Pure Data Centres

Complete Baseline Report

Attachment-4-8-3

March 2024

Licence Application LA011399

Contents

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Signature		
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Title	Environmental Consultant	Senior Environmental Consultant
Date	15 March 2024	15 March 2024

1.0 INTRODUCTION

This Baseline Report relates to the South Dublin Routing 4 No. 2 Limited ('the Applicant') application to the Environmental Protection Agency (EPA) for an Industrial Emissions (IE) Licence to operate their Energy Centre (EC) and Data Centre (DC) located at Orion Business Campus, Northwest Business Park, Dublin 15, D15 XE2N, Co Dublin. The location of the subject site is shown on DUB01EX-RKD-ZZ-ZZ-DR-A-00008-Site Location Map included with this application, this application relates to the entire Installation, that covers c. 5.59 hectares) in total (hereafter referred to as the 'Site').

The Energy Centre, and Data Centre, main buildings, and site infrastructure (hereafter referred to as the 'Installation') is shown on DUB01EX-RKD-ZZ-ZZ-DR-A-00006-Site Layout Plan, included with the application. The Installation, when constructed, will consist of 3 no. Energy Centre (EC) Buildings to provide a continuous power supply to the 3 no. 2-storey Data Centre (DC) Buildings. It is necessary form the outset of a licence application that the operator of an Installation 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 Pure Data Centres Group Limited 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 excerpt 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 Directive[1] 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 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…."*

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

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 2013[2]. 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. T*he 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 completed in to address the requirements of legislation and in accordance with the EU Guidance[3] 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

1.3 Contributors to the report

Luke Maguire (BSc). is an Environmental Consultant at AWN with over 3 years of experience in Environmental Consulting and water resources. Luke holds a B.Sc. in Geoscience from Trinity College Dublin and has worked on a range of developments including pharmaceutical plants, medical device facilities, double basement office

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

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

building structures, ICT facilities and energy projects. Luke has experience in contaminated soil sampling and analysis, basement impact assessments and largescale dewatering processes

Marcelo Allende (BSc, BEng). Marcelo is a Water Resources Engineer with over 18 years of experience in environmental consultancy and water resources studies. Marcelo is a Senior Environmental Consultant (Hydrologist) with AWN Consulting, a member of the International Association of Hydrogeologists (Irish Group) and a member of Engineers Ireland (MIEI).

Teri Hayes, BSc MSc PGeo. Teri is a Director with AWN Consulting with 25 years of experience in water resource management and environmental assessment and risk analysis. Teri is a member of the International Association of Hydrogeologists (Irish Group) – former president and a professional member of the Institute of Geologists of Ireland She has project managed and contributed to numerous environmental impact assessments and design of appropriate mitigation measures, acted as an expert witness at public hearings, lectured in EIA for postgraduate classes and provided expert advice on EIA sections for planning authorities and ABP.

1.4 Sources of information

Desk-based geological information on the substrata (both quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing national databases and site archives. The collection of baseline regional data was undertaken by reviewing the following sources:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register; and
- Current EPA on-line database -Envision water quality monitoring data for watercourses in the area; and,
- Office of Public Works (OPW, 2023).
- River Basin District (ERBD) Management Plan;
- Dublin City Council (2005), Greater Dublin Strategic Drainage Study: Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council;
- IGSL Site Investigations (2019);

Site specific data was derived from the following sources:

- Geophysical Investigation Report, Brian Daly Transport Site , BALLYCOOLIN, DUBLIN 15; (Apex Geophysics Limited, 2019). See **Appendix A.**
- Preliminary Ground Investigation Report, Project Orion (Brian Daly Transport) Ballycoolin Co. Dublin; (IGSL Limited Pinnacle Consulting Engineers, 2019); See **Appendix B.**
- Waste Characterisation Assessment, Ballycoolin Road, Grange, Dublin 15; (O' Callaghan Moran & Associates, 2019). See **Appendix C.**
- Groundwater Sample test report (2 no. samples), Element Materials Technology, 2019). See **Appendix D.**
- Design site plans and drawings.

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
Hydrotreated Vegetable Oil (HVO) / Light Fuel Oil (Diesel)	Fuel for energy centre and emergency generators	11188 m^3
Urea and water solution	SCR Abatement Reagent	250 m3
Lubricating Oil	Lubricating oil	75 m3

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)
Hydrotreated Vegetable Oil (HVO)	H304 May be fatal if swallowed and enters airways.
Urea and water solution	N/A
Lubricating Oil	H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H319 Causes serious eye irritation. H360F May damage fertility if swallowed. H410 Very toxic to aquatic life with long lasting effects. H411 Toxic to aquatic life with long lasting effects. H412 Harmful to aquatic life with long lasting effects.

Substance	Hazard Statement(s)
	H413 May cause long lasting harmful effects to aquatic life.
Light Fuel Oil (Diesel) as a substitute for HVO	H226 – Flammable liquid and vapour H304 – May be fatal if swallowed and enters airways H332 – Harmful if inhaled H315 – Causes skin irritation H351 – Suspected of causing cancer H373 – May cause damage to organs through prolonged or repeated exposure H411 – 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 above chemicals have been reviewed and based on this assessment the urea solution is incapable of contaminating soil or groundwater and have been excluded from further assessment. The only chemicals stored on site that are considered to be capable of contaminating soil or groundwater are Light Fuel Oil (Diesel), and Lubricating Oil.

4.0 STAGE 3: ASSESSMENT OF THE SITE-SPECIFIC POLLUTION POSSIBILITY

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 road; vessel rupturing; leaking underground tank; 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 to land or ground water.

4.1.1 Liquid Fuel (HVO/Diesel)

The stored Liquid Fuel is used as a pilot fuel for the Dual-Fuel Engines and an emergency fuel, ensuring the continued operation of the Dual-Fuel Engines and emergency systems. In summary the Installation includes:

- Energy Centre Fuel Storage
    - 3 no. 350,000 litre fuel storage tanks
    - 2 no. 65,000 litre carbon steel pilot liquid fuel Day/Receiving Tanks
- Emergency Generator and Fire Sprinkler Pump Fuel Tank
    - 1 no. 1 m^3 Emergency Generator day tank
    - 1 no. 6.5 m^3 Emergency Generator belly tank
    - 1 no. 0.5 m^3 Fire Sprinkler Pump belly tank

The total fuel storage capacity the site is 1,188 m^3. Therefore, the total fuel stored is approximately 1,005 tonnes (SEAI[4] HVO density of 846 kg/m^3). The sections below describe the above storage tanks in further detail. The risk of accidental discharge from the bulk storage of liquid fuel has been adequately addressed through design and operational management procedures.

Energy Centre Bulk Fuel Oil Storage

The EC(S)engines have dual-fuel functionality and can be operated on liquid fuel. The service yard includes 3 no. 350,000 litre carbon steel Bulk Liquid Fuel Storage Tanks, and 2 no. 65 m^3 carbon steel pilot liquid fuel Day/Receiving Tanks. , these steel tanks are single walled. The liquid fuel tanks are bunded within the services yard, and include high and low alarms, breather vents, leak detection alarms.

The fuel tanks will be contained within a bunded area in line with the requirements of the *Guidance to Storage and Transfer of Materials for Scheduled Activities* (EPA, 2005). The fuel tanks include level transmitters and level gauges to monitor fuel levels within that will identify any sudden loss of fuel. All tanks are single walled to contain any leaks and monitored by a leak detection system. Sensors will be connected to BMS systems to notify of activations.

There is a designated HGV fuel unloading bay located to the south of the fuel storage tanks, the fuel filling areas are dished to contain any spills into ACO drain along the kerb line. The fuel delivery trucks will drive onto containment areas before commencing to unload fuel. Fuel unloading is a highly controlled process and a standard operating procedure (SOP) for fuel unloading will be implemented. In the unlikely event of a fuel spill incident, the spill will be contained within the unloading station which is surrounded by concrete upstand and directed to the site stormwater system via an appropriately sized forecourt hydrocarbon separator (Class I).

Fuel pumps, will be used to unload fuel arriving on site and forward it to the Bulk Liquid Fuel Storage Tanks/Day/Receiving Tanks. The Fuel pumps will be located in individual dedicated enclosures built on a skid with a fuel containment solution in the unlikely event of a fuel spill incident. Transfer pipelines are in place to transfer fuel from the Bulk Liquid Fuel Storage to the Day/Receiving Tanks and on to the engines, these are on an above ground pipe rack. There are no below ground pipelines; there are 3 no.

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[4] https://www.seai.ie/data-and-insights/seai-statistics/conversion-factors/

sections of pipe trench (open trench allowing vehicles to drive over and full visibility of the pipe) under road sections shown on the site plan (DUB01EX-RKD-ZZ-ZZ-DR-A-00006-Site Layout Plan).

The Bulk Liquid Fuel Storage Tanks and Day/Receiving Tanks are single-skinned, located within a bund that has a capacity of 110% of the largest tank, and fitted with level monitoring sensors connected to a control panel which provides high- and low-level alarms to prevent overfilling and identify a sudden loss of within the tank.

Emergency Generator and Fire Sprinkler Pump Fuel

The liquid fuel (HVO/diesel) is stored locally at the emergency generator and fire sprinkler pump. The Emergency Generator is enclosed in a specialised container, and it has 1 no. 1 m^3 fuel tank internal within the enclosure, and 1 no. 6.5 m^3 fuel tank external to the generator enclosure. The Fire Sprinkler Pump includes a 0.5 m^3 fuel tank within the pump room.

The Emergency Generator and Fire Sprinkler Pump will be rarely used, and will only require infrequent top ups of fuel.

The process of HVO/diesel delivery to the Installation will be conducted by a fully staffed and closely monitored team, using Heavy Goods Vehicles (HGVs). Furthermore, the implementation of standard operating procedures ensures a managed approach to fuel delivery.

4.1.2 Lubricating Oil Storage

There is a centralised bulk Lubricating Oil (LO) storage in within the services yard that includes three bulk oil storage tanks consisting of 1 no. 30 m^3 for clean LO, 1 no. 25 m^3 for waste LO, and 1 no. 20 m^3 service LO tank. This allows for centralised unloading of new oil, and removal of waste oil for the entire building. These bulk tanks are single-skinned, located within a bund that has a capacity of 110% of the largest tank.

The tanks are fitted with leak detection alarms and level monitoring sensors connected to a control panel which provides high- and low-level alarms to prevent overfilling and identify a sudden loss of within the tank. The tank bunds will generally be free draining with sensors to activate shut down valves to contain any potential spills, leaks. Sensors will be connected to BMS systems to notify of activations.

LO is delivered to the site by supply tanker and pumped to the clean oil storage tanks. Unloading is undertaken from a dedicated unloading bay with control measures for the spills/leaks.

Clean LO is pumped via transfer pumps and the pipe rack from clean LO bulk tanks directly to the Dual-Fuel engines engine. LO is then gravity fed from the day tank to the engine and controlled via the engine control panel. When required, waste LO is pumped from the engine to the waste oil bulk tank. The day tanks (9 no tanks total) are contained within the EC(s) are fitted with level monitoring which provide high- and low-level alarms to the engine control panel. Waste LO is returned via transfer pumps and the pipe rack to the waste oil bulk tank in the service yard.

Regular inspections of LO storage tanks are conducted to check for signs of damage, leaks, or deterioration. Maintenance personnel will also assess the oil's quality, ensuring it meets the required specifications for use.

5.0 CONCLUSION - STAGES 1 TO 3

Stages 1 to 3 of the Baseline Assessment have concluded that the development includes the storage of relevant hazardous substance that are capable of contaminating soil or groundwater.

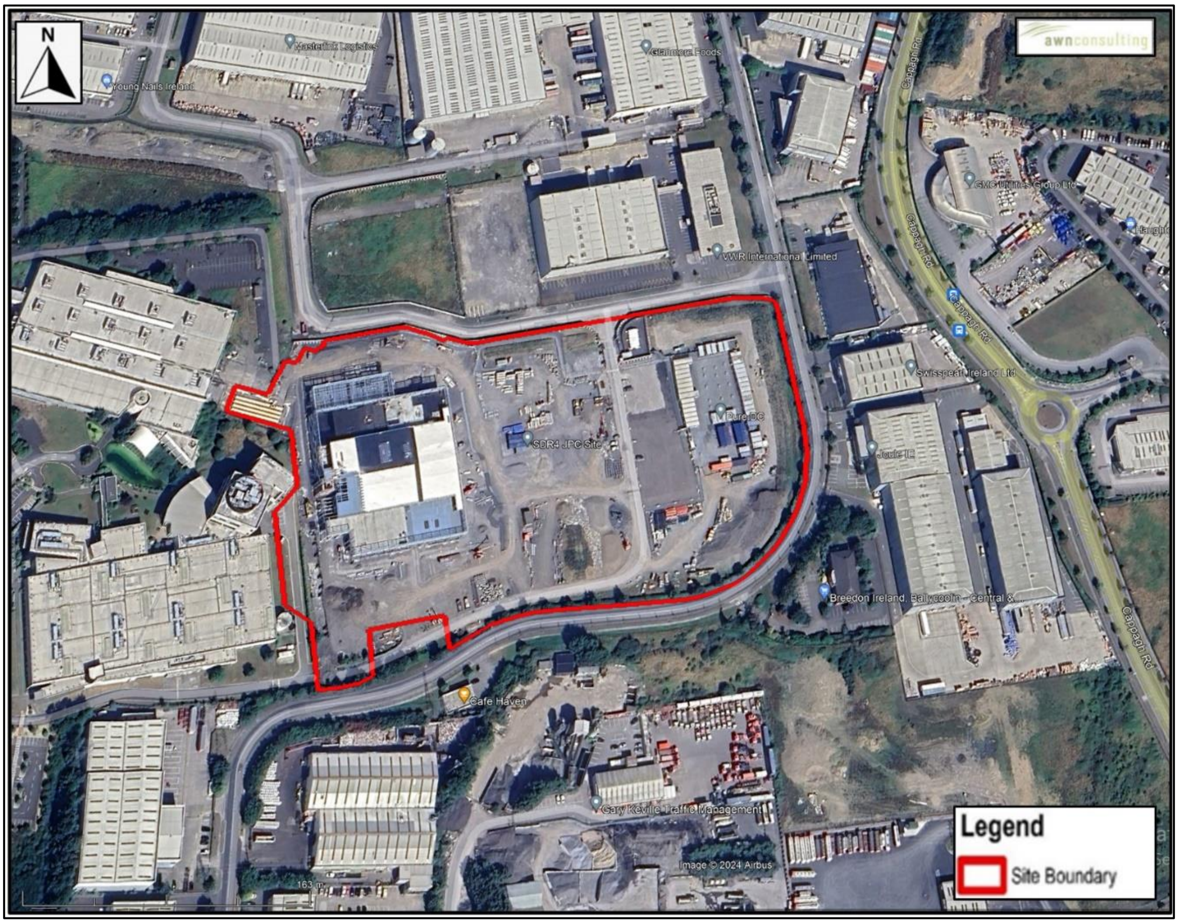
The potential pollution risk is low based on the likelihood of releases of such substances occurring. However, due to the volume of the HVO and Lubricating oil, which is a relevant hazardous substance, ‘used, stored and transported’ to the site it is considered that a Complete Baseline Assessment is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

6.0 STAGE 4 ‐ SITE HISTORY

6.1 Site Context

The site of c. 5.59 Ha (hectares) is located within Orion Business Campus, Northwest Business Park, Ballycoolin, Dublin, Co Dublin. The site is located at 9.8 km to the northwest of Dublin city centre, 4.5 km to the southwest of Dublin Airport and 1.6 km from the M50 motorway. The site was previously in use as warehouse space and a logistics and distributions centre with associated office space (refer to Insert 6.1).

According to the EPA (2024) there are multiple IEL and IPC licensed activities currently active in the vicinity of the subject site. Inspection of the EPA (2024) database indicates that the Industrial Emissions in closest proximity to the site are the K2 Strategic Infrastructure Ireland Limited (Applied) and Blancomet Recycling IE Limited, which are located approximately 675 m and c. 325m west and south the development site, respectively. The nearest industrial IPC facility is Lagan Materials Limited Company which is located approximately 270 m to the south of the subject site, within the Rosemount Business Park. None of the facilities mentioned above are upgradient of the site. Blancomet Recycling IE Limited and Lagan Materials Limited Company are located downgradient (south) of the site, while K2 Strategic Infrastructure Ireland Limited is located cross gradient (west), indicating that there would be negligible potential risk of contamination from these facilities.



Insert 6.1 *Site Location map (Source: Google Earth, August 2022 imagery)*

The vicinity and surrounding context of the site is predominantly characterized by an industrial land function, coupled with a combination of commercial, recreational, residential, agricultural land, educational / institutional and amenity uses. Refer to insert 6.2 below.

Huntstown quarry (western boundary) is located approximately 160m to the northeast of the subject development at the point of closest proximity. It presently comprises a licensed inert waste recovery facility operating under license number W0277-03 issued in 2015. From a review of the Annual Environmental Reports and Licensee Reports related to the activities at the Huntstown Power Station and Huntstown Quarry on the EPA website a number of noncompliance issue were noted. However, there is no indication that these would result in adverse environmental impact on the subject site as it is located cross gradient and therefore there would no effects on soils or groundwater underlying the subject site due to its operation.

__Insert 6.2__ Site Vicinity and Surrounding Land Use / function map (Source: Google Earth August 2022 imagery)

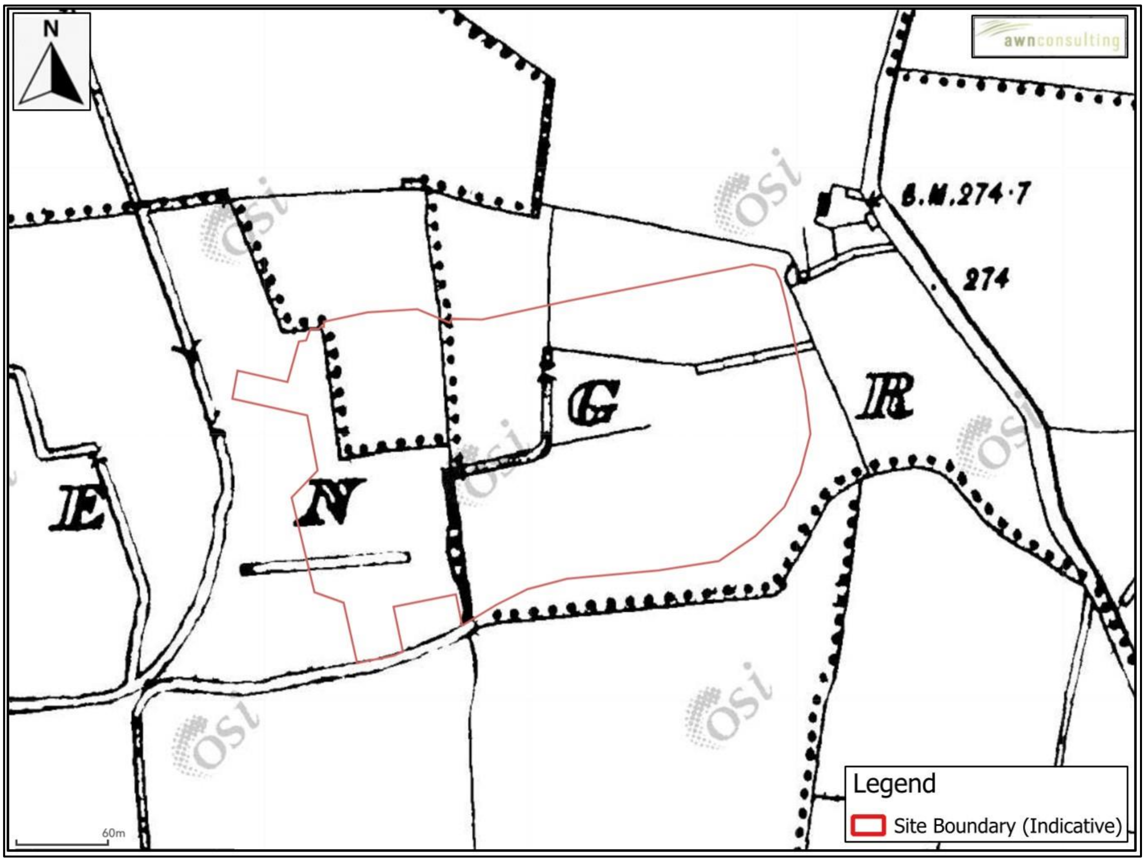
6.2 Prior Use

This section includes an evaluation of the likelihood of the presence of any contamination on soil/ groundwater at the site and an overview of the site development history. The site was formerly occupied by the Brian Daly Transport Services Building that was in use as warehouse space and a logistics and distributions centre with associated office space.

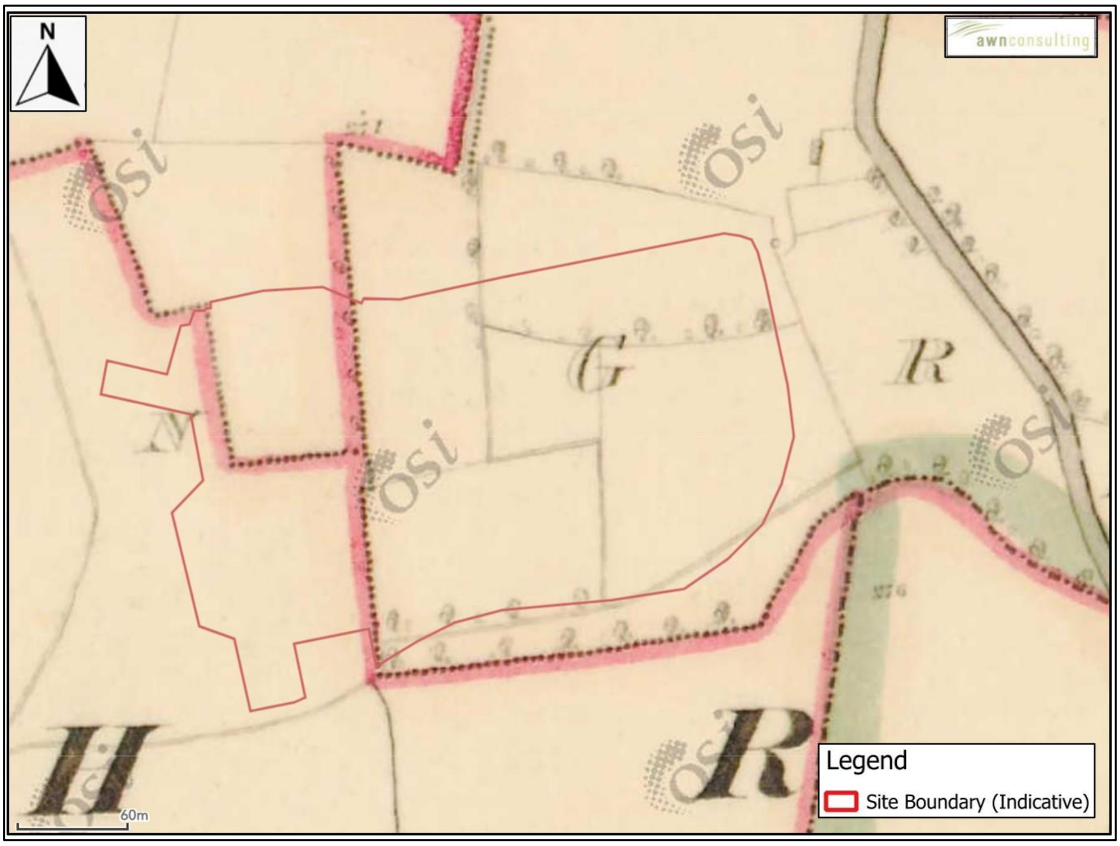
The prior to development by the Applicant the site comprised a building structure in the northwest portion of the site (Brian Daly Transport Services Building), a soil mound located in the east part of the site, coupled with localized grass landscaped and hardstand areas for vehicle parking and loading. The Brian Daly Transport Services Building has been demolished and the site has been cleared of vegetation and bulk earthworks.

The site currently, is occupied by Data Centre 1 (DC1) that is located in the west of the site. The site is an active construction site with the eastern portion of the site in early construction preparation stages. Historical Ordnance Survey (OSi, 2024) maps were examined for the purpose of this study. OS maps were available for the period from 1829 to 1913 and included the historic 6-inch Cassini maps (c.1845), Historic Map 6-inch Cassini Colour (1837-1842), and the historic 25-inch maps (1888-1913). The historic maps dating from 19th and early 20th century indicate the site has previously been used/utilized for agricultural purposes, comprising portions of multiple fields separated by hedgerow and unoccupied by residential or associated agricultural building structures.

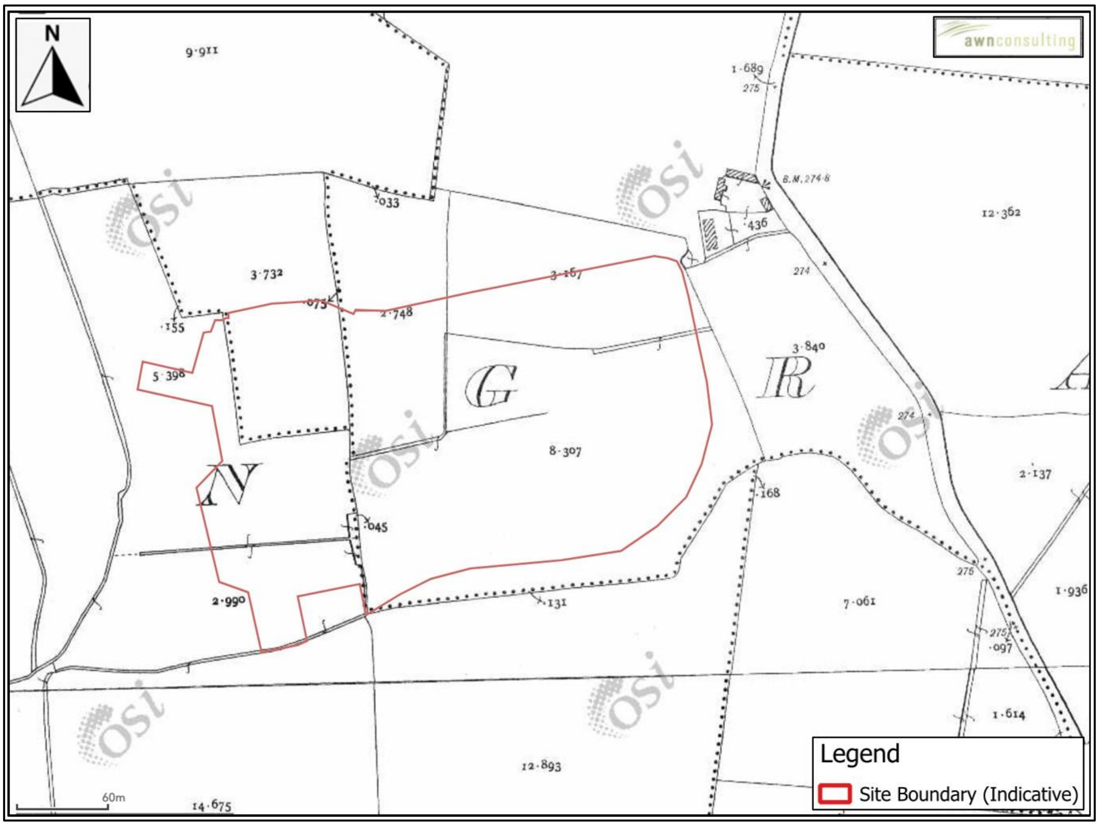
The land use in the immediate vicinity of the subject site between years 1837-1842 comprised predominantly of greenfield land with an associated agricultural function, as indicated by the Cassini Colour Historic Map (refer to Insert 6.2 and 6.3). The historical map from c. 1837-1842 and c.1888-1913 are presented in Insert 6.3, 6.4, and 6.5 below, respectively.



Insert 6.3 *OSI Aerial 6” Cassini Image (1837) indicative site location (source www.osi.ie*



Insert 6.4 *OSI Aerial Image (1837-1842) indicative site location (source www.osi.ie)*



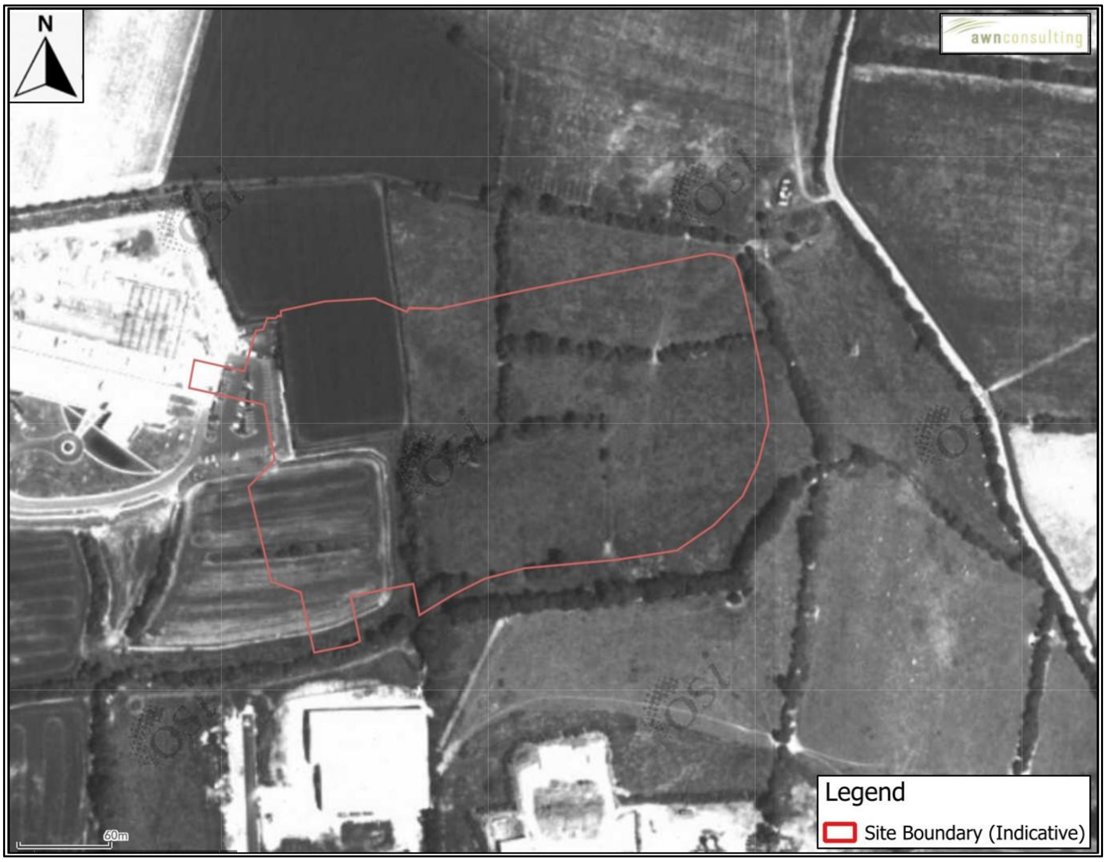
Insert 6.5 *OSI Aerial Image 25" (1888-1913) indicative site location (source www.osi.ie)*

Aerial imagery/photos dating up to 1995 indicate that this agricultural function remained as the sites land use until the range of years spanning across 1996-2000. The 1995 aerial imagery shows that the northwest corner of the site was occupied as part of a neighbouring development consisting of a building structure and surrounding hardstand cover. The aerial imagery dated from the 1996-2000 period, marks a shift in the land use within the region, as industrial, manufacturing, and business companies locate in the vicinity after the establishment of Rosemount Business Park and Orion Business Park, North West Business Park, Ballycoolin, Dublin 11.

The 1996-2000 imagery shows hardstanding area in the central, south, and southwest parts of the site are depicted as a designated car parking zones for trucks / haulage vehicles. The east of the site remained unoccupied by building structures as grassland / soil mound. The development on site follows the Castleway Developments Limited in 2005 FCC Planning Reference F05A/0962 discussed below.

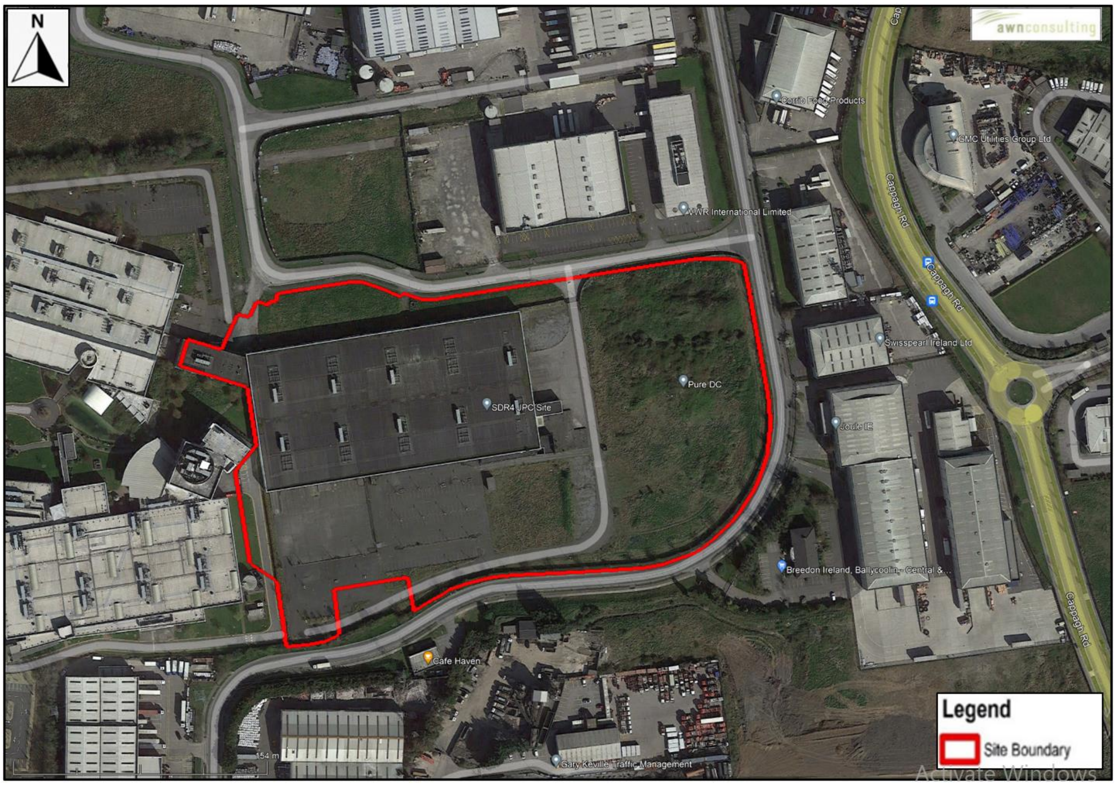
Since the close of the 20th century the local vicinity surrounding the site can be characterised by a predominant industrial and Commercial / Business land use, coupled with a mixture of agricultural, greenfield, recreational (Sports Ireland National Indoor Arena, GAA- National Games Development Centre) and localized residential zoned land (estates) scattered and dispersed across the wider area. The 2006-2012 and 2011-2013 aerial imagery depict a progressively smaller proportion of agricultural/greenfield land which coincides with general increase in the set ups of industrial/commercial businesses and organisations in close proximity to the site, coupled with an increase in residential land (dwellings) in the locality, situated to the southwest, southeast of proposed development site.

The Historic aerial images from c. 1995 and 1996-2000 are presented in insert 6.6 and 6.7 below, respectively.



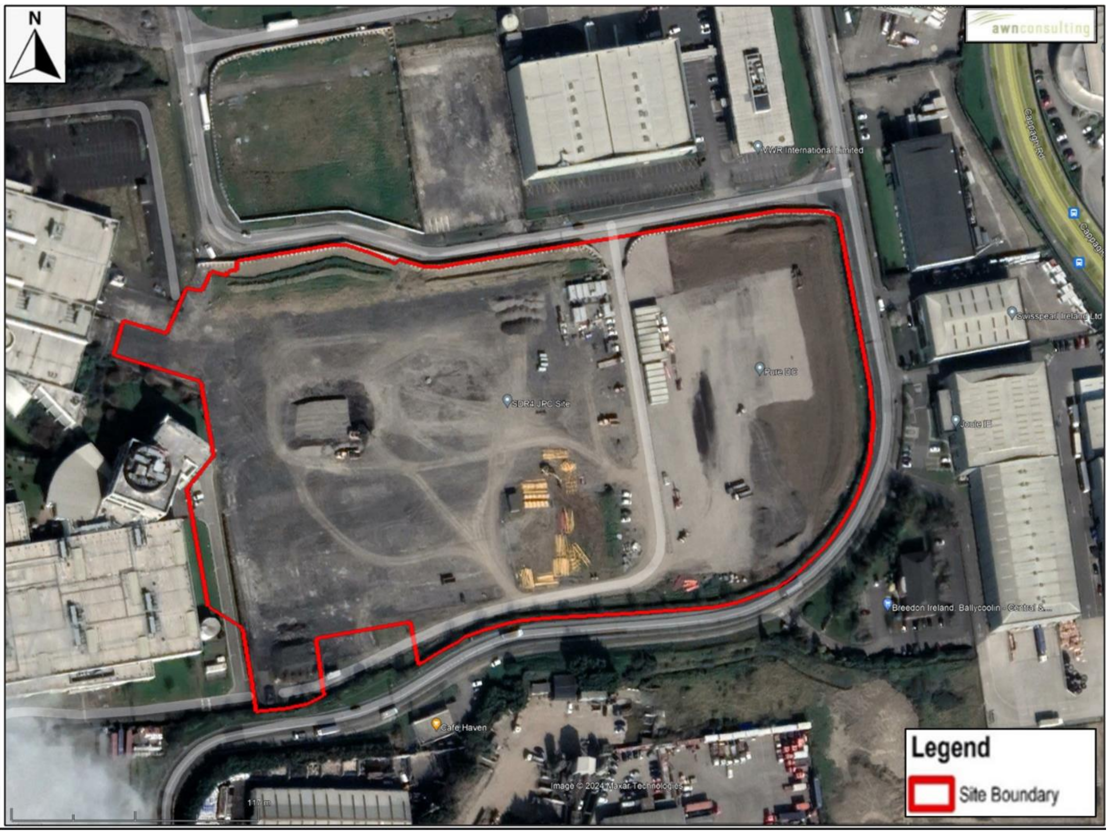
Insert 6.6 *OSI Aerial Image (1995) (source www.osi.ie)*

Insert 6.7 *OSI Aerial Map (1996-2000) (source www.osi.ie)*



Insert 6.8 *Aerial Image Prior to Demolition / Site Clearance- enabling works in progress (Source: Google Earth 2021)*

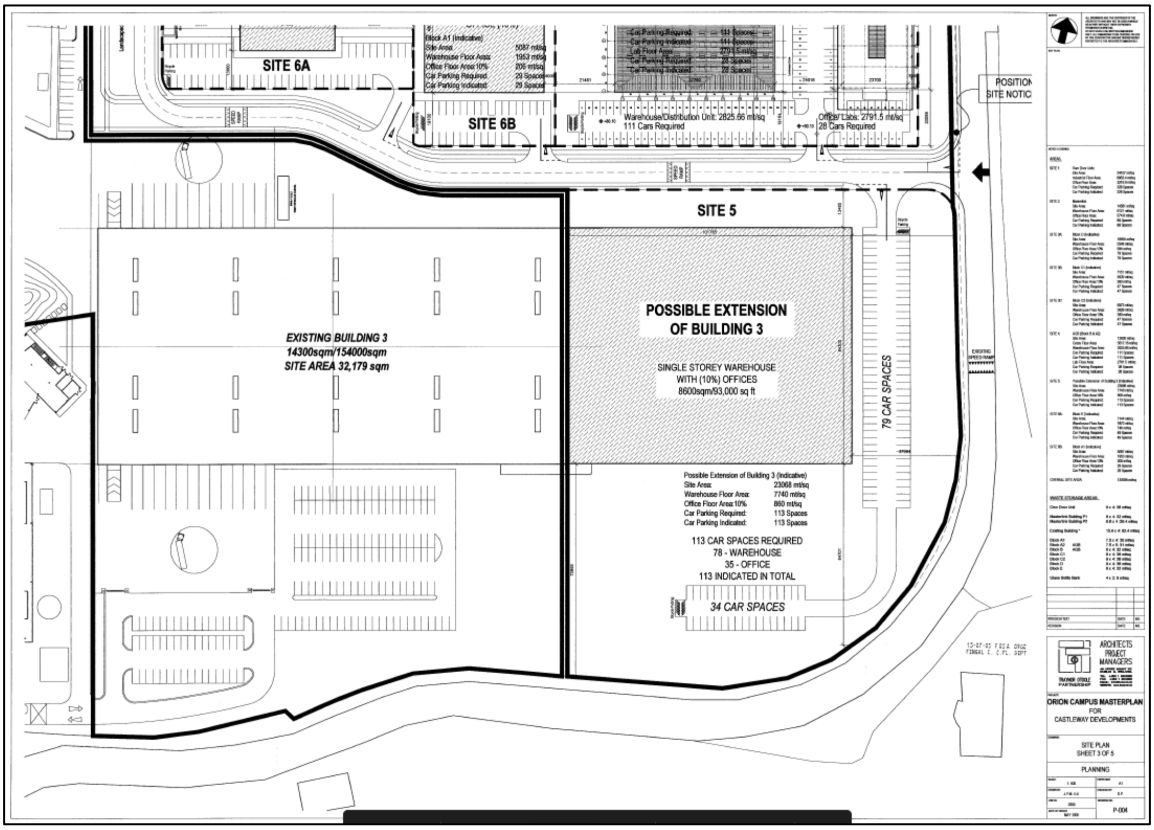
The hardstanding areas and structural features previously described/mentioned have recently undergone demolition and site clearance in late 2021, early 2022 (refer to insert 6.9 below).The most recent imagery is show in Insert 6.1 above.



Insert 6.9 *Aerial Image Prior to construction and Post Demolition / Site Clearance-enabling works in progress (Source: March 2022)*

Castleway Developments Limited - Planning Reference F05A/0962

Part of the subject site, together with lands to the north, was subject to a planning permission by Castleway Developments Limited in 2005. Permission was granted under reference F05A/0962 for: *Development of 22,486 sq. m approximately of mixed use logistics, office, enterprise, laboratory and industrial accommodation (as Phase 1 of a wider mixed use master plan development) and related site infrastructural and landscaping works on a 13.4 ha site approximately, located in the townlands of Ballycoolin, Grange and Cloghran, Blanchardstown, Dublin 15. The site is principally bounded by Northwest Business Park to the north; the Orion Business Campus/Ballycoolin Business Park to the south; Rosemount Business Park to the east and Ballycoolin Business Park to the west. The Phase 1 development will consist of: 44 no. part two storey own door enterprise units in two buildings comprising industrial and office accommodation (10,173sq m); 1 no. part three storey building comprising logistics and office accommodation (6,696 sq. m) and 2 no. linked buildings comprising warehouse and distribution, laboratory and office accommodation (5,617sq m) ranging in height from one to three storeys, all with related service/marshalling yards, surface car parking, cycle parking, waste storage/recycling areas, signage and ancillary storage and staff facilities. There will be 2 no. new vehicular access points to the site from the access roads on the northern and eastern site boundaries respectively. The infrastructural works sought in this application are designed to facilitate the proposed and future development of the entire site and will consist of: the provision and* *upgrading of the foul drainage, water supply and surface water drainage network on the site; internal roads and pathways; pedestrian access points; the provision of a telecommunications ducted network; the provision of utilities infrastructure and connections (ESB and gas); street lighting; site landscaping and boundary treatments; plant; ESB substations and switchrooms; changes in level and all associated site excavation and development works above and below ground.'*



Insert 6.10 *Site Layout F05A/0962*

The prior to development by the Applicant the site comprised a building structure in the Northwest portion of the site, a soil mound located in the east part of the site, coupled with localized grass landscaped and hardstand areas for vehicle parking and loading. The internal road to the north of the subject site was completed but the proposed extension to building 3 was not completed. The site has been in use as Brian Daly Transport Services under lease which lapsed in 2018. Brian Daly Transport used the site a warehousing and transport depo for their haulage business. Refer to insert 6.8 and 6.9 (above and below, respectively) for the previous site layout prior to the commencing of demolition and site clearance (enabling works).

<u>Orion Business Campus, Ballycoolin Business Park, Blanchardstown, Dublin 15</u>

The overall site was originally developed in the 1990s as part of the Orion Business Campus development. This included a myriad of permissions for manufacturing and distribution, manufacturing and production, and high technology office use for Science and Technology based industry (3Com, Symantec). Permissions related to the sites are set out below, and Insert 6.11 shows the Orion Business Campus masterplan.

- F91A/0984: Permission was granted for the original facility for 3Com on part of the current site by An Bord Pleanala. (Building 1)

- F94A/0720: Permission was granted for expansion of the above facility given a total floor area of 11,500 sq. metres.
- F95A/0473: Permission was granted for a small extension and chemical store and biocycle store on part of the current site.
- F96A/0590: Permission was granted for a small extension to the 3Com facility.
- F96A/0876: Permission was granted for an extension to the complex with a floor area of 11,686sq. metres. This has been built. (Building 2)
- F96A/0976: Permission was granted for a three storey building consisting of kitchen/dining facility and offices.
- F99 A/0992: Single storey manufacturing and distribution building with links to the two main existing buildings on the site and all associated car parking, roadworks, landscaping, surface and foul effluent drainage and all ancillary works associated with this development on a site directly to the east of the existing 3Com facility. (Building 3)
- F04A/1702: Permission was granted for the change of use of Building 2 from the permitted manufacturing and production facility to Science and Technology based offices (11,207 sq.m.). The development will also consist of the provision of a new entrance pavilion (302 sq.m.); additional roof lights and elevational changes including new curtain walling, cladding and revised glazing. Vehicular and pedestrian access to the site will be from the existing access points. The proposal will also include the provision of additional surface level car parking spaces; internal pedestrian pathway, the removal of the existing ground floor link to Building 3 (415 sq.m.) landscaping; boundary treatments; ancillary plant and all associated site development works above and below ground.
- FW09A/0172: Permission was granted for a surface car par to provide 237 car par spaces on 6,685 m.sq area; entrance from private access road, pedestrian access from car park to building via relocated ramp, permeable block pavement for car parking area; impermeable pavement for circulation road; SUDS drainage including flow control and petrol oil interceptor; discharge of surface water to private sewer; car park marking and signage, car park lighting and landscaping, new exit from existing car park to private access road, increase bicycle parking from 12 to 24 and permit holder parking from 4 to 8. PL 0GF.236363: First paity appeal to An Bord Pleanala in relation to a condition which was removed. This site is to the south of the subject site.
- FW13A/0139: Permission granted to Symantec for the change of use, increase in internal area and modifications to the existing Block B and Link Building at the Aurora site, Ballycoolin Business Park, Ballycoolin Road, Dublin 15. The proposed development will consist of the change of use of 4000 m2 of existing production facility space to high technology office use, 665m2 of additional first floor area within the main high bay area will be provided. The link building area will be reduced by 182m2. The increased floor area and modifications are comprised of: Provision of additional general office space on a new first floor mezzanine of 2,555 m2 located in the previous production hall area. The total floor area of the modified buildings (Block B and Link Building) will be 8,698 m2 (GIA).
- FW14A/0055: Permission for a change of use and associated site works to the existing Orion 1 Building, the proposed development will consist of the change of use of 11,500m^2 of existing production facility space to high technology office use. No physical alterations to the existing Orion 1 Building are proposed. The application also includes: The provision of 203 additional car parking spaces increasing the total number from 161 existing spaces to 364 spaces. The application proposes to accommodate the new spaces in the existing Northern Car Park which is to be de-commissioned on implementation of Planning Ref. No. FW09A/0172 granted 10th November 2010. The application also proposes

the re-location of 100 existing car parking spaces currently located to the north of the Orion 1 Building to the Northern Car Park. The existing hard standing will be replaced with soft landscaping. This application proposes to retain the Existing Northern Car Park and allocate the 303 parking spaces to this development. The proposal also includes the provision of 35 secure cycling spaces, 8 secure motorcycle spaces and the retention of 11 visitor parking spaces in the forecourt. No new surface car parking spaces are proposed as part of this application.

Insert 6.11 *Orion Business Campus masterplan*

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 with regard to confirming source-pathway-receptor linkages i.e. in the unlikely event of a leakage/spillage.

7.1 Topography

The site is relatively flat / level with minor localized undulations, though there is a slight fall in elevation towards the southern and eastern edge of the site. Site topography ranges in elevation from approximately 80mOD rising to 87mOD in the southeast and northwest, respectively.

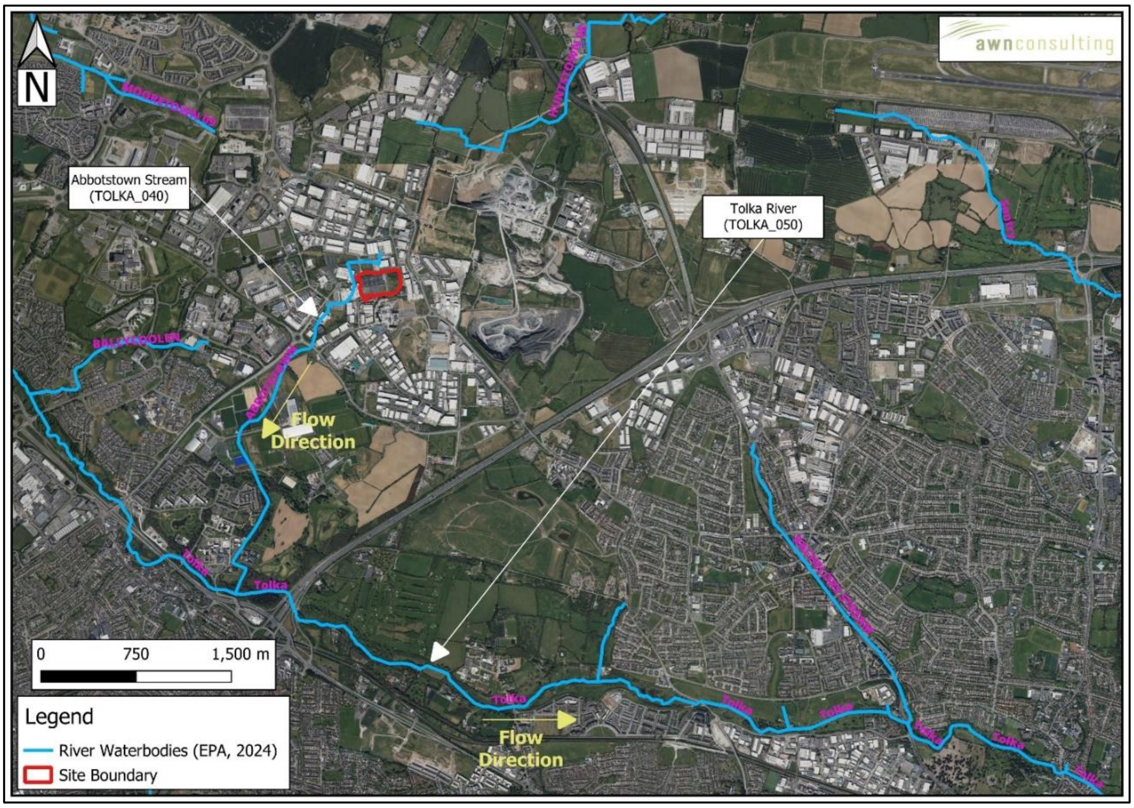
7.2 Hydrology

The site is located within the former Eastern River Basin District (ERBD) (now the Irish River Basin District), as defined under the Directive 2000/60/EC of the European Parliament commonly known as the Water Framework Directive (WFD). The WFD, establishes a framework for community action in the field of water policy.

According to the EPA maps, the site is situated in Hydrometric Area No. 09 of the Irish River Network and lies within the River Liffey and Dublin Bay Catchment (Catchment ID: 09) and the Tolka_SC_020 Sub-Catchment.

The Abbotstown Stream (Insert 7.1) runs rounding the northern and western boundary of the site and discharges to the Tolka River. The historical OSI maps presented above in Section 6.2 show that the Abbotstown stream were part of local drainage of the site when they were in greenfield state. At some point between 1995 and 2000, the Abbotstown stream was culverted in the vicinity of the site.

The Abbotstown stream joins / merges with the Tolka River c. 3.1 km downstream the site. The Tolka river is located c. 2.6 km (linear distance) to the southwest of the site.



Insert 7.1 *Hydrological Environment*

Currently, as the site and its vicinity has been partially developed, surface drainage flows towards the south and the west of the site, where is collected by a series of gullies which are connected to a surface drainage system, ultimately out falling to an existing 900mm diameter concrete surface water sewer which is located at the south-west corner of the site adjacent. This sewer falls is a westerly direction into the business estate stormwater drainage network.

7.2.1 Surface Water Quality

The WFD requires ‘Good Water Status’ for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. ‘Good status’ means both ‘Good Ecological Status’ and ‘Good Chemical Status’. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle (2022-2027) is currently being undertaken.

During the development of this Plan, a prioritisation exercise was undertaken by the local authorities, the EPA and other stakeholders to identify those water bodies that require immediate action within this plan cycle to 2027. During the catchment characterisation, the EPA identified those water bodies either ‘At Risk’ of not achieving their objectives or ‘Under Review’. The outcome of this prioritisation process was the selection of 190 Areas for Action across the 5 Local Authority regions. Within these 190 areas, a total of 726 water bodies were selected for initial actions during this RBMP cycle. There are 832 water bodies identified as being ‘At Risk’ of not achieving their environmental objectives under this Plan that have not been included in the Areas for Action. For most of these water bodies, targeted actions will be undertaken in the third cycle RBMP from 2022-2027. The draft 3rd cycle RBMP has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the Proposed Project.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011)
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006).

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. 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.

In addition to the biological assessment method outlined above the EPA also classified water bodies in accordance with the WFD water quality status. Rivers, lakes, estuaries and coastal waters can be awarded one of five statuses: High, Good, Moderate, Poor, Bad. Groundwater has just two statuses – Good and Poor.

The Abbotstown Stream belongs to the TOLKA_040 WFD surface waterbody (European code: IE_EA_09T011000) and is currently classified by the EPA as having *'Poor'* WFD water quality status (2016-2021 period) and is '*At risk of not achieving good status*' (refer to insert 7.1). The main pressures identified on the TOLKA_040 are associated with the presently 'poor' ecological and biological status or potential, specifically the invertebrate status or potential.

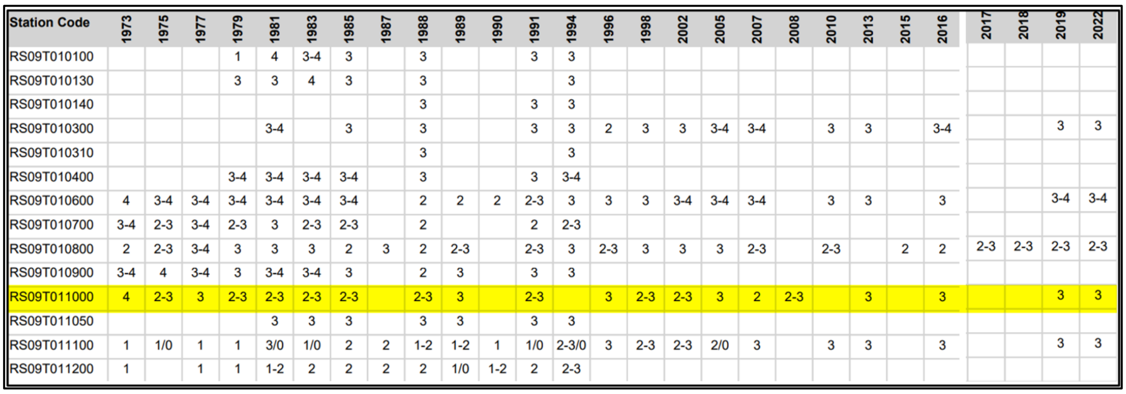
The section / portion of the Tolka River located directly downstream from the Abbotstown Stream belongs to the TOLKA_050 surface waterbody (European Code: IE_EA_09T011100)) is currently classified by the EPA as having '*Poor*' WFD water quality status (2016-2021 period) and is 'At risk of not achieving good status' in relation to the Risk WFD score (refer to insert 7.1). The main pressures identified on the TOLKA_050 river waterbody are associated with the recent (latest) ''poor' ecological / biological condition, characterised by poor ecological and biological status or potential, specifically the invertebrate status or potential.

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. 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. Q Values are used to express the biological water quality by the EPA, based on changes in the macro invertebrate communities of riffle areas brought about by organic pollution. Q1 indicates a seriously polluted water body, Q5 indicates unpolluted water of high quality.

Q Values are based primarily on the relative proportions of pollution sensitive to tolerant macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site. The intermediate values (Q1-2, 2-3, 3-4 etc.) denote transitional conditions. "Condition" refers to the likelihood of interference with beneficial or potential beneficial uses.

Q Values for the River Tolka and its tributaries in its section nearest of the development site are shown in Table 4.1 and the descriptions of each of the Q Ratings are shown in Table 4.2.

Table 7.1 *Biological Quality Ranking in River Tolka near of the Development Site. The historical and previous Q Score/values for the adjacent Abbottstown Stream (RS09T011000) is highlighted in yellow below*



Station Code	1973	1975	1977	1979	1981	1983	1985	1987	1988	1989	1990	1991	1994	1996	1998	2002	2005	2007	2008	2010	2013	2015	2016	2017	2018	2019	2022
RS09T010100				1	4	3-4	3		3			3	3														
RS09T010130				3	3	4	3		3				3														
RS09T010140									3			3	3														
RS09T010300					3-4		3		3			3	3	2	3	3	3-4	3-4		3	3		3-4			3	3
RS09T010310									3				3														
RS09T010400				3-4	3-4	3-4	3-4		3			3	3-4														
RS09T010600	4	3-4	3-4	3-4	3-4	3-4	3-4		2	2	2	2-3	3	3	3	3-4	3-4	3-4		3	3		3			3-4	3-4
RS09T010700	3-4	2-3	3-4	2-3	3	2-3	2-3		2			2	2-3														
RS09T010800	2	2-3	3-4	3	3	3	2	3	2	2-3		2-3	3	2-3	3	3	3	2-3		2-3		2	2	2-3	2-3	2-3	2-3
RS09T010900	3-4	4	3-4	3	3-4	3-4	3		2	3		3	3														
RS09T011000	4	2-3	3	2-3	2-3	2-3	2-3		2-3	3		2-3		3	2-3	2-3	3	2	2-3		3		3			3	3
RS09T011050					3	3	3		3	3		3	3														
RS09T011100	1	1/0	1	1	3/0	1/0	2	2	1-2	1-2	1	1/0	2-3/0	3	2-3	2-3	2/0	3		3	3		3			3	3
RS09T011200	1		1	1	1-2	2	2	2	2	1/0	1-2	2	2-3														

Table 7.2 *Description of Q Value in Biological Quality Ranking*

Q Value	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2	Bad	Seriously polluted	Unsatisfactory

In relation to the subject site, the active EPA monitoring station located in closest proximity to the site / in the vicinity of the site is:

- The water quality at the nearest gauging station with the most recent information is Mulhuddart Bridge (Station Code: RS09T010800) which is classified as 2-3 (Poor) which was tested in 2022. This station is located approximately 2.8Km upstream the confluence junction of Tolka river and Abbotstown stream.
- The quality in Abbotstown Bridge (Station Code: RS09T011000), located 0.5 km downstream the mentioned junction was also classified as poor (Q3) in 2016.

7.2.2 Flood Risk

The potential risk of flooding on the site was also assessed during the planning application process. A summary of the findings of the flood risk assessment are the following:

Examination of recorded flood events as detailed on floodmaps.ie shows recorded flood events into the Tolka river (2.5 km to the west of the site) and in the Huntstown Stream (2.2 km to the northeast), which outfalls in Ward river and belongs to the Broadmeadow catchment.

Based on the PRFA flood maps, the development resides within Flood Zone C, i.e. where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). The nature of the development is light industrial and as such this type of development is categorized as a ‘Less Vulnerable Development’. This development is an ‘Appropriate’ development for the Flood Zone that the site resides in.

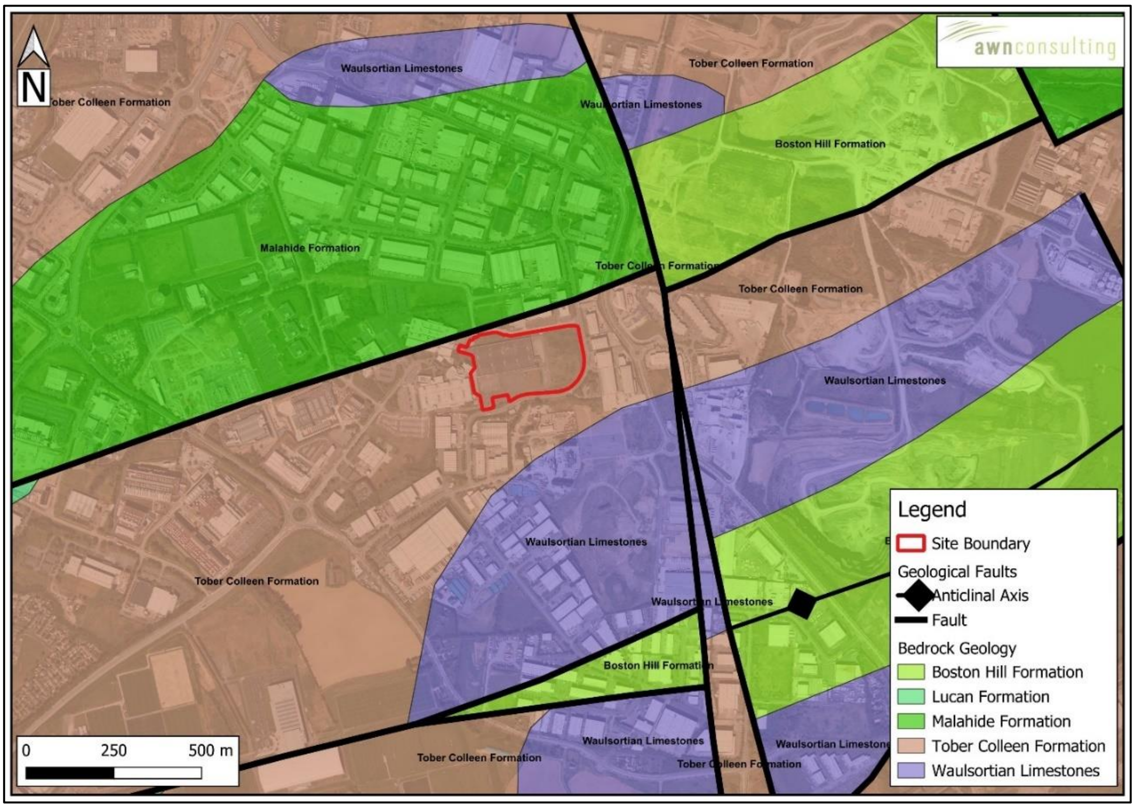
Therefore, it is concluded that the development is located appropriately with regard to flooding and based on the projected discharge of local surface drainage into the public sewer, the project design will not cause an increased risk of flooding elsewhere.

7.3 Geology and Hydrogeology

7.3.1 Geology and Aquifer Classification

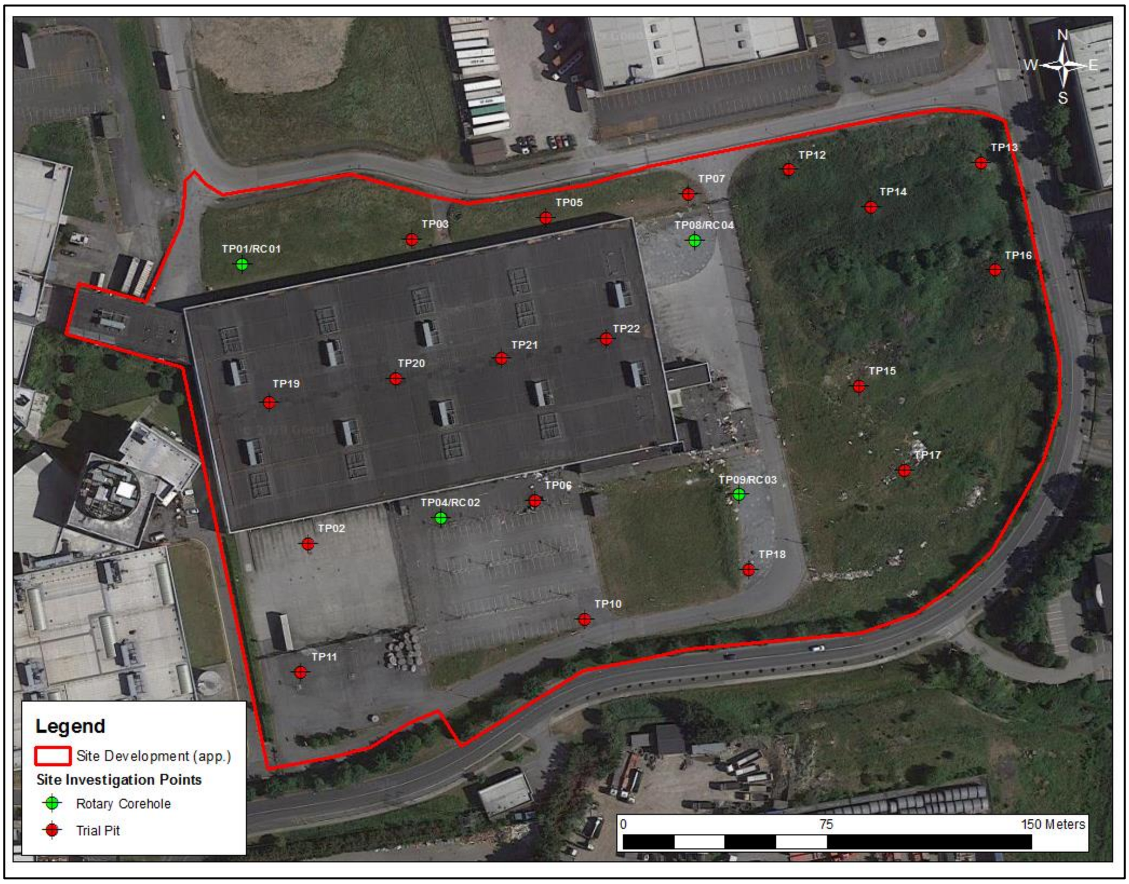
Inspection of the available GSI mapping data (GSI, 2024) shows that the bedrock geology underlying the site is classified as Tober Colleen formation which is described Calcareous shale, limestone conglomerate of Carboniferous age (refer to Insert 7.2 This geological formation typically consists of dark-grey, calcareous, commonly bioturbated mudstones and subordinate thin micritic limestones. The formation ranges from 50m to 250m in thickness.

In terms of the structural geology of the area, the GSI database displays a fault traversing the neighbouring adjacent property which bounds the site from the north. The GSI indicates a bedrock aquifer fault running in south-west to north-east direction (orientation) extending across vicinity. The GSI database presently lists no karst features in the immediate vicinity of the subject site and significant karstification would not be expected in this type of limestone.



Insert 7.2 *Bedrock Geology Map (source: GSI)*

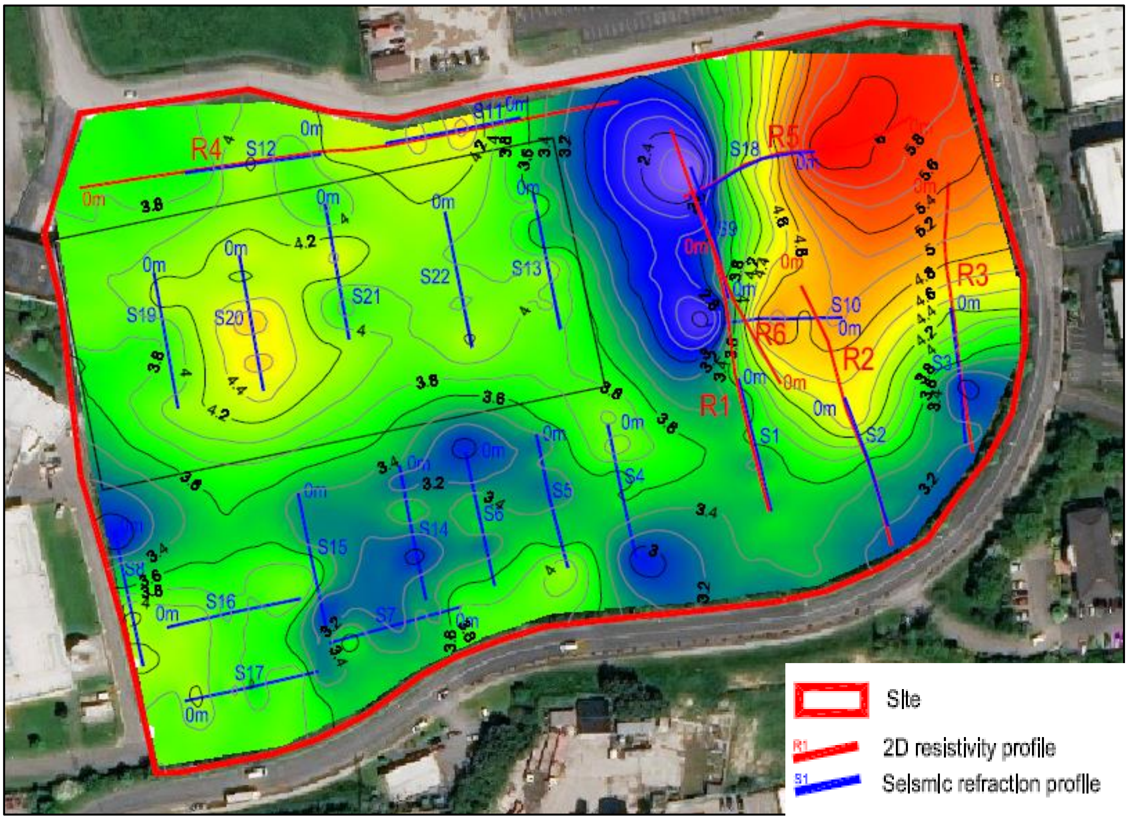
A site investigation was carried out at the site by IGSL in 2019 (refer to 7.3 below and laboratory analysis included in Appendix B) which consisted of 22 no. trial pits (TP01 to TP22), 4 no. boreholes into bedrock (RC01 to RC04). This investigation found that depth to bedrock ranges between 1.2 and 4.5m below ground level (mbgl).



Insert 7.3 *Site Investigations Points (source: IGSL Ground Investigations, 2019)*

Additionally, a geophysical investigation was carried out at the site by APEX in 2019 which consisted of 2D Electrical Resistivity Tomography (ERT) and Seismic Refraction profiling. This investigation interpreted that the depth up to the top of competent bedrock ranges from 2.0 to 6.3mbgl with an average of 3.8mbgl. Therefore, the elevation of bedrock surface ranges from 78 mOD in the northeast of the site to 76 mOD in the southwest. Refer to Appendix A for the entire report.

Bedrock appears to be deeper towards the northeast of the site due to an increase in site topography at this location (refer to Insert 7.4 below).



Insert 7.4 *Depth to Competent Bedrock (mbgl) (source: APEX Geophysical Investigations, 2019)*

7.3.2 Groundwater Body (Aquifer)

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 classifies the principal aquifer types in Ireland as:

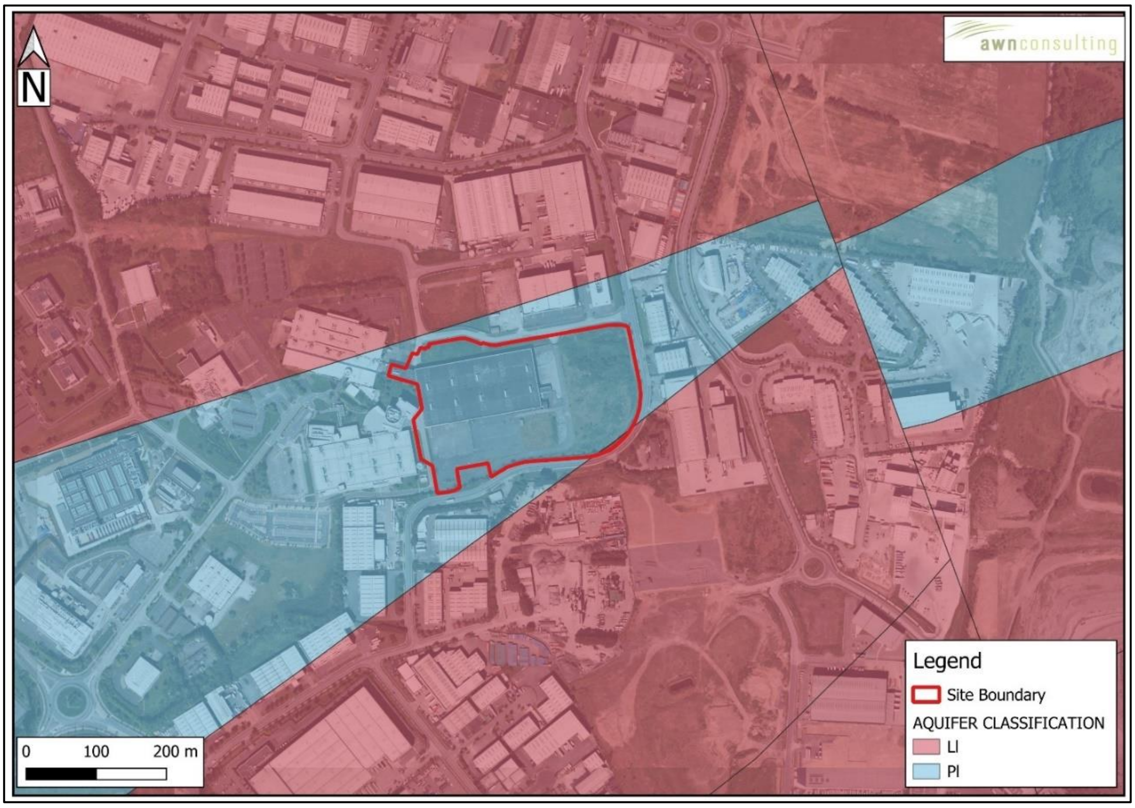
Bedrock Aquifer:

- Lk - Locally Important Aquifer - Karstified
- Ll - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive
- Pl - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
- Pu - Poor Aquifer - Bedrock which is Generally Unproductive
- Rkd - Regionally Important Aquifer (karstified diffuse)

Gravel Aquifer

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

Reference to the GSI (2024) National Draft Bedrock Aquifer Map for the site states this is a Poor Aquifer (Pl), which is generally unproductive except for local zones (refer to *Insert 7.5* below).



Insert 7.5 *Aquifer Classification Map (source: GSI)*

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 waters by December 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) underlying the site is the Dublin Aquifer (IE_EA_G_008) Currently, the EPA (2016-2021) on-line mapping classifies the Dublin water body as having 'Good Status', with a WFD risk is under "review

The site is underlain by the Dublin Groundwater Body (EU code: IE_EA_G_008) which has been investigated by the GSI and is described as having a groundwater flow regime of 'PP' which is poorly productive bedrock aquifer. Based on the most recent data (www.epa.ie) the Dublin GWB for which the Proposed Development is located entirely within, has a status of "Good" (2016-2021) and is under "Review".

In addition, groundwater source protection zones, which are zones defined by the GSI within which development is limited in order to protect groundwater from potential pollution, are not identified by the GSI under the site or in the immediate vicinity. There are no source protection areas relating to group water schemes or public water supplies within 2 km of the site.

There are no karst features in the area.

Standing water tables were measured in two boreholes (RC01 & RC03, screened into the bedrock) in July 2019. Results are the following:

- RC01: 3.2mbgl; 77.78mOD (upgradient).
- RC03: 2.13mbgl; 77.4mOD (downgradient).

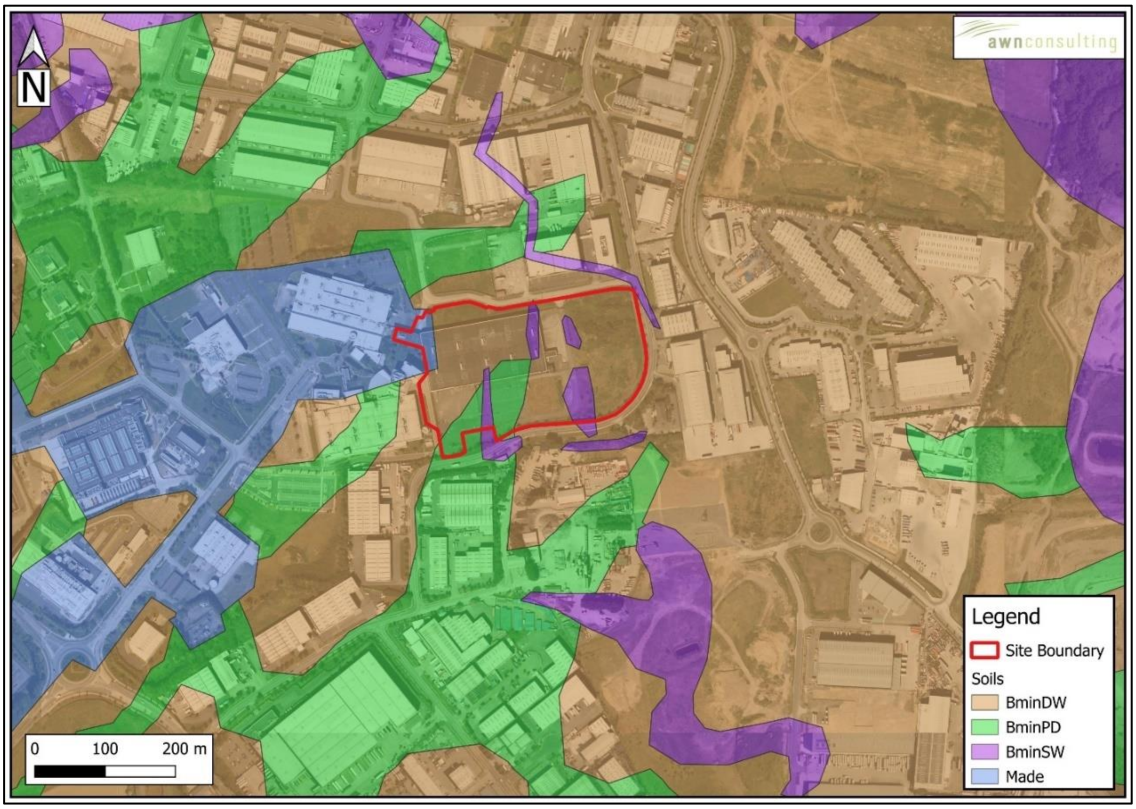
These results show that groundwater flows towards southwest seemingly towards the Tolka river.

7.3.3 Soil Type and Aquifer Vulnerability

The GSI/Teagasc (2024) mapping database currently denotes 3 no. principal soil types, some occurring in localized zones dispersed across the site and surrounding lands, which are identified as follows:

- The approximate central and east portion of the site is underlain by localized zones of BminSW, indicating mainly basic shallow well drained soils (BminSW).
- The predominant soil type beneath / underlying the development site and its vicinity (particularly north & east) is deep well drained mineral- mainly acidic soil derived from limestones (BminDW).
- Areas of Poorly drained mineral soils derived from mainly basic parent materials (BminPD) are predominantly beneath the southeast part / portion of the site.

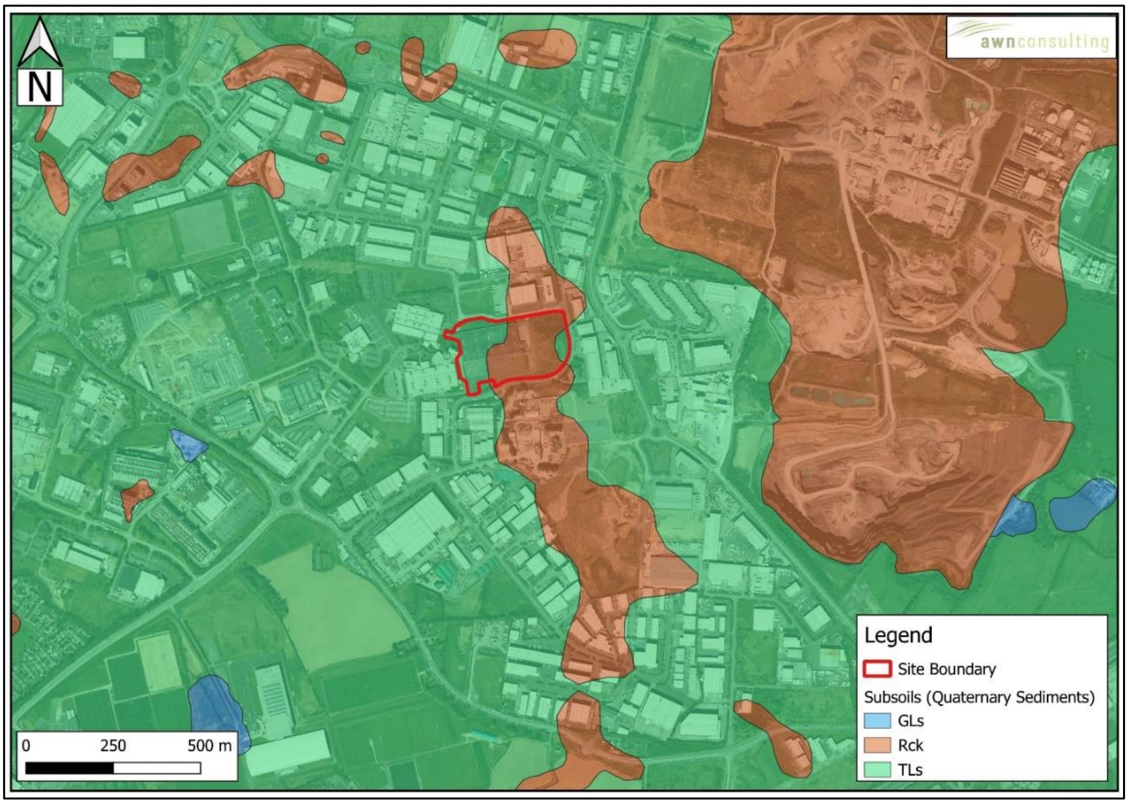
The northwest corner of the site coupled with the land bounding the site is underlain by Made Ground (refer to insert 7.6 below).



Insert 7.6 *Soil Classification Map (source: Teagasc, 2024)*

The regional overburden deposits are reflective of the Quaternary geological period that extends from around 1.5 million years ago to the present day. This can be further sub-divided into the Pleistocene Epoch, which covers the Ice Age period, and which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day.

A soil map, produced by Teagasc, indicates that the majority of the site and surrounding area is underlain by Limestone till Carboniferous (TLs) with small portions of Bedrock at surface (Rck) or near surface subcrop occurring as localized zones. The GSI subsoils or quaternary sediments map indicates a band of rock at or near surface running north-south through the site with limestone till to the east and the west. The neighbouring/adjacent site directly to the northwest of the subject development is underlain by Made Ground. (refer to Insert 7.7 below.



Insert 7.7 *Subsoil Classification Map (source: GSI, 2024)*

The site investigation carried out by IGSL in 2019 and the geophysical investigations undertaken by APEX also in 2019 mentioned in the previous section, concluded the following structure for the subsoils in the site:

Made Ground

Made ground deposits were encountered across the site at most locations, with made ground encountered up to 4.3m below current ground level in the east of the site. The made ground comprises mostly rootless, rare plastic fragments, sandy Gravel and gravelly silty Clay. There was no visual or olfactory evidence of contamination at any of the locations.

Overburden

The made ground is underlain by an overburden strata which mostly comprises firm to stiff silty gravelly Clay and gravelly clayey Silt mainly in the south of the site. This overburden is underlain by the bedrock.

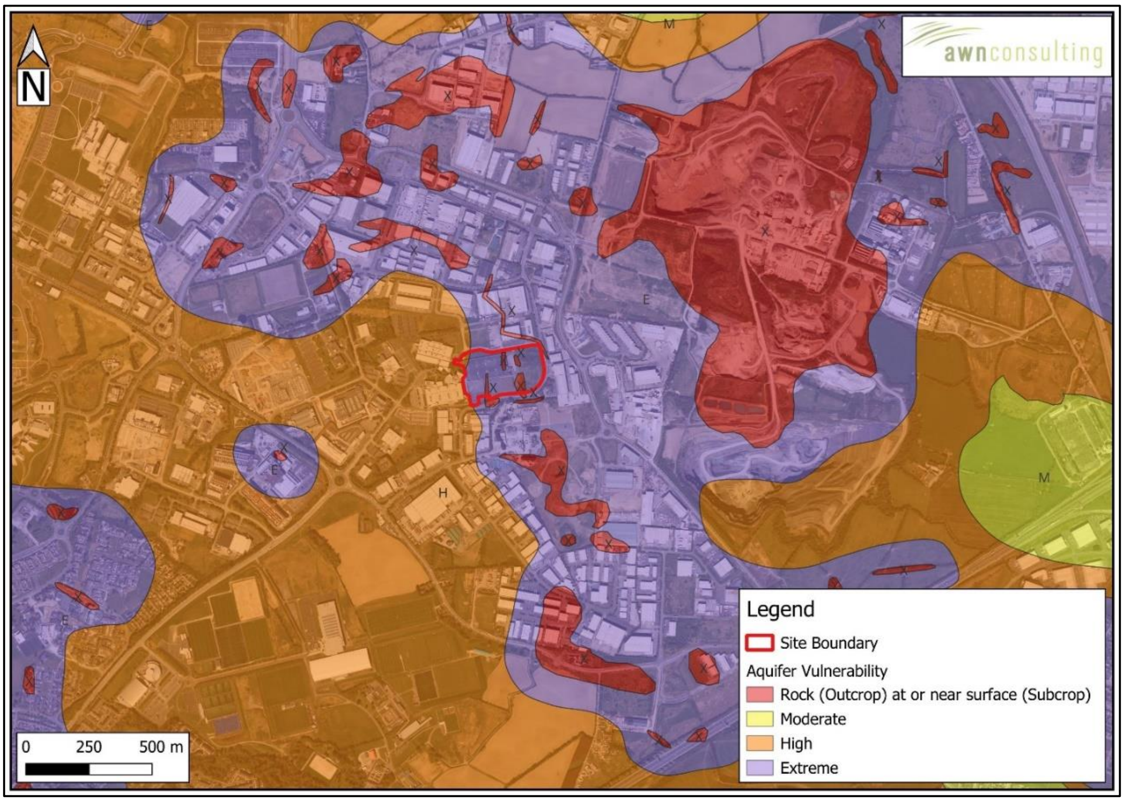
Bedrock

As it was mentioned in the previous section, depth to weathered/fractured bedrock varies from 1.2mbgl to 4.5mbgl. The depth of the top of competent bedrock ranges from 2.0 to 6.2mbgl with an average of 3.8mbgl. Highest depth was observed towards the northeast of the site.

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 can consist solely/ or of mixtures of peat, sand, gravel, glacial till, clays, or silts).

Reference to the GSI Vulnerability data indicates that the development site can be classified as having an 'Extreme' aquifer vulnerability which indicates that the soil cover is between 0-3m of clayey/silty soil deep at the site (refer to insert 7.8 below). Also, the map shows some portions of rock near the surface.

The aquifer vulnerability classification is relatively consistent with data obtained from the site investigations carried out by IGSL (2019) at the proposed development site given that Bedrock was encountered between the depth range of 1.2m- 4.5m below ground level (BGL). Comparison with the site investigation results, the aquifer vulnerability in the site could be classify as 'High' to 'Extreme'.



Insert 7.8 *Aquifer Vulnerability Map (source: GSI, 2024)*

7.3.4 Groundwater Body (Aquifer)

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 waters by December 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) underlying the site is the Dublin Aquifer (IE_EA_G_008) Currently, the EPA (2016-2021) on-line mapping classifies the Dublin water body as having ‘Good Status’, with a WFD risk is under “review”.

7.4 Man-Made Pathways

As identified in Stages 1-4 there will be storage tanks for chemical constituents within the facilities classified as ‘Relevant hazardous substances’ according to definitions within Article 3 of Regulation (EC) No 1272/2008 which, due to the volumes stored and the hazard classifications, are capable of contaminating soil or groundwater and therefore could pose a risk to receiving waters if a source-pathway-receptor linkage is identified. The storage tanks will be fully bunded within a hardstand area, and any spills outside of these areas would be addressed by the oil interceptors prior to discharge following attenuation Abbottstown Stream which ultimately discharges to the Tolka River downstream.

Foul water (wastewater) drainage from the domestic use and from the process which include the reverse osmosis water treatment plant and cooling system, will be discharged by gravity to the existing 300mm diameter sewer located estate road bounding the southern side of the site. The wastewater emissions ultimately discharge to Ringsend Wastewater Treatment Plant (WWTP).

Surface water from roof areas will be collected in a gravity pipe network around the site and subsequently will be attenuated in attenuation tanks. These tanks will be a geocellular module type and will be designed to cater for a 1/100 year return period storm. The attenuation system will discharge a greenfield rate into the existing 900mm diameter 900mm diameter surface water (stormwater) sewer which is located at the southwest corner of the site (directly adjacent to the southern access road) and falls in a westerly direction.

Surface water run-off from the car park areas will be collected via a permeable paving system which will retain pollutants in the stone make-up and filter fabric prior to infiltrate into the subsoil. Remaining run-off which cannot be infiltrated, will be drained to the proposed surface water drainage system.

Run-off from the remaining hardstanding areas on site, include the access roads and yard areas will be directed either to a system of swales and filter drains (and subsequently into the subsoil) or directly to the attenuation system. Run-off from the access road and truck turning areas will pass through a full retention oil interceptor prior to reaching the attenuation system.

A non-return valve will be fitted at the outfall point to the 900mm diameter existing sewer to prevent surface water entering from the public sewer into the system during surcharge conditions.

8.0 STAGE 6 – CONCEPTUAL SITE MODEL

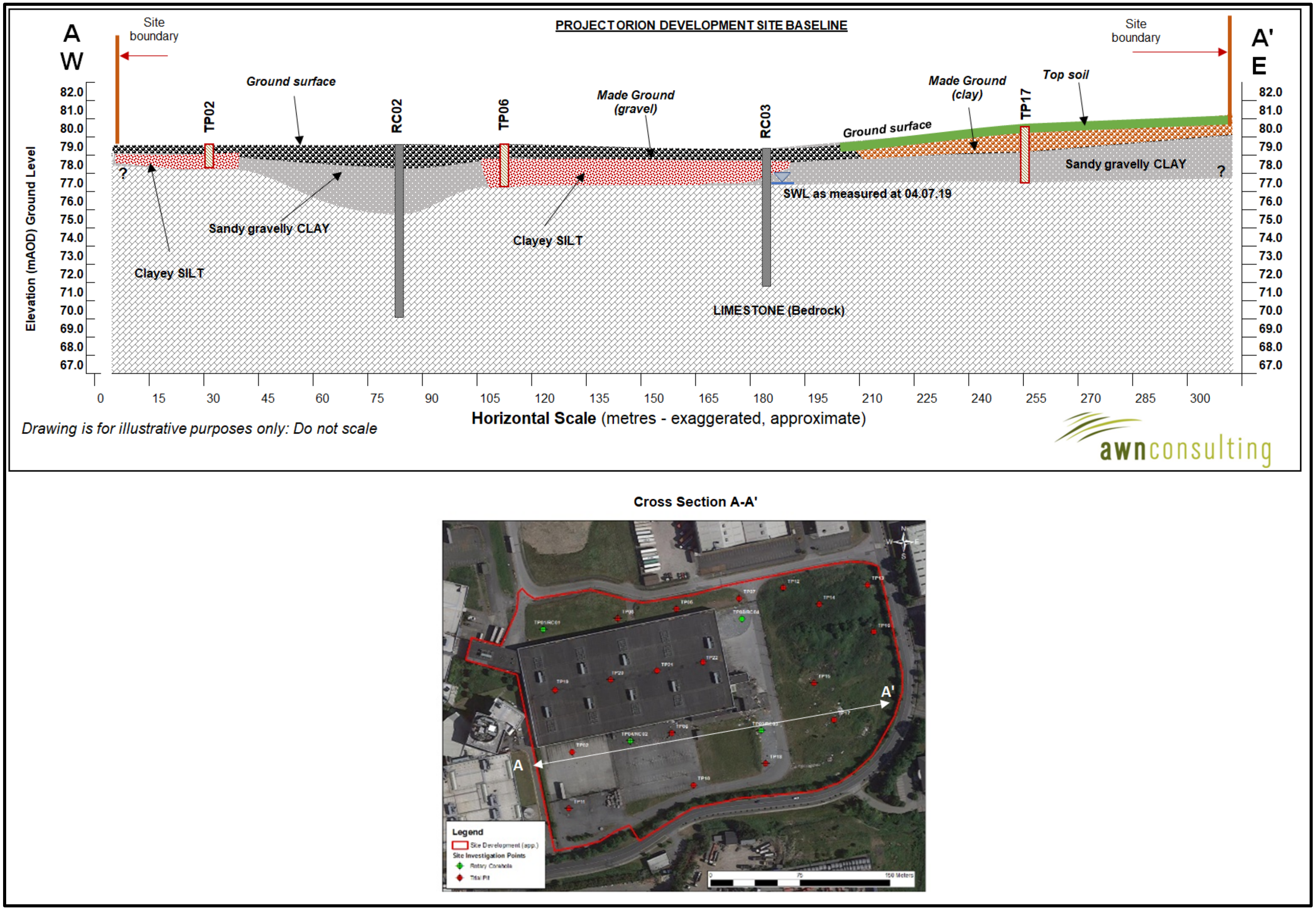
A summary of the conceptual site model (CSM) is described below with reference to schematic cross section (Insert 5.1) and development above.

- The profile on site comprises made ground overlying low permeability clay/silt topsoil.
- Depth to weathered/fractured bedrock varies from 1.2mbgl to 4.5mbgl. The depth of the top of competent bedrock ranges from 2.0 to 6.0mbgl with an average of 3.8mbgl. Highest depth was observed towards the northeast of the site
- According to this information, the groundwater vulnerability can be classified as '*High*' to '*Extreme*'
- There is no evidence of historical soil contamination.
- There is no evidence of groundwater contamination.
- There are no groundwater dependent terrestrial ecosystems which have potential to be impacted by the development.
- The site storm drainage will discharge into the public sewer.
- The land is zoned for industrial development of this type and is within flood zone C and therefore suitable for industrial development.
- The Tolka River is located c.2.6km to the southwest of the site and the site has an indirect hydrological link through the local surface water drainage system.
- In its section near of the development site, the Tolka river has been classified by the WFD as 'Poor Status' and its risk as 'At risk'.

The pollutant linkages based on the primary sources of possible contaminants on site are summarised in Table 8.1. There will not be direct discharges into the Tolka river, as eventual spills will be collected and conducted into the attenuation tanks prior its treatment. The design stormwater system shall discharge to the Abbotstown Stream, prior to its outfall to the River Tolka 3.1 km downstream (south).

Table 8.1 *Pollutant Linkages*

Source	Pathways	Receptor	Impact Assessment
Stored Chemical Substances Spill	Vertical and lateral migration via shallow overburden to underlying bedrock Lateral migration via groundwater within the bedrock aquifer Lateral migration via drainage system	Poor Bedrock Aquifer with high to extreme vulnerability.	Low – Tanks will be bunded and double lined. Subsoil above the bedrock aquifer comprises low permeability clay and silt. Eventual spills will be collected and conducted to the attenuation system.
		Public 900mm diameter surface water sewer, which outfalls to the Abbotstown Stream, which ultimately discharges to the Tolka	Low – Tanks will be bunded and double lined. Eventual spills will be collected and conducted to the attenuation system
Spills from the access road and truck turning areas	Vertical and lateral migration via shallow overburden to underlying bedrock Lateral migration via groundwater within the bedrock aquifer Lateral migration via drainage system	Poor Bedrock Aquifer with high to extreme vulnerability.	Low – Spills will be collected and discharged into the surface drainage system
		Public 900mm diameter surface water sewer	Low – Run-off from these area will pass through a full retention oil interceptor prior to reaching the attenuation system.



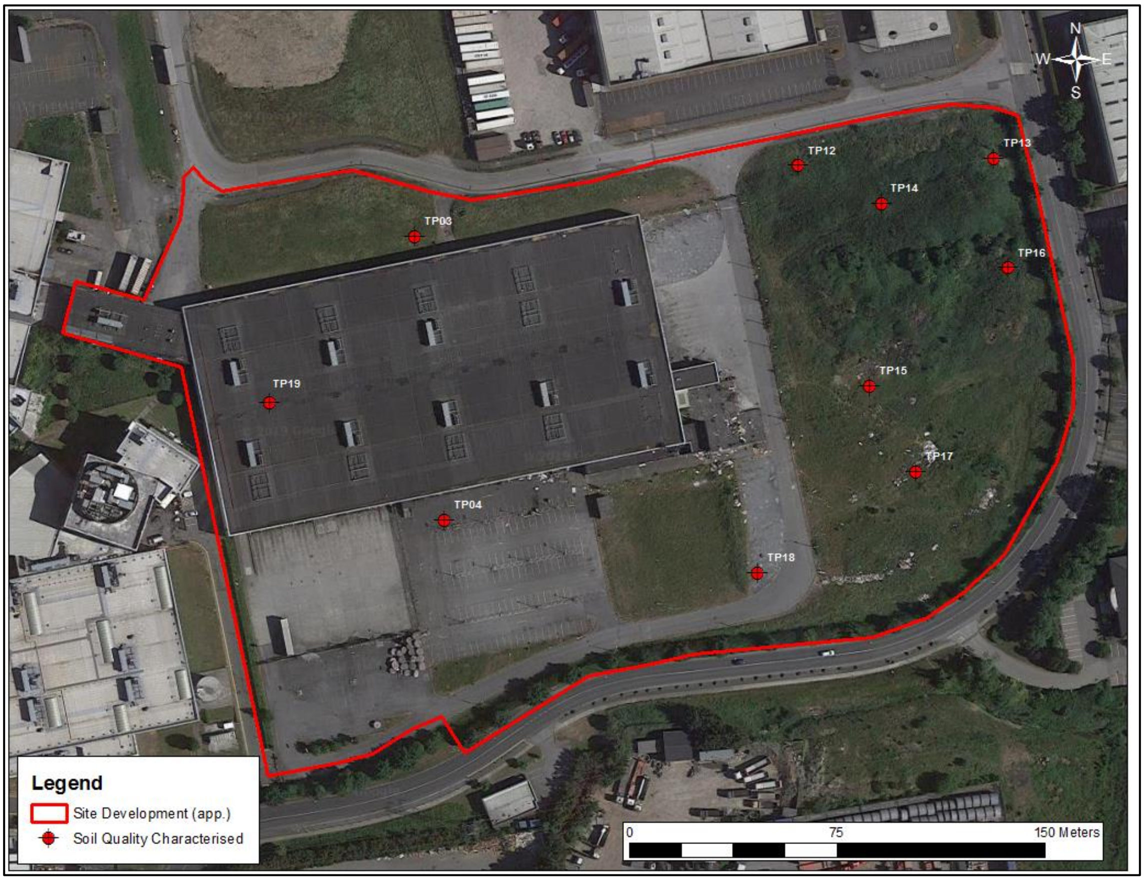
Insert 8.1 *Schematic Cross Section A-A'*

9.0 STAGE 7 – SITE INVESTIGATION AND BASELINE SOIL & WATER QUALITY ASSESSMENT

9.1.1 Soil Quality

As part of the site investigations undertaken by IGSL in 2019 (Appendix B), soil samples of made ground and natural ground collected from ten trial pits were analysed considering RILTA suites parameters. The results were part of a waste characterisation assessment undertaken by O'Callaghan Moran (OCM) and Associates included as part of Appendix C.

Site investigation points (intrusive) locations and depths for sample locations are presented in Insert 9.1 and Table 9.1 below.



Insert 9.1 *Soil sample locations (source: OCM Waste Characterisation Assessment, 2019)*

Table 9.1 *Depth of Soil Samples*

Sample	Depth (mbgl)	Sample	Depth (mbgl)
TP03	1.0	TP15	2.0
TP04	1.0	TP16	0.2-0.5
TP12	0.5	TP16	2.0
TP13	1.0	TP17	1.0
TP13	2.0	TP18	1.0

TP14	1.0	TP19	1.0
TP14	4.0		

The results of the WAC testing are presented in Appendix C, and include for comparative purposes the WAC for Inert, Non Hazardous and Hazardous Waste Landfills pursuant to Article 16 of the EU Landfill Directive 1999/31/EC Annex II which establishes criteria and procedures for the acceptance of waste at landfills.

The made ground meets the Inert WAC, with the exception of TP14 at 4.0m and TP19 at 1.0m which exceeds the Inert WAC for Total Organic Carbon (TOC). The natural ground was determined to meet the inert WAC criteria.

Regarding to WAC analysis, all the samples were classified as Non-Hazardous. Specifically, samples from TP3, TP4, TP13, TP15, TP16 (0.2-0.5), TP17 and TP18 meet the inert WAC. It means that this material is suitable for retention on site or if it requires removal is suitable for recovery at a permitted waste recovery facility subject to the approval of the facility operator.

Samples from TP-14 (1m) and TP-19 exceed the inert WAC only for Total Organic Carbon but may be suitable for recovery at a permitted waste recovery facility if the derogation for TOC is accepted. Otherwise, the material in these trial pits must be sent to a Non-Hazardous Waste Landfill subject to approval of the facility operator.

The sample from TP-12, TP-14 (4m) and TP-16 (2m) contain construction demolition waste and is suitable for disposal to non-hazardous landfill in Ireland subject to approval of the facility operator. Asbestos was not detected in any of the samples analysed from the site.

There are no legislated threshold values for soils in Ireland. As such soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and also ecology for a resident and commercial/industrial end use.

Generic Assessment Criteria in the UK has been derived using the Contaminated Land Exposure Assessment (CLEA) model to be protective of human health for a number of different land uses. LQM (Land Quality Management) and the CIEH (Chartered Institute of Environmental Health) developed a document in July 2009 detailing their own research and derivation of their own ‘LQM GACs’. A total of 82 substances including many organic substances had LQM GACs derived, for the standard land uses of residential, commercial/industrial and allotments. This was updated in 2015 following further research and the derived results are now called LQM/CIEH Suitable 4 Use Level (S4UL). The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and as transparently-derived and cautious “trigger values” above which further assessment of the risks or remedial action may be needed. For each contaminant S4ULs have been derived for six land use scenarios based on assessing exposure pathways in each planning scenario. In this instance the commercial scenario has been considered. Soil type and soil organic matter (SOM) has an influence on the behaviour of contaminants. S4ULs have been derived for three SOM contents (1%, 2.5% and 6%) to cover the likely range in soils. A prudent approach has been taken by considering the lower 1% SOM content.

According to the IGSL 2019 site specific ground investigation, the results indicated that there was no significant soil contamination at the site, with the exception of Arsenic, whose concentration recorded at TP04 (41mg/kg) and TP19 (48mg/kg) were slightly above the threshold concentration for land suitable for residential use (40mg/kg). Refer to Appendix B for the full report and test results.

All results were below the threshold for land suitable for commercial use. Laboratory results compared with threshold concentrations are tabulated in Appendix C.

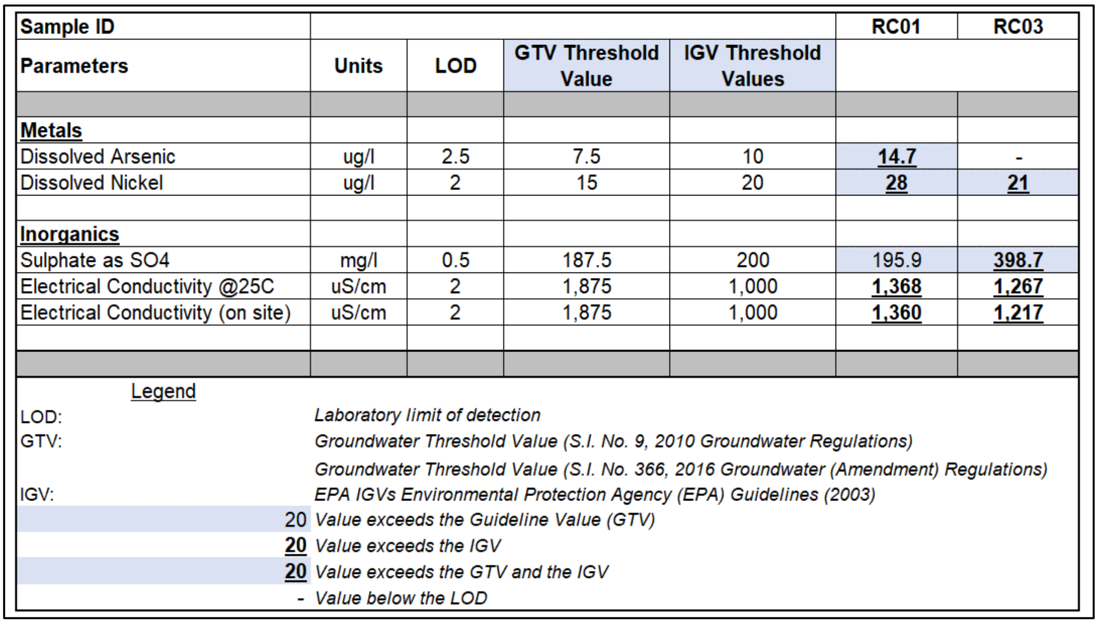
9.1.2 Groundwater Quality

The analytical results for the groundwater samples were compared to the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. 9 of 2010) as amended by the European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016 (S.I. No. 366 of 2016). The Regulations establish a comprehensive system of water quality and quantity objectives for all bodies of groundwater and thereby provide a basis for systems of control for achieving those groundwater objectives, taking into account the requirements of the Water Framework Directive (2000/60/EC) and the Groundwater Directive (2006/118/EC). The threshold values are based on the assessment of the general quality of groundwater in a groundwater body in terms of whether its ability to support human uses has been significantly impaired by pollution. Where there are no threshold values for a parameter the results are compared to the Interim Guideline Values (IGVs) "Interim report towards setting guideline values for the protection of groundwater in Ireland", published by the Environmental Protection Agency (EPA) in June 2003.

2 no. bedrock boreholes were fitted with standpipes to allow for groundwater sampling (RC01 & RC03). Two groundwater samples were recovered by AWN in July 2019 from onsite bedrock boreholes RC01 and RC03. Overall, there was no evidence of any significant contamination from previous use of the site. It is noted that contaminants of concern (PAHs, SVOCs, EPH and phenols) were not elevated above the limit of detection in the water samples. The investigations did not identify any evidence of soil or groundwater contamination on the site as a result of previous use of the site.

Dissolved Arsenic, Dissolved Nickel, Sulphate and Electrical Conductivity recorded concentrations higher than the threshold values defined, as can be seen Table 9.2 below.

Table 9.2 *Exceedances observed over Groundwater Threshold Values*



Sample ID					**RC01**	**RC03**
Parameters	**Units**	**LOD**	**GTV Threshold Value**	**IGV Threshold Values**		
Metals						
Dissolved Arsenic	ug/l	2.5	7.5	10	**14.7**	-
Dissolved Nickel	ug/l	2	15	20	**28**	**21**
Inorganics						
Sulphate as SO4	mg/l	0.5	187.5	200	195.9	**398.7**
Electrical Conductivity @25C	uS/cm	2	1,875	1,000	**1,368**	**1,267**
Electrical Conductivity (on site)	uS/cm	2	1,875	1,000	**1,360**	**1,217**

Legend

LOD:	*Laboratory limit of detection*
GTV:	*Groundwater Threshold Value (S.I. No. 9, 2010 Groundwater Regulations)*
	Groundwater Threshold Value (S.I. No. 366, 2016 Groundwater (Amendment) Regulations)
IGV:	*EPA IGVs Environmental Protection Agency (EPA) Guidelines (2003)*
20	*Value exceeds the Guideline Value (GTV)*
20	*Value exceeds the IGV*
20	*Value exceeds the GTV and the IGV*
-	*Value below the LOD*

The complete comparison between laboratory analyses results and groundwater threshold values are presented above in Table 9.2. Laboratory reports can be seen in Appendix D.

10.0 CONCLUSIONS

On the basis of the soil and groundwater investigations undertaken prior to construction of the Installation and an assessment of source-pathways-receptors, the following conclusions have been made:

- A review of soil and water quality confirms that there is no evidence of any residual contamination beneath the site.
- According to the IGSL 2019 site specific ground investigation, the results indicated that there was no significant soil contamination at the site, with the exception of Arsenic, whose concentration recorded at TP04 (41mg/kg) and TP19 (48mg/kg) were slightly above the threshold concentration for land suitable for residential use (40mg/kg).
- Groundwater sampled at the site recorded concentrations higher than the threshold values defined for Dissolved Arsenic, Dissolved Nickel, Sulphate and Electrical Conductivity.
- The bulk fuel oil storage is the only chemical storage that is of a quantity that has the pontifical to contaminate soil or water. However, the risk prevention measures planned at the facility significantly reduce the potential for an environmental impact to soil or water to occur. These measures include bunded and double contained vessels, double lined drainage and containment systems 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 and groundwater environment. Interceptors are installed on the surface water drainage. 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.

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APPENDIX A

GEOPHYSICAL INVESTIGATION REPORT, BRIAN DALY TRANSPORT SITE , BALLYCOOLIN, DUBLIN 15; (APEX GEOPHYSICS LIMITED, 2019).

AGP18049_01

REPORT
ON THE
GEOPHYSICAL INVESTIGATION
AT
BRIAN DALY TRANSPORT SITE ,
BALLYCOOLIN, DUBLIN 15.
FOR
SDR4.

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25TH JANUARY 2019

PRIVATE AND CONFIDENTIAL

THE FINDINGS OF THIS REPORT ARE THE RESULT OF A GEOPHYSICAL SURVEY USING NON-INVASIVE SURVEY TECHNIQUES CARRIED OUT AT THE GROUND SURFACE. INTERPRETATIONS CONTAINED IN THIS REPORT ARE DERIVED FROM A KNOWLEDGE OF THE GROUND CONDITIONS, THE GEOPHYSICAL RESPONSES OF GROUND MATERIALS AND THE EXPERIENCE OF THE AUTHOR. APEX GEOSERVICES LTD. HAS PREPARED THIS REPORT IN LINE WITH BEST CURRENT PRACTICE AND WITH ALL REASONABLE SKILL, CARE AND DILIGENCE IN CONSIDERATION OF THE LIMITS IMPOSED BY THE SURVEY TECHNIQUES USED AND THE RESOURCES DEVOTED TO IT BY AGREEMENT WITH THE CLIENT. THE INTERPRETATIVE BASIS OF THE CONCLUSIONS CONTAINED IN THIS REPORT SHOULD BE TAKEN INTO ACCOUNT IN ANY FUTURE USE OF THIS REPORT.

PROJECT NUMBER	AGP18049		
AUTHOR	**CHECKED**	**REPORT STATUS**	**DATE**
EURGEOL PETER O'CONNOR P.GEO., M.SC (GEOPHYSICS), DIP. EIA MGT.	TONY LOMBARD M.SC (GEOPHYSICS)	V.01	25TH JANUARY 2019

CONTENTS

1. EXECUTIVE SUMMARY

APEX Geophysics Limited was requested by SDR4 to carry out a geophysical investigation to determine the depth to bedrock and to assess rock excavatability at the Brian Daly Transport Site, Ballycoolin, Dublin 15. The objectives of the survey were to: identify depth to bedrock; produce a depth to bedrock contour map; provide information on the excavatability of the bedrock.

The area to be surveyed consists of a large warehouse, truck parking areas and surrounding green areas and is c. 7ha in extents. Site topography is around 80 mOD rising to 84 mOD in the north-east.

The Geological Survey of Ireland (GSI) 1:100,000 Bedrock Geology map indicates that the survey area is underlain by mudstone/limestone of the Tober Colleen Formation. The GSI bedrock map shows rock outcrop in the centre and east of the site. The GSI subsoils map shows a band of rock at or near the surface running N-S through the site with limestone till to the east and west.

Twenty-two Trial Pits were opened in November 2018 and seventeen Dynamic Probes were also carried out. Rock was recorded in fifteen of the pits at depth ranging from 0.7 to 4m.

The geophysical investigation consisted of 2D Electrical Resistivity Tomography (ERT) and Seismic Refraction profiling. The survey was carried out in January 2019.

The interpreted soil (made ground and boulder clay) depths from the seismic data range from 2.0m to 6.3m with an average of 3.8m. Soil stiffness for the made ground ranges from soft/loose to firm/dense and from firm to stiff for the boulder clay. Soil thickness is likely to include between 0.5 to 1.5m of weathered and fractured rock at the base. The reduced bedrock surface in mOD shows a gradual decrease from around 78 mOD in the north-east to around 76 mOD in the south-west.

The soil and weathered rock material has seismic P-wave velocities in the range from 150 m/s (soft) up to 1900 m/s (very stiff) and should be diggable or rippable.

Material with a resistivity of 125 - 700 Ohm-m on ERT profiles R1 – R6 has been interpreted as mudstone/limestone (possible Tober Colleen Formation). P-wave seismic velocities of the bedrock range from 3116 m/s to 4888 m/s (averaging 3900 m/s) indicating a generally strong, medium to thinly bedded mudstone/limestone in the heavy breaking/blasting category where encountered in any future excavation.

The Trial Pit depths have not been incorporated into the contours at this stage as they may refer to top of weathered/fractured rock whereas the seismic based contours profile the top of competent bedrock. To confirm the findings of the geophysical report rotary core boreholes are recommended.

Coring should commence in the stiff boulder clay to ensure recovery of the full rock sequence. Laboratory testing to include rock strength measurements should be carried out on core samples.

This geophysical report should be reviewed after the completion of any direct investigation and the depth to bedrock, bedrock surface maps revised where necessary. An excavatability assessment incorporating weighted geophysical, trial pit and borehole data should be carried out prior to excavation.

Note: Mudstone/Limestones of possible Tober Colleen Formation origin may contain pyrite and this should be taken into consideration when assessing possible future use of any excavated material.

2. INTRODUCTION

APEX Geophysics Limited was requested by SDR4 to carry out a geophysical investigation to determine the depth to bedrock and assess rock excavatability at the Brian Daly Transport Site, Ballycoolin, Dublin 15.

2.1 Survey Objectives

The objectives of the survey were to:

- Identify depth to bedrock
- Produce a depth to bedrock contour map
- Provide information on the excavatability of the bedrock.

2.2 Site Background

The area to be surveyed consists of a large warehouse, truck parking areas and surrounding green areas. The area to be surveyed is c. 7ha in extents and is outlined in Figure 1. Ground elevation is approximately 80 mOD across most of the site with an elevated area rising to around 84 mOD in the north-east.

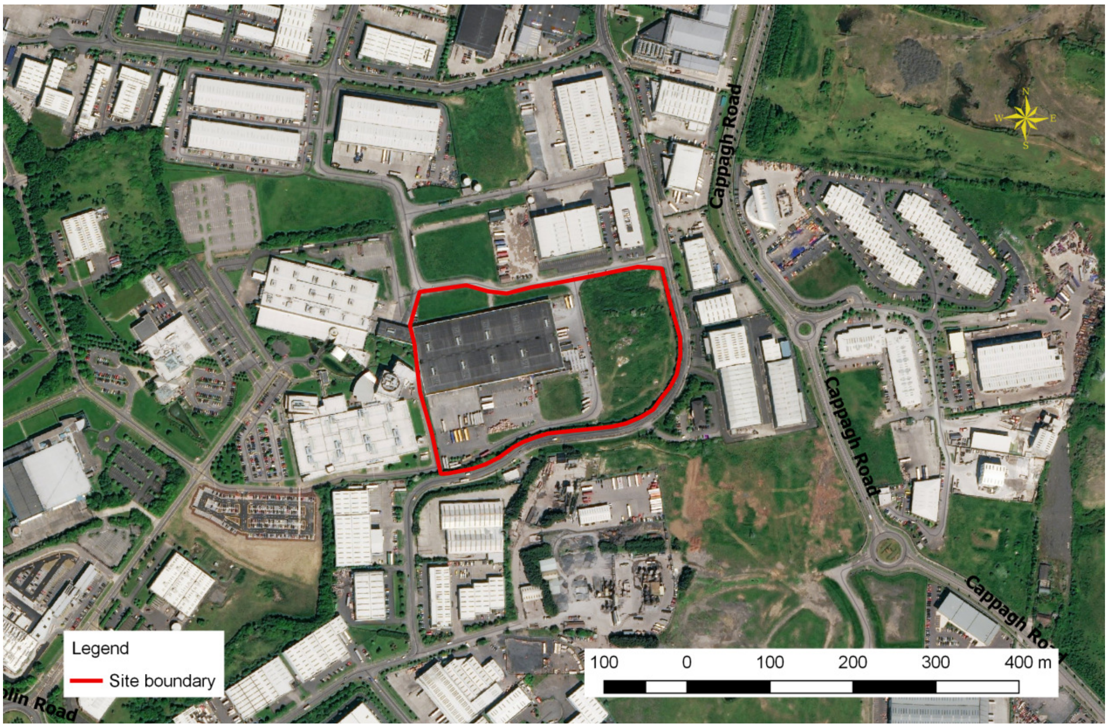

Fig.2.1. Site location (outline in red).

2.3 Bedrock and soils

The Geological Survey of Ireland (GSI) 1:100,000 Bedrock Geology map indicates that the survey area is underlain by Tober Colleen Formation dark-grey, calcareous, commonly bioturbated, mudstones and subordinate thin micritic limestones (see Fig. 2.2 below). The bedrock map shows rock outcrop in the centre of the site.

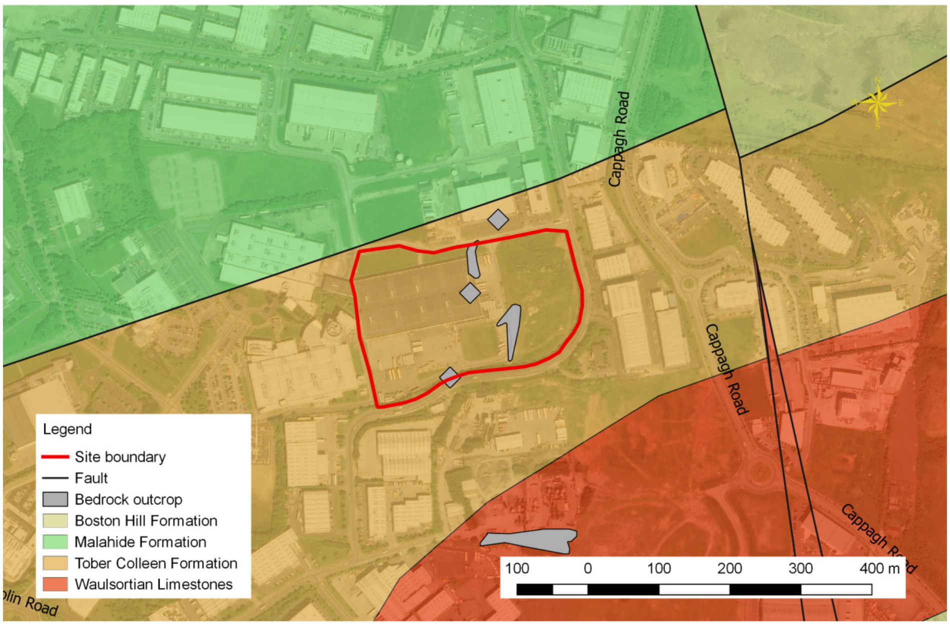

Fig.2.2. Bedrock geology of the survey area (site outline in red).

The GSI subsoil map shows a band of rock at or near the surface running N-S through the site with limestone till to the east and west (see Fig. 2.3 below).

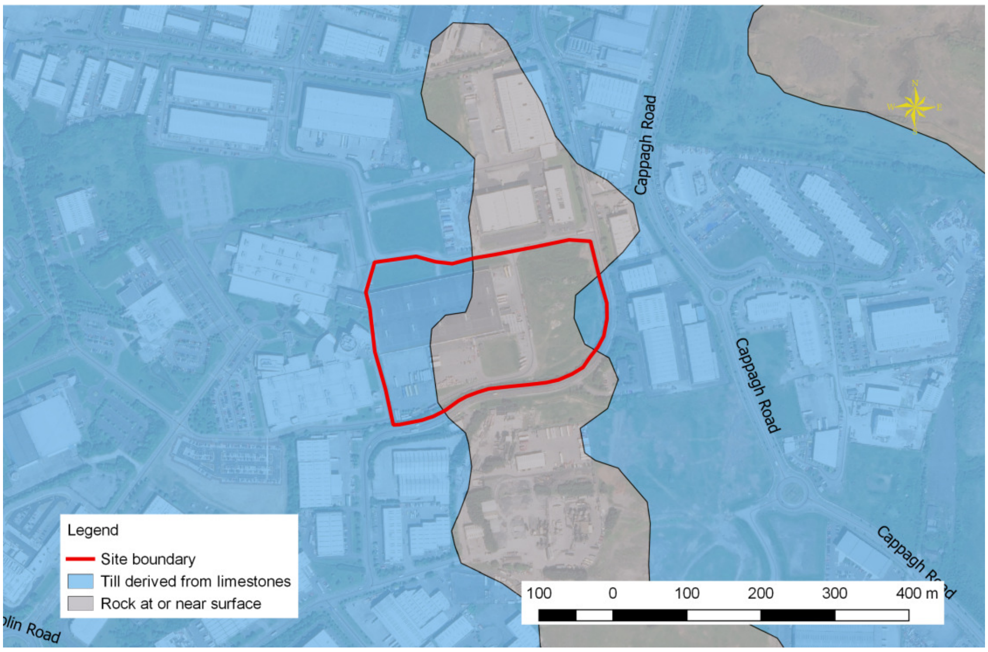

Fig.2.3. Subsoils of the survey area (site outline in red).

2.4 Groundwater

The GSI database indicates bedrock within the site as "Poor Aquifer – generally unproductive except in local zones " (Fig. 2.4).

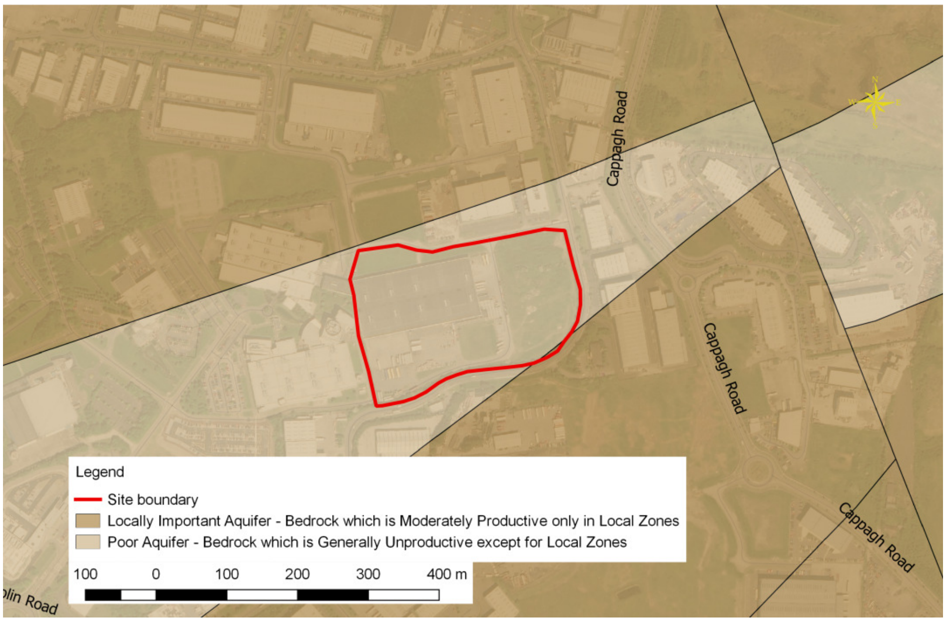

Fig.2.4. Aquifer classification of the survey area (site outline in red).

2.5 Historical Sheet

The 6" Geological Sheet (Fig.2.5) shows rock outcrop running through the eastern part of the site.

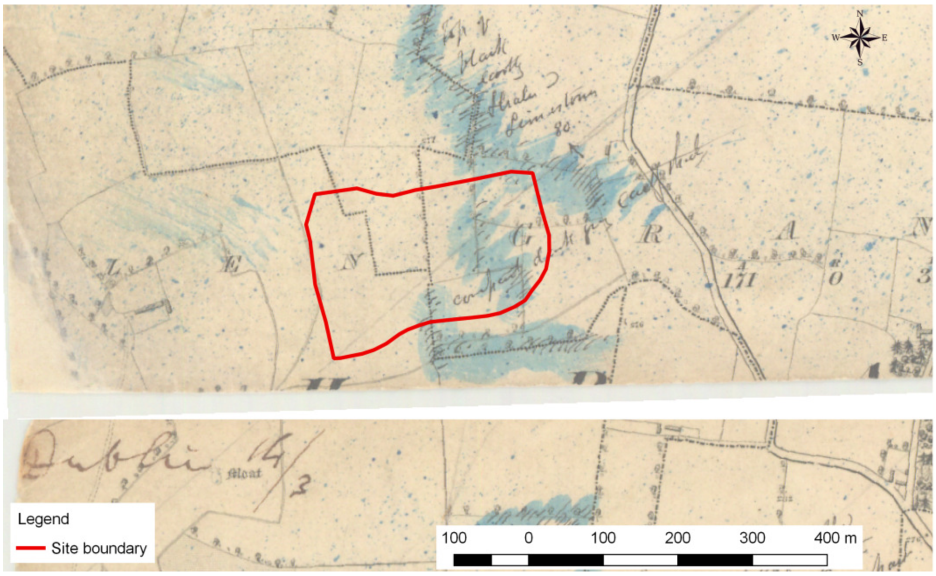

Fig.2.5. GSI 6" Sheet of the survey area (Site outline in red).

2.6 Previous Investigations

Twenty-two trial pits were opened in November 2018 and seventeen dynamic probes were also carried out. Rock was recorded in fifteen of the pits at depths ranging from 0.7 to 4m and recorded as limestone. The overlying soils consist of a surface layer of made ground (gravel, clay, silt, with occasional inert waste) over stiff to very stiff gravelly silty clay (boulder clay). Made ground thickness ranges from 0.1m to 4m. The dynamic probes reached depths ranging from 0.1 to 4.2m.

2.7 Survey Rationale

The investigation consisted of 2D Electrical Resistivity Tomography (ERT) and Seismic Refraction profiling.

ERT soundings image the resistivity of the materials in the subsurface along a profile to produce a cross-section showing the variation in resistivity to depths dependent on the length of the profile. Each cross-section is interpreted to determine the material type along the profile based on the typical resistivities returned for Irish ground materials. Sand/gravel most rocks will have a high resistivity whilst silt/clay will have a low resistivity.

Seismic Refraction Profiling measures the velocity of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher seismic velocities while soft, loose or fractured materials have lower velocities. This method profiles the depth to subsurface layers and provides a cross check on the ERT interpretation. An estimation of rock excavatability can also be made from the seismic velocity.

As with all geophysical methods the results are based on indirect readings of the subsurface properties. The effectiveness of the proposed approach will be affected by variations in the ground properties. By combining a number of techniques it is possible to provide a higher quality interpretation and reduce any ambiguities which may otherwise exist. Further information on the detailed methodology of each geophysical method employed in this investigation is given in **APPENDIX A: DETAILED GEOPHYSICAL METHODOLOGY**.

3. RESULTS

The survey was carried out in January 2019. The geophysical survey locations are indicated on Drawing AGP18049_01 (Appendix C). The interpreted ERT profiles R1-R6 and seismic refraction profiles S1-S22 are shown in Drawings AGP18049_R1-R6 and in Appendix B. The results of the November 2018 Trial Pit logs have been summarised on adjacent ERT and seismic profiles. Dynamic Probe data have not been included.

3.1 ERT

Six ERT Profiles (R1 – R6) were acquired across the site. The resistivity values have been interpreted on the following basis:

Resistivity (Ohm-m)	Interpretation
< 65	MADE GROUND
65 - 125	Gravelly Silty CLAY with cobbles and boulders (Boulder Clay)
125 - 250	Weathered fractured ROCK (on R4 only)
125 - 700	MUDSTONE/LIMESTONE

3.2 Seismic Refraction Profiling

Twenty-two seismic refraction spreads (S1-S22) were recorded (Drawing AGP18049_01). The seismic refraction data has been interpreted on the following basis:

Layer	Seismic Velocity range (m/s)	Seismic Velocity average (m/s)	Interpretation	Stiffness/Rock Quality	Excavatability Estimate
1	150 - 615	318	MADE GROUND, gravelly silty CLAY	Soft/loose-firm/dense	Diggable
2	400 - 1900	900	Gravelly silty CLAY (Boulder Clay), weathered, fractured ROCK at base	Firm-stiff	Diggable - rippable
3	3116 - 4888	3947	Medium-thinly bedded MUDSTONE/LIMESTONE	Fair- good	Heavy Breaking or Blast

3.3 DISCUSSION

3.4.1 Soil

The interpreted soil (made ground and boulder clay) depths from the seismic data range from 2.0m to 6.3m with an average of 3.8m. Soil stiffness for the made ground ranges from soft/loose to firm/dense and from firm to stiff for the boulder clay.

As weathered and fractured bedrock has a similar seismic velocity to very stiff boulder clay) this soil thickness is likely to include between 0.5 to 1.5m of weathered and fractured rock at the base, with the seismic data mapping the top of competent bedrock.

The contoured depths to competent bedrock from the seismic data are shown in Drawing AGP18049_02 (the increase in thickness in the north-east of the survey area is due to an increase in site topography at this location). The reduced competent bedrock surface in mOD is shown in Drawing AGP18049_03 and a gradual decrease in the bedrock surface from around 78 mOD in the north-east to around 76 mOD in the south-west can be seen.

There is a zone of possible shallow weathered fractured rock between 100 and 170 m on R4. This coincides with the location of rock outcrop shown on the GSI 6'' sheet (Fig. 2.5) and with the shallow rock on seismic profile S9. Trial Pits TP7, TP8, TP21 and TP22 also encountered shallow rock in this area (0.7m to 2.9m), although TP5, located at 125m on R4, records made ground of gravel and clay. A rotary cored borehole is recommended at this location.

3.4.2 Bedrock

Material with a resistivity of 125 - 700 Ohm-m on R1 – R6 has been interpreted as mudstone/limestone (possible Tober Colleen Formation). P-wave seismic velocities of the bedrock range from 3116 m/s to 4888 m/s (averaging 3900 m/s) indicating a generally strong, medium to thinly bedded Mudstone/Limestone.

As mentioned in the previous section the bedrock surface gradually decreases from around 78 mOD in the north-east to around 76 mOD in the south-west. The seismic velocity of the competent bedrock has been plotted in Drawing AGP18049_04.

Trial Pit rock levels are generally around 0.5 – 1.5m higher than the seismic rock levels. The Trial Pit depths have not been incorporated into the contoured depth maps at this stage as they may refer to top of weathered/fractured rock whereas the seismic based contours refer to the top of competent bedrock. This will be confirmed when the rotary core results become available and are cross-checked against the seismic levels. A final top of competent bedrock map will then be produced incorporating the geophysical and borehole data.

Note: Mudstone/Limestones of possible Tober Colleen Formation origin may contain pyrite and this should be taken into consideration when assessing possible future use of any excavated rock material.

3.4.3 Excavatability

The soil and weathered rock material has seismic P-wave velocities in the range from 150 m/s (soft) up to 1900 m/s (very stiff) and should be generally diggable or rippable.

The P-wave seismic velocities of the competent bedrock range from 3116 m/s to 4888 m/s which place it in the heavy breaking or blasting category where encountered in any future excavation.

4. RECOMENDATIONS

To confirm the findings of the geophysical report the following rotary core boreholes are recommended in addition to or replacing some of the proposed client boreholes:

No.	Easting	Northing	Comment
PBH1	709803.7	741059.7	to confirm rockhead and rock quality
PBH2	709857.6	740979.1	to confirm rockhead and rock quality
PBH3	709755.1	741077.4	to confirm rockhead and rock quality
PBH4	709649.0	740899.7	to confirm rockhead and rock quality
PBH5	709632.0	741061.9	to confirm rockhead and rock quality
PBH6	709839.9	741082.5	to confirm rockhead and rock quality
PBH7	709779.9	740942.5	to confirm rockhead and rock quality

Coring should commence in the stiff boulder clay to ensure recovery of the full rock sequence. Laboratory testing to include rock strength measurements should be carried out on core samples.

This geophysical report should be reviewed after the completion of any direct investigation and the depth to bedrock, bedrock surface maps revised where necessary.

An excavatability assessment incorporating weighted geophysical, trial pit and borehole data should be carried out prior to excavation, using a scheme similar to Weaver (1975) in Appendix D.

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APPENDIX A: DETAILED GEOPHYSICAL METHODOLOGY

A combination of geophysical techniques was used to provide a high quality interpretation and reduce any ambiguities, which may otherwise exist.

Electrical Resistivity Tomography (ERT)

Electrical Resistivity Tomography was carried out to provide information on lateral variations in the overburden material as well as on the underlying overburden and bedrock.

Principles

This surveying technique makes use of the Wenner resistivity array. The 2D-resistivity profiling method records a large number of resistivity readings in order to map lateral and vertical changes in material types. This method involves the use of electrodes connected to a resistivity meter, using computer software to control the process of data collection and storage.

Data Collection

Profiles were recorded using a ABEM LS4 resistivity meter, imaging software, four 20 takeout multicore cables and up to 80 stainless steel electrodes. Saline solution was used at the electrode/ground interface in order to gain a good electrical contact required for the technique to work effectively. The recorded data were processed and viewed immediately after surveying.

Data Processing

The field readings were stored in computer files and inverted using the RES2DINV package (Geotomo Software, 2006) with up to 5 iterations of the measured data carried out for each profile to obtain a 2D-depth model of the resistivities.

The inverted 2D resistivity models and corresponding interpreted geology are displayed on the accompanying drawings alongside the processed seismic sections. Profiles have been contoured using the same contour intervals and colour codes. Distance is indicated along the horizontal axis of the profiles.

Seismic refraction profiling

Principles

This method measures the velocity of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher seismic velocities while soft, loose or fractured materials have lower velocities.

Seismic profiling measures the p-wave velocity (Vp) of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher Vp velocities while soft, loose or fractured materials have lower Vp velocities. Readings are taken using geophones connected via multi-core cable to a seismograph.

Data Collection

A Geode high resolution 24 channel digital seismograph, 24 10HZ vertical geophones and a 10 kg hammer were used to provide first break information, with a 24 take-out cable (3m spacing). Equipment was carried was operated by a two-person crew.

Readings are taken using geophones connected via multi-core cable to a seismograph. The depth of resolution of soil/bedrock boundaries is determined by the length of the seismic spread, typically the depth of resolution is about one third the length of the profile.(eg. 69m profile ~23m depth, 33m profile ~ 11m depth)

Shots from seven different positions were taken (2 x off-end, 2 x end, 3 x middle) to ensure optimum coverage of all refractors. All profiles were surveyed to ITM Grid using a ProXR dGPS system.

Data Processing

First break picking in digital format was carried out using the FIRSTPIX software program to construct p-wave (Vp) traveltime plots for each spread. Velocity phases were selected from these plots using the GREMIX software program and were used to calculate the thickness of individual velocity units. Topographic data were input. Material types were assigned and estimation made of material properties.

First break picking in digital format was carried out using the FIRSTPIX software program to construct traveltime plots for each spread. The recorded data was processed and interpreted using the GREMIX software program. GREMIX interprets seismic refraction data as a laterally varying layered earth structure. It incorporates the slope-intercept method, parts of the Plