yield (115M³/day). The remainder of the wells listed in table 7.1 are greater than 3km from the site, with only one well being used for agriculture and domestic use.

Insert 7.4 below presents the GSI well search for the area surrounding the site (Note this source does not include all wells) and Table 7.1 below summarises the details of some of the wells present within this search area.



Insert 7.4 GSI Well Search (GSI, 2020)

Groundwater flow locally is anticipated to flow in a southerly direction towards the Tolka River and regionally towards Dublin Bay to the East.

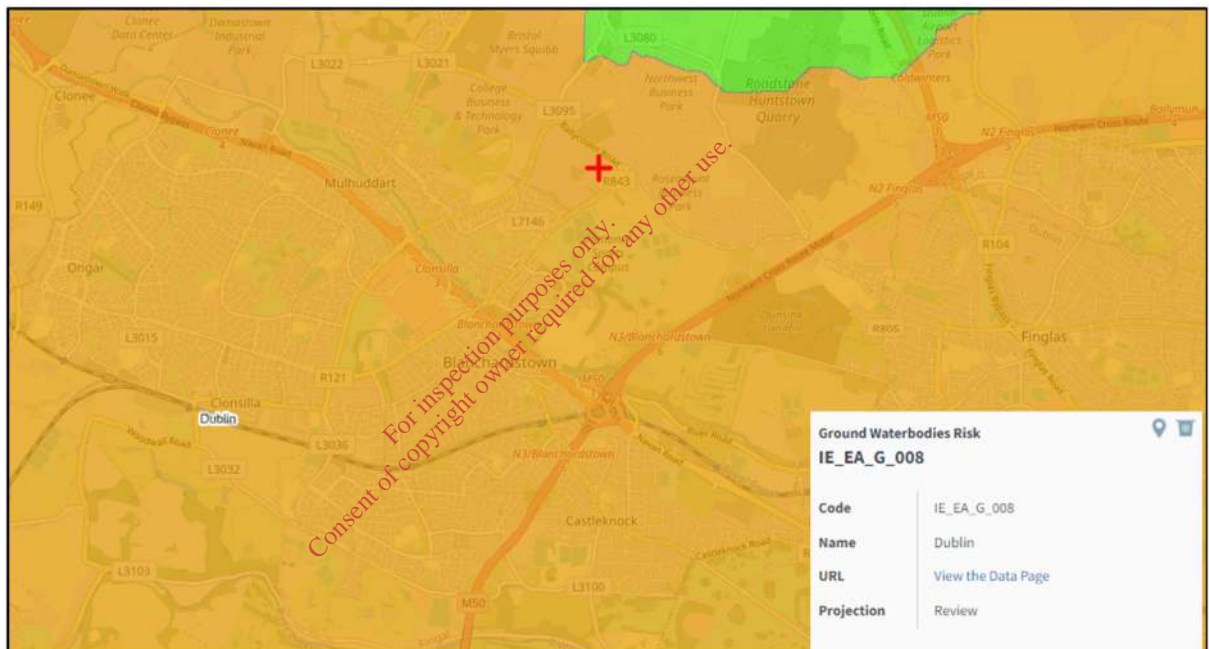
Table 7.1 GSI Well Index Table from well search (GSI, 2020)

GSI Name	Type	DEPTH (m)	Depth to Rock (m)	Townland	County	Use	Yield Class	Yield m3/day
2923NEW041	Spring			TYRRELSTOWN	Dublin			
2923NEW043	Spring			KILSHANE	Dublin			
2923NEW047	Borehole	22.5	2.3	TYRRELSTOWN	Dublin			
2923NEW048	Borehole	12	2	TYRRELSTOWN	Dublin			
2923NEW049	Borehole	22.2	2	TYRRELSTOWN	Dublin			
2923NEW050	Borehole	23	2.8	TYRRELSTOWN	Dublin			
2923NEW054	Borehole	23	3	HOLLYWOODRATH	Dublin			
2923NEW057	Borehole	23.6	6.2	POWERSTOWN	Dublin			
2923NEW059	Borehole	6.8	6.8	TYRRELSTOWN	Dublin			
2923SEW047	Borehole	3.8		CAPPOGE	Dublin			
2923SEW048	Borehole	3.2		CAPPOGE	Dublin			
2923SEW049	Borehole	3.6		CAPPOGE	Dublin			
2923SEW004	Borehole	76.2		CAPPOGE	Dublin	Agri & domestic use	Good	109.1
2923NEW033	Borehole	150	12	TYRRELSTOWN	Dublin	Industrial use	Good	115

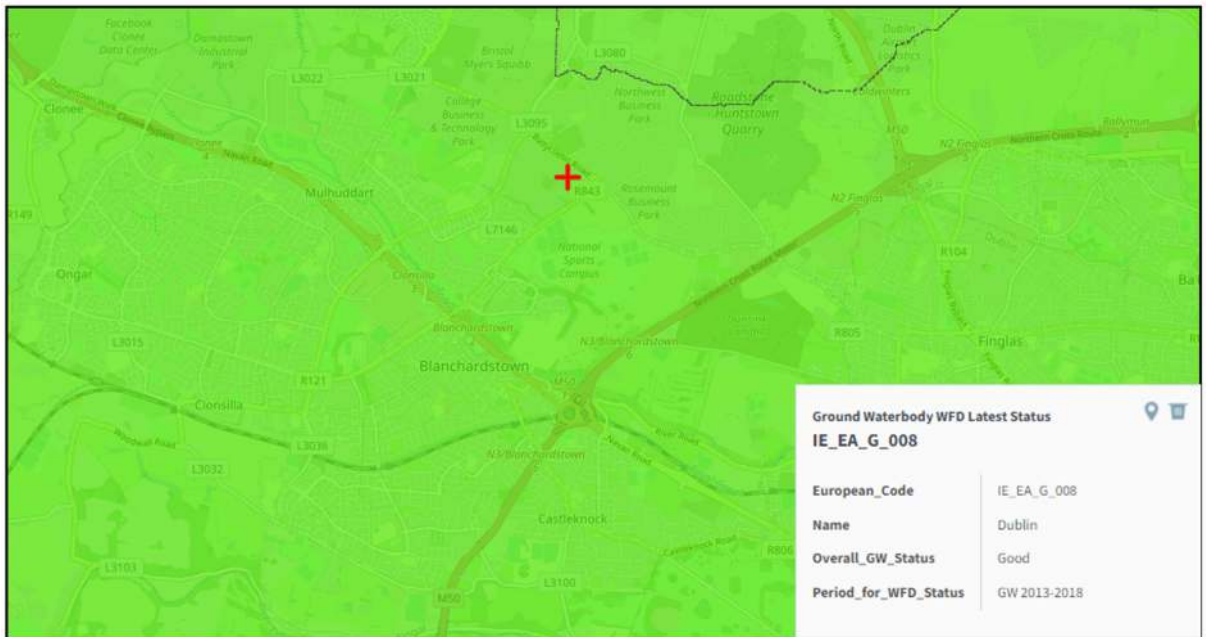
7.2.2.4 Groundwater Quality

The European Communities Directive 2000/60/EC established a framework for community action in the field of water policy (commonly known as the Water Framework Directive [WFD]). The WFD required 'Good Water Status' for all European water by 2015, to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'.

The groundwater body (GWB) in the region of the site (Dublin Urban) is classified by the EPA under the Water Framework Directive (WFD) Risk Score system as 'under review' (Insert 7.5). Currently, the Dublin GWB is classified as "Good status" (Insert 7.6) at the site and surrounding area.



Insert 7.5 *GWB Risk, site shown with a red X 'groundwater body is not at risk' (Source: [EPA Maps](#))*

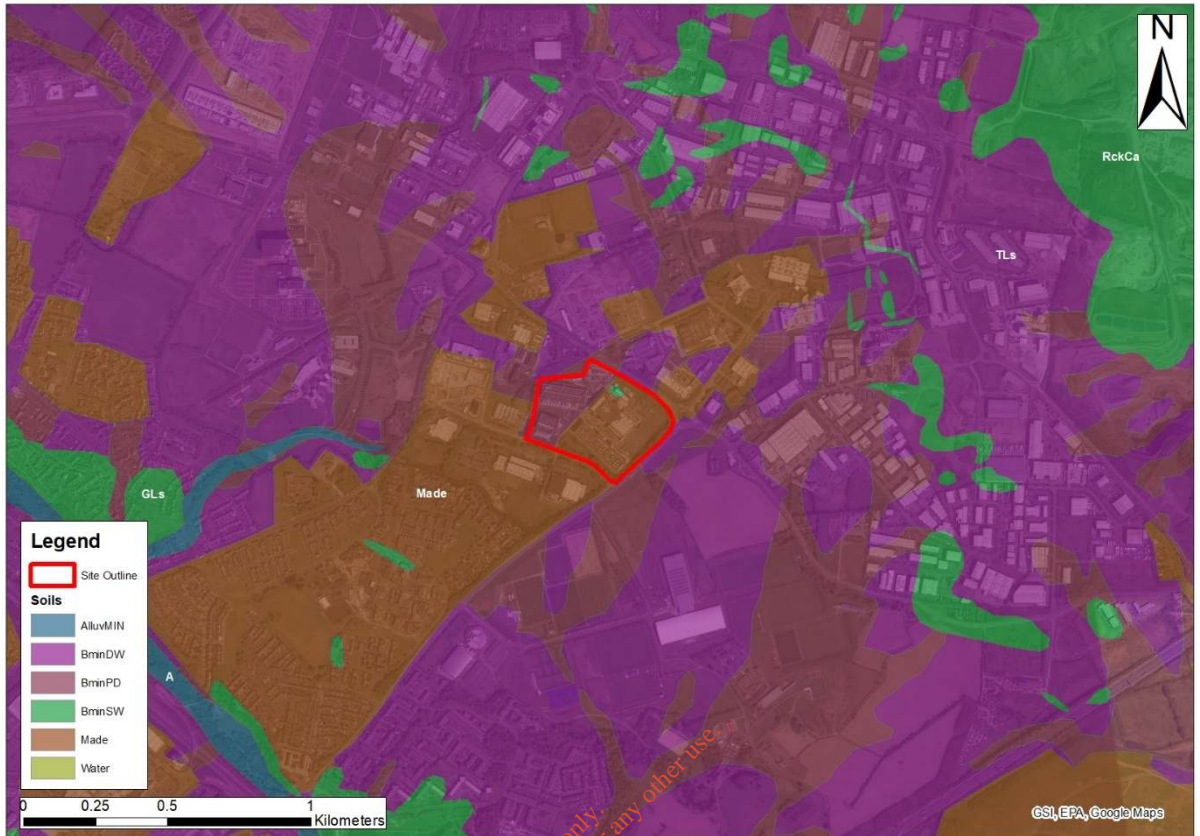


Insert 7.6 GWB WFD Status (period 2013-2018) site shown with a red X. Green = Good Status (Source: [EPA Maps](#))

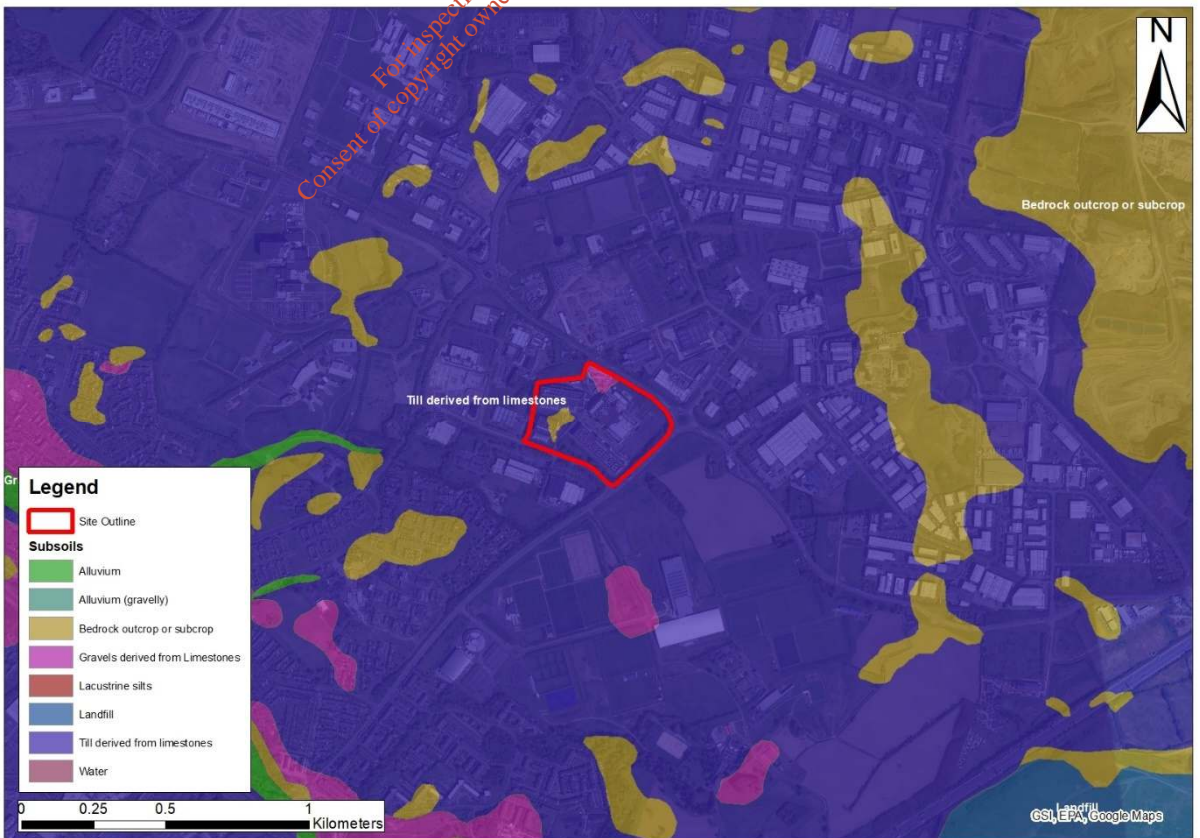
There is no groundwater sampling data available for the site.

7.2.3 Regional Soils

The GSI geological web viewer shows the site primarily underlain by till derived from limestone with local area (0.1 km²) of gravels derived from limestone within the northern part of the site. There is a bedrock outcrop or subcrop in the southwestern part of the site.



Insert 7.6 Soils map (boundary indicated in red) (Source: www.gsi.ie)



Insert 7.7 Sub-Soils map (boundary indicated in red) (Source: www.gsi.ie)

7.3 HYDROLOGY

The site is drained by the Ballycoolen River approximately 150 meters to the southwest of the site and the Abbotstown River approximately 60 meters to the east of the site. The Ballycoolen river flows southwest, the Abbotstown River flows to the southeast, both rivers drain into the River Tolka at Mulhuddart and Abbotstown respectively. The River Tolka lies 1.7km south of the site and discharges to Dublin Bay.

Storm water drainage from the site currently discharges to the attenuation ponds on site prior to discharge to the existing storm water system along the Business Estate Road via Class 1 hydrocarbon interceptors and flow control devices. This eventually discharges into the Ballycoolen stream to the west of the site.

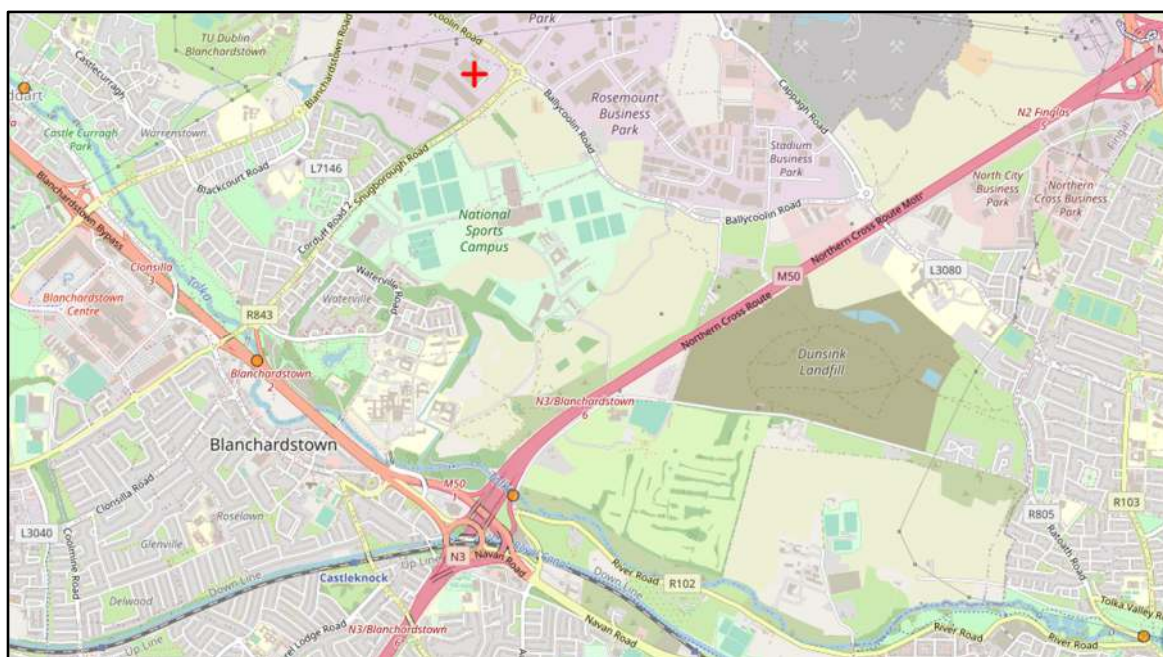


Insert 7.8 Hydrological Environment (Source: [EPA Maps](#))

7.3.1 Surface Water Quality

The site is located within the Ireland River Basin District (formally the Eastern River Basin District (ERBD)), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD).

Surface water quality is monitored continuously by the EPA at various regional locations along principal and other smaller watercourses. Insert 7.10 below presents the EPA quality monitoring points in the context of the site and other regional drainage setting.



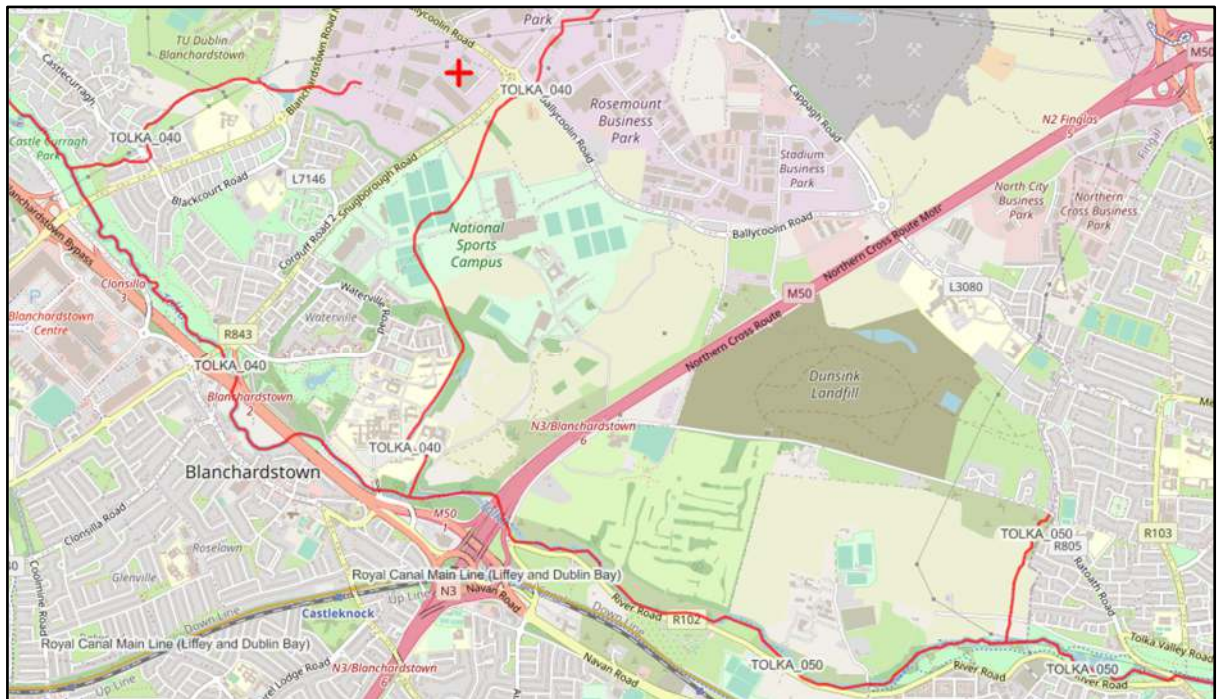
Insert 7.9 Surface Water Quality Monitoring Point (Source: [EPA Maps](#)) (Site location indicated with red X with monitoring point locations shown with orange circles)

With reference to the site setting, the nearest downstream EPA monitoring station is situated along the River Tolka to the south of the site and is downstream of the Ballycoolen river. A second EPA monitoring station is situated along the River Tolka and is downstream of the Abbotstown River to the southeast of the site at Dunsink Lane.

The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

The water quality monitoring stations located on the River Tolka downstream of the site have quality ratings available within the last twenty years. This monitoring location (Old Corduff Road Bridge RS09T010900) has a Q rating of 3, 'Poor' status (in 1994). The further downstream monitoring station (Abbotstown RS09T011000) obtained a Q rating of 3 which also denotes a "Poor" rating for River Tolka in 2019.

In accordance with the 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 Tolka waterbody as having 'Poor Status' (Cycle Status 2013-2018) with a current WFD River Waterbody risk score of 1a, 'At risk of not achieving good status'. Insert 7.11 presents the river waterbody EPA map.



Insert 7.10 River Waterbody At risk of not achieving good status, WFD Ecological Status: Poor. (Site location indicated with red X).

7.3.2 Flood Risk

The potential risk of flooding on the subject site was also assessed through a review of the OPW CFRAM mapping for the area; shown in Insert 7.12. The Office of Public Works (OPW) on-line database was reviewed with regard to incidences of historical, regional and local flooding relevant to the area. The site is regarded as a “Less Vulnerable Development” as it is used for industrial use. There were no flood events recorded at the site or immediate area. There are no final flood maps prepared for this site. According to the draft CFRAM (Catchment Flood Risk Assessment and Management) maps, there is no modelled flood event impacting on this development. Therefore, this site resides in Flood Zone C which means the probability of flooding is low (less than 0.1% or 1 in 1000). The closest watercourse is Abbotstown River which is located approximately 0.06km east south east of the site.

There are no historic flood events recorded for the proposed development site and the surrounding area. The nearest flood event occurred 1.85km south west of the development site along the N3 at Blanchardstown. The flooding occurred along the Tolka River in April 2002.

It is concluded that the site is located in an area which is not liable to flooding and will not in and of itself result in any additional flood risk.



Insert 7.11 OPW Historical Flood Map (source: www.floodmaps.ie)

7.4 MAN-MADE PATHWAYS

As identified in Stages 1-4, bulk storage for hydrocarbons only is present at the facility. Due to the volumes stored and the hazard classifications of these substances they could pose a risk to receiving waters if a source-pathway-receptor linkage existed.

There are no existing land drains which may act as a migration route. Although the aquifer vulnerability is high based on the thin soil cover present, the underlying bedrock is a poor aquifer with poor connectivity so little potential for off-site migration should any leakage occur to natural soil. However, much of the site is hard paved reducing the potential for vertical migration to ground during operation. In the unlikely event of a leakage outside of the storage bunds, the primary pathway would be through the stormwater drainage system. The only man-made pathway of concern is the site stormwater network, the stormwater network is described in Section 4.2 above.

As noted in Section 4.1 the fuel tanks are located on hardstanding, appropriately bunded, with leak detection alarm systems, furthermore, prior to discharge, stormwater is passed through Class 1 hydrocarbon interceptors to ensure that the quality of the stormwater discharge is controlled.

It is intended to install a penstock on the outfall of each Attenuation Systems prior to the discharge into the stormwater main (Emission Point SW1, SW2, SW3, and SW4). Once installed, the penstock will allow the outfall of the stormwater network(s) to be closed off to inhibit the outflow in the event of a spill or a fire. Potentially polluted rainwater that reaches the stormwater attenuation basins(s) (for example, in the case of a fire) shall be tested before release to the receiving storm water main. Any

stormwater of unacceptable quality will be pumped out or otherwise removed of the attenuation basin and disposed of appropriately. In the highly unlikely event of a major spill that entered the storm cell(s), inspection would be undertaken to ensure there is no subsurface contamination.

7.5 SURROUNDING LAND USE AND INTERDEPENDENCIES

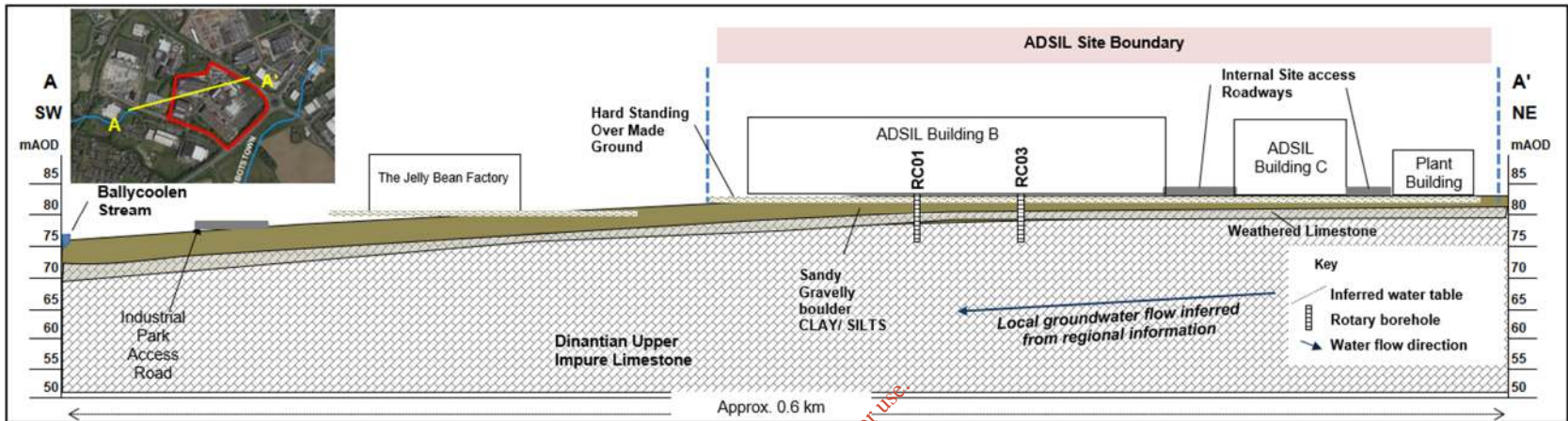
The surrounding context of the site has been described in Section 1.3 above.

The only other site of interest in the surrounding area is the Ipsen Manufacturing Ireland Limited site, located immediately to the west of the site and cross gradient. It is a licenced facility subject to an EPA monitoring programme for groundwater, air and effluent emissions. Due to the topography, the potential for any off-site migration of contamination from this site (if present) is likely to migrate in a southerly direction and not directly towards the ADSIL site.

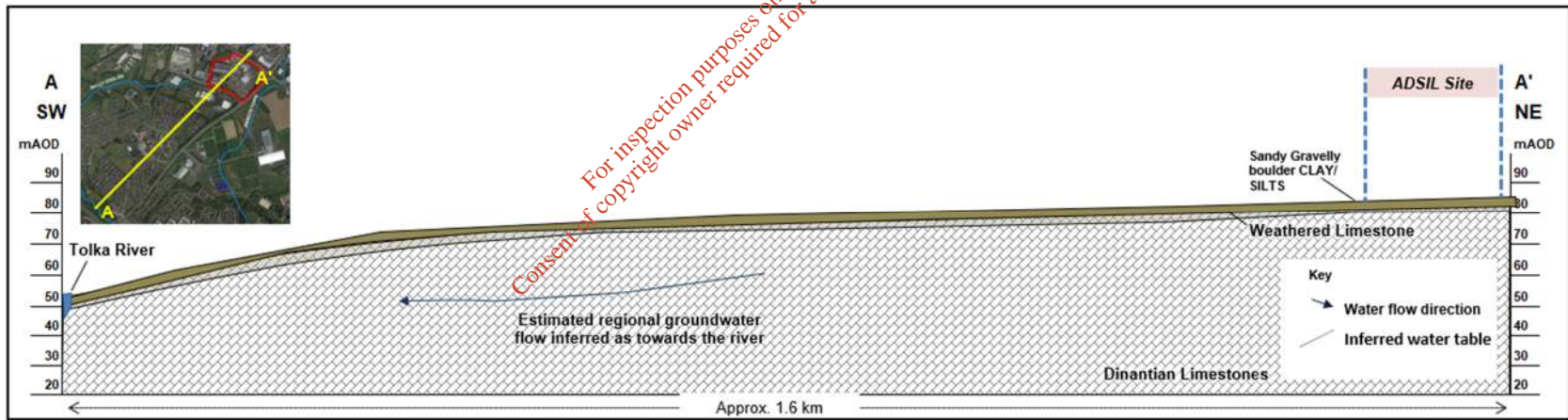
8.0 STAGE 6 – CONCEPTUAL SITE MODEL

Based on the available information which includes some intrusive site-specific data, the site has been characterised below:

- The site is situated on relatively flat ground with a gentle slope to the southwest with a ground elevation across the site of 74 mAOD to 81 mAOD (Malin Head datum);
- The profile on site is relatively consistent and comprises topsoil or made ground overlying a slightly gravelly clay which was in turn underlain by very stiff black sandy gravelly clay with some cobbles. Depth to bedrock is relatively shallow less than 3.0 meter in places (based on site investigations), there is a subcrop recorded at the site and a small gravel deposit. As such, the bedrock aquifer is a Poor Aquifer which is Generally Unproductive except for Local Zones;
- The site is underlain by the Tober Colleen Formation comprising mixed sandstones, conglomerates, shales and limestones; The bedrock aquifer is a Poor Aquifer which is Generally Unproductive except for Local Zones;
- Review of the geology and hydrogeology in the surrounding region indicates that there are no sensitive receptors such as groundwater-fed wetlands, significant public water supplies/ Group Water Schemes or geological heritage sites within the immediate vicinity which could be impacted by the installation;
- Groundwater flows are expected to be in a south direction towards the River Tolka and regionally in a south easterly direction towards Dublin Bay.
- Based on the Institute of Geologists of Ireland (IGI) the criteria for rating the importance of hydrogeological features, the importance of the hydrogeological features at this site is rated as **Low Importance**. This is based on the assessment that the attribute has a low quality significance or value on a local scale. The aquifer is a *poor* bedrock aquifer, unproductive expect in local zones and it is unlikely to be used for public water supply or widely used for potable use.
- In addition, it does not host any groundwater dependent ecosystems (SACs/NHAs).



Insert 8.1 A-A' Schematic local cross section showing the ADSIL site



Insert 8.2 A-A' Schematic regional cross section showing the ADSIL site

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8.1 POLLUTANT LINKAGES

The pollutant linkages based on the primary sources of possible contaminants on site are summarised in Table 8.1.

Table 8.1 Pollutant Linkages

Source	Pathways	Receptor	Impact Assessment (in the event of a leak to ground)
Diesel Fuel Spill (fully contained)	<p>Vertical and lateral migration via shallow overburden to underlying bedrock</p> <p>Lateral migration via groundwater within the bedrock aquifer</p> <p>No open water pathway. Indirect link through lateral migration via drainage system</p>	<p>Poor aquifer, generally unproductive expect for local zones Aquifer with extreme - high vulnerability</p> <p>Stormwater system to River Tolka (distance 1.6km)</p>	<p>Low – Tanks are bunded and double skinned and on hard stand areas with interceptors on the drainage system. Should leakage to soil occur movement off site would be limited by absorption and attenuation in clay and the poor connectivity of fracturing within the underlying rock.</p> <p>Low – Tanks contained (as above), gradient low and hydrocarbons will have attenuated prior to reaching the River Tolka.</p>

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9.0 STAGE 7 – SITE INVESTIGATION

The most relevant soil quality site investigation information is found in the 'Environmental Report For the Building C site located in the IDA Blanchardstown Business & Technology Park, ADSIL (16th May 2013)' and in 'IDA Industrial Estate Snugborough Road Dublin, Proposed Data Centre, IGSL Report No. 20963, Geotechnical Report July 2018' for Building D.

The Environmental Report for the Building C site located in the IDA Blanchardstown Business & Technology Park, ADSIL (16th May 2013) provides previous intrusive site investigation details extracted from trial pit and borehole investigations completed on site in 1979, 2010 and 2012. The investigation (2012) completed in the northwest part of the site consisted of two boreholes and three trial pits and included soil sampling which was scheduled of Cen 10:1 Leachate and Solids.

Findings of the 2012 investigation are summaries below:

- Bedrock is general 2.5 to 3.0 metre below existing ground levels.
- In general there was no evidence of the water table.
- Subsurface ground conditions were similar over the site, consisting of topsoil underlain by brown sandy slightly gravelly clay which was in turn underlain by very stiff black sandy gravelly clay with some cobbles (shaley clay) which extends to limestone bedrock at final level.
- Based on the chemical parameters scheduled with Jones Environmental laboratory the three samples selected were considered inert (WAC analysis)

The 2018 IDA Industrial Estate Snugborough Road Dublin, Proposed Data Centre, IGSL Report No. 20963, Geotechnical Report for Building C provides details of investigations completed in the former Kingston Technologies part of the site. The instructive investigation works included eight boreholes using a shell and auger rig and seven rotary core boreholes using a Knebel drilling rig. A representative 7 soil samples were collected from the 8 boreholes and 4 samples were scheduled for the Rilta (WAC) test suite. All parameters in all four samples were less than laboratory detection limit or less than the Inert Landfill Waste Acceptance Criteria limits. The boreholes completed in the south-western area of the site confirmed bedrock within 2.0 to 3.0 meter below ground level.

The 2010 investigation completed by Collen Constructions and CSEA was focused on the central area of the site where Building C and Building A in the centre and southeast part of the site. There were 9 trial pits completed which determined similar findings to above with respect to soil composition and depth to bedrock. There was no environmental soil data gathering during this phase of investigation works.

The Building B Blanchardstown Due Diligence Report ADSIL, Clifton Scannell Emerson Associates CSEA (20 February 2015) report contains the 'Amazon Web Services Phase 1 Environmental Site Assessment Proposed Building B, Blanchardstown, Snugborough and Ballycoolin Road, Co. Dublin, Ireland, ERM, (January 2015)'. It reports on the environmental status of the western part of the site, however there was no instructive site investigations completed.

10.0 CONCLUSIONS

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

- The soil quality data is limited for the facility. However, based on available data, there is no evidence of contamination within the soils beneath the site. There is no groundwater quality data available and no existing monitoring boreholes to facilitate collection of samples.
- The only relevant bulk hazardous substances (substances stored or used onsite and which are classified as hazardous by the EPA under the Groundwater Regulations and contained in bulk storage) is diesel for back-up emergency generators. The risk prevention measures at the facility significantly reduce the potential for an environmental impact to soil or water to occur. These measures include bunded or double contained vessels, dual-contained fuel pipe system (when underground), and spill management procedures.
- Source-pathway-receptor linkages were assessed for the bulk storage areas. It was concluded that there are no direct pathways to either the soil or groundwater environment. A leakage from a bulk tank would be fully contained in the designated bund or the double skin lining of the tank, with leaks during delivery fully contained within the continuous hard stand delivery area. Any leakage outside of the delivery area would be contained within the drainage system. As the site is covered in hardstand, any spilled or leaked hydrocarbons, if not immediately contained will migrate through stormwater drainage system and subsequently be treated within the on-site interceptors and is assimilated within the attenuation systems on site.

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11.0 REFERENCES

Environmental Report for Building C site located in the IDA Blanchardstown Business & Technology Park, ADSIL, Clifton Scannell Emerson Associates CSEA (16th May 2013)

Building C - Blanchardstown Due Diligence Report ADSIL, Clifton Scannell Emerson Associates CSEA (20 February 2015)

Amazon Web Services Phase 1 Environmental Site Assessment Proposed Building B, Blanchardstown, Snugborough and Ballycoolin Road, Co. Dublin, Ireland, ERM, (January 2015).

Blanchardstown Industrial Park, Blanchardstown, Dublin 15 Site Investigation Addendum, February 2015, Site Investigations, for CSEA

Environmental Impact Assessment Screening Report Data Storage Facility at the Former Kingston Technology Building, IDA Blanchardstown Business and Technology Park, Ballycoolin Road and Snugborough Road, Blanchardstown, Dublin 15. AWN Consulting (5th June 2018)

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Phase 1 Environmental Site Assessment Report – Blanchardstown Business and Technology Park, Snugborough Road, Dublin 15, ACOM, (December 2017)

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Ordnance Survey Ireland. Aerial photographs and historical mapping. Available at: <https://www.osi.ie/> (Accessed: January 2022)

Appendix A

The Environmental Report for the Building C site located in the IDA Blanchardstown Business & Technology Park, ADSIL (16th May 2013) contains 'Ground Investigations Ireland Ltd 110kV Sub Station – Building C Blanchardstown Site Investigation, Colleen construction, October 2012

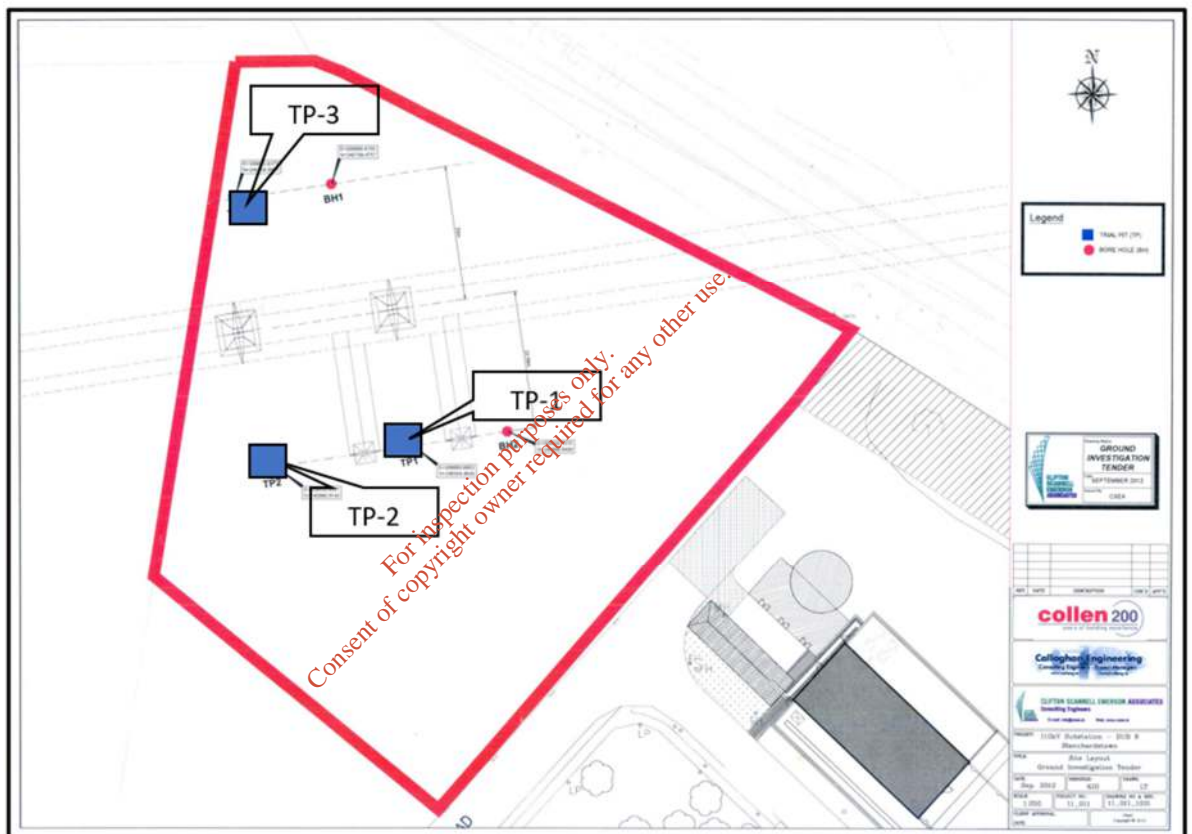


Figure A.1 showing No. 3 Trial Pits Completed in 2012 in the Northwest Corner of the Site

Jones Environmental Laboratory

Client Name:

Reference:

Location:

Murphy - CEN 10:1 Leachates and solids (as mg/kg)

Contact:

JEFL Job No.:

JEFL Sample No.	1	2	3															
Client Sample No.	TP1	TP2	TP3															
Depth/Other	0.6	0.4	0.7															
Container	T	T	T															
Sample Date	19/09/2012	19/09/2012	19/09/2012															
Sample Type	Soil	Soil	Soil															
Batch Number	1	1	1															
Date of Receipt	21/09/2012	21/09/2012	21/09/2012															
									Inert	Stable Non-reactive	Hazardous	LOD	Units	Method Number				
% Dry Matter	76.0	71.1	86.6	~	~	~	~	~				<0.1	%	NONE/PM4				
Antimony # - L	<0.02	0.03	0.03	~	~	~	~	~	0.06	0.7	5	<0.02	mg/kg	TM30/PM17				
Arsenic # - L	<0.025	<0.025	0.032	~	~	~	~	~	0.5	2	25	<0.025	mg/kg	TM30/PM17				
Barium # - L	0.18	0.05	0.20	~	~	~	~	~	20	100	300	<0.03	mg/kg	TM30/PM17				
Total BTEX # Solid	<0.025	<0.025	<0.025	~	~	~	~	~	6			<0.025	mg/kg	TM2/PM7				
Cadmium # - L	<0.005	<0.005	0.006	~	~	~	~	~	0.04	1	5	<0.005	mg/kg	TM30/PM17				
Chloride - L	<3	<3	6	~	~	~	~	~	800	15000	25000	<3	mg/kg	TM27/PM0				
Chromium # - L	0.063	<0.015	0.152	~	~	~	~	~	1	10	70	<0.015	mg/kg	TM30/PM17				
Copper # - L	<0.07	<0.07	0.16	~	~	~	~	~	2	50	100	<0.07	mg/kg	TM30/PM17				
DOC - L	130	130	100	~	~	~	~	~	500	800	1000	<20	mg/kg	TM60/PM0				
Fluoride - L	3	4	5	~	~	~	~	~	10	150	500	<3	mg/kg	TM27/PM0				
Lead # - L	0.07	<0.05	<0.05	~	~	~	~	~	0.5	10	50	<0.05	mg/kg	TM30/PM17				
Mercury Dissolved by CVAF # - L	0.0036	0.0012	0.0011	~	~	~	~	~	0.01	0.2	2	<0.0001	mg/kg	TM61/PM38				
Mineral Oil - Solid	<30	<30	<30	~	~	~	~	~	500			<30	mg/kg	TM5/PM16				
Molybdenum # - L	<0.02	<0.02	<0.02	~	~	~	~	~	0.5	10	30	<0.02	mg/kg	TM30/PM17				
Nickel # - L	0.03	<0.02	0.14	~	~	~	~	~	0.4	10	40	<0.02	mg/kg	TM30/PM17				
PAH 17 Total - Solid	1.97	1.84	<0.64	~	~	~	~	~	100			<0.64	mg/kg	TM4/PM8				
Total 7 PCBs# - Solid	<0.035	<0.035	<0.035	~	~	~	~	~	1			<0.035	mg/kg	TM17/PM8				
Selenium # - L	<0.03	<0.03	<0.03	~	~	~	~	~	0.1	0.5	7	<0.03	mg/kg	TM30/PM17				
Sulphate (Soluble) - L	9.2	13.4	23.7	~	~	~	~	~	1000	20000	50000	<0.5	mg/kg	TM27/PM0				
TOC# - Solid	3.1	4.3	0.7	~	~	~	~	~	3	5	6	<0.2	%	TM21/PM24				
TDS - L	590	820	650	~	~	~	~	~	4000	60000	100000	<350	mg/kg	TM20/PM0				
Zinc # - L	0.17	<0.03	0.36	~	~	~	~	~	4	50	200	<0.03	mg/kg	TM30/PM17				
Phenol Index - L	1.4	<0.5	2.2	~	~	~	~	~	1			<0.5	mg/kg	TM101/PM0				
Mass of raw test portion	0.1179	0.1261	0.1036										kg	NONE/PM17				
Mass of dried test portion	0.09	0.09	0.09										kg	NONE/PM17				
Leachant Volume	0.872	0.863	0.886										l	NONE/PM17				
Eluate Volume	0.7	0.68	0.8										l	NONE/PM17				

Please see attached notes for all abbreviations and acronyms

Table A.1 Showing the Waste Acceptance Criteria (WAC) Analytical Results (2012)

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Jones Environmental Laboratory

Client Name:

Reference:

Location:

Murphy - CEN 10:1 Leachates and solids (as mg/kg)

Contact:

JEFL Job No.:

JEFL Sample No.	Client Sample No.	Depth/Other	Container	Sample Date	Sample Type	Batch Number	Date of Receipt	Inert	Stable Non-reactive	Hazardous	LOD	Units	Method Number
											Please see attached notes for all abbreviations and acronyms		
% Dry Matter	~	~	~	~	~	~	~				<0.1	%	NONE/PM4
Antimony # - L	~	~	~	~	~	~	~	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Arsenic # - L	~	~	~	~	~	~	~	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium # - L	~	~	~	~	~	~	~	20	100	300	<0.03	mg/kg	TM30/PM17
Total BTEX # Solid	~	~	~	~	~	~	~	6			<0.025	mg/kg	TM2/PM7
Cadmium # - L	~	~	~	~	~	~	~	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chloride - L	~	~	~	~	~	~	~	800	15000	25000	<3	mg/kg	TM27/PM0
Chromium # - L	~	~	~	~	~	~	~	1	10	70	<0.015	mg/kg	TM30/PM17
Copper # - L	~	~	~	~	~	~	~	2	50	100	<0.07	mg/kg	TM30/PM17
DOC - L	~	~	~	~	~	~	~	500	800	1000	<20	mg/kg	TM60/PM0
Fluoride - L	~	~	~	~	~	~	~	10	150	500	<3	mg/kg	TM27/PM0
Lead # - L	~	~	~	~	~	~	~	0.5	10	50	<0.05	mg/kg	TM30/PM17
Mercury Dissolved by CVAF # - L	~	~	~	~	~	~	~	0.01	0.2	2	<0.0001	mg/kg	TM61/PM38
Mineral Oil - Solid	~	~	~	~	~	~	~	500			<30	mg/kg	TM5/PM16
Molybdenum # - L	~	~	~	~	~	~	~	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel # - L	~	~	~	~	~	~	~	0.4	10	40	<0.02	mg/kg	TM30/PM17
PAH 17 Total - Solid	~	~	~	~	~	~	~	100			<0.64	mg/kg	TM4/PM8
Total 7 PCBs# - Solid	~	~	~	~	~	~	~	1			<0.035	mg/kg	TM17/PM8
Selenium # - L	~	~	~	~	~	~	~	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Sulphate (Soluble) - L	~	~	~	~	~	~	~	1000	20000	50000	<0.5	mg/kg	TM27/PM0
TOC# - Solid	~	~	~	~	~	~	~	3	5	6	<0.2	%	TM21/PM24
TDS - L	~	~	~	~	~	~	~	4000	60000	100000	<350	mg/kg	TM20/PM0
Zinc # - L	~	~	~	~	~	~	~	4	50	200	<0.03	mg/kg	TM30/PM17
Phenol Index - L	~	~	~	~	~	~	~	1			<0.5	mg/kg	TM101/PM0
Mass of raw test portion												kg	NONE/PM17
Mass of dried test portion												kg	NONE/PM17
Leachant Volume												l	NONE/PM17
Eluate Volume												l	NONE/PM17

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Table A.2 Showing the Waste Acceptance Criteria (WAC) Analytical Results (2012)

Appendix B: Blanchardstown Industrial Park, Blanchardstown, Dublin 15 Site Investigation Addendum, February 2015, Site Investigations for CSEA

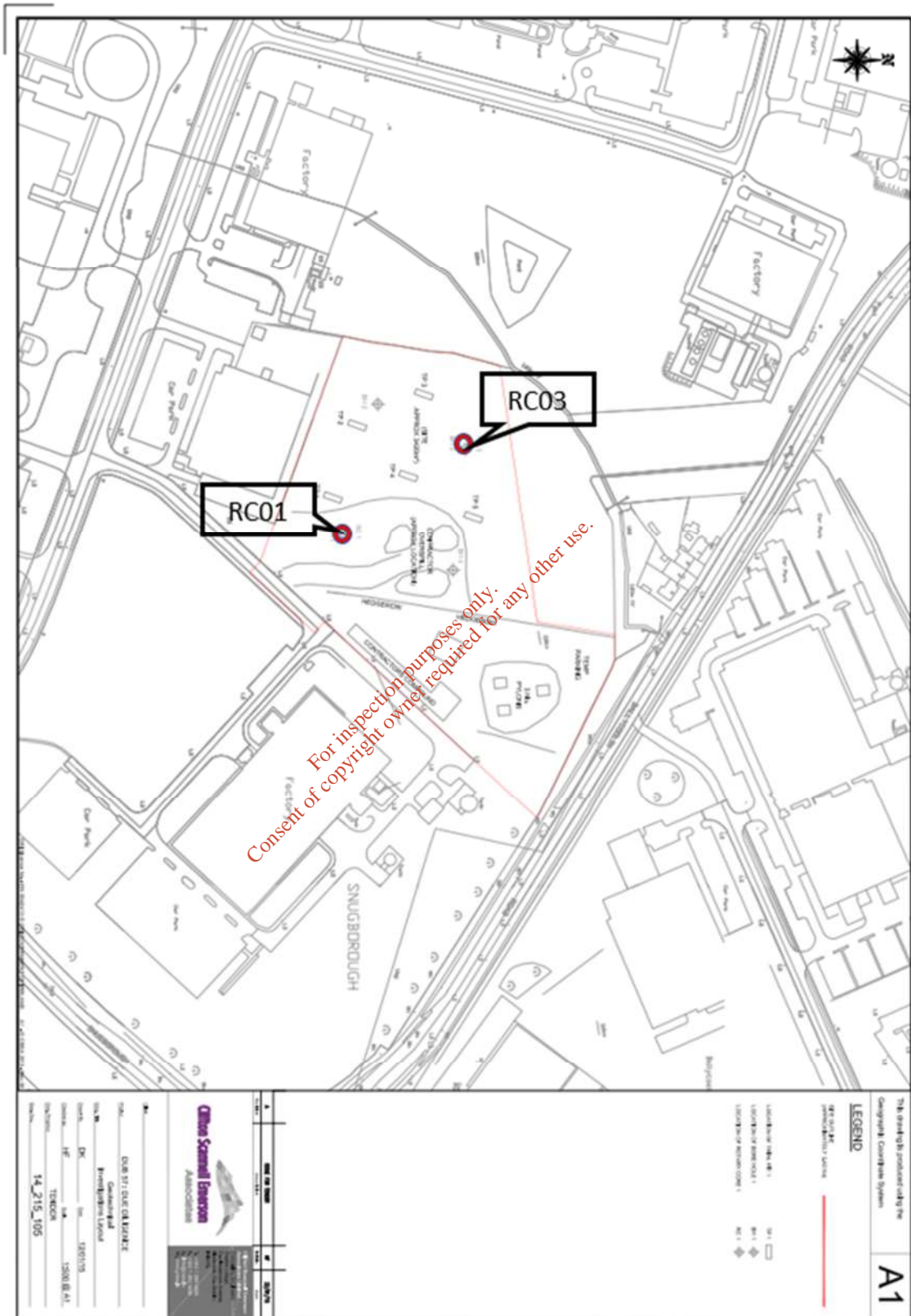





Figure B.1 showing No. 2 Rotary Core Boreholes Completed in 2015 in the west the Site

Rotary Corehole Record										
CONTRACT: Blanchardstown Industrial Park					HOLE ID: RC01					
Client: -					Elevation: m.O.D.					
Consultant: Clifton Scanell Emerson Associates					Co-ordinates: E:					
Site Address: Blanchardstown, Dublin 15					N:					
Boring Commenced: 10/02/2015					Hole Diameter: 68 mm					
Boring Completed: 10/02/2015					Drilled by: J. Moriarty					
Rig Type: Edeco					Logged by: S. Letch					
Sheet 1 of 1										
Downhole Depth (m)	Core Run Depth (m)	TCR (%)	SCR (%)	ROD (%)	Fracture Index (#fractures per m)	DISCONTINUITIES	Unit Depth (m)	Legend	Elevation (M.O.D.)	GEOLOGICAL DESCRIPTION
0.0							0.00			Open hole drilling - Cable percussion borehole completed - see log.
2.90	27	15	7	Ni(5)		Rough, curvy to planar, moderately open, occasionally clay smeared, sub-horizontal and 45° dip.	2.90			Moderately strong to strong thinly bedded (wavy) grey to occasionally black fine grained LIMESTONE (grading from pale grey sandy LIMESTONE to dark grey argillaceous LIMESTONE). Fresh to occasional slightly weathered (moderately weathered at non-intact zones).
				17						
				Ni(10)						
				15						
4.40	37	26	0							
				Ni(20)						
				25						
5.90							5.90	Hole End		
10.0										

COREHOLE SL 0201 BH.GPJ COREHOLE.GDT 13/02/15

Remarks:
 (Note: Stratum bands <100mm are not indicated pictorially;
 NA = not applicable; NR = not recordable; NI = non-intact)
 Corehole completed adjacent to borehole.
 Corehole backfilled - no installation.

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Rotary Corehole Record										
CONTRACT: Blanchardstown Industrial Park					HOLE ID: RC03					
Client:		-			Elevation:		m.O.D.			
Consultant:		Clifton Scannell Emerson Associates			Co-ordinates:		E:			
Site Address:		Blanchardstown, Dublin 15			N:					
Boring Commenced:		11/02/2015			Hole Diameter:		68 mm			
Boring Completed:		11/02/2015			Drilled by:		J. Moriarty			
Rig Type:		Edeco			Logged by:		S. Letch			
Sheet 1 of 1										
Downhole Depth (m)	Core Run Depth (m)	TCR (%)	SCR (%)	ROD (%)	Fracture Index (Fractures per m)	DISCONTINUITIES	Unit Depth (m)	Legend	Elevation (M.O.D.)	GEOLOGICAL DESCRIPTION
0.0							0.00			Open hole drilling - Cable percussion borehole completed - see log.
2.60	18	4	0		Ni(20) 8	Rough, curvy to planar, moderately open, occasionally clay smeared, sub-horizontal and 45° dip.	2.60			Moderately strong to strong thinly bedded (wavy) grey to occasionally black fine grained LIMESTONE (grading from pale grey sandy LIMESTONE to dark grey argillaceous LIMESTONE). Fresh to occasional slightly weathered (moderately weathered at non-intact zones).
4.10	91	38	29		Ni(10) 9					
					Ni(5) 9					
							5.60	Hole End		
Remarks: (Note: Stratum bands <100mm are not indicated pictorially; NA = not applicable; NR = not recordable; NI = non-intact) Corehole completed adjacent to borehole. Corehole backfilled - no installation.										
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Appendix C: The 2018 IDA Industrial Estate Snugborough Road Dublin, Proposed Data Centre, IGSL Report No. 20963, Geotechnical Report for Building D.

This information has been submitted as confidential information with Section 6 of the IE licence application.

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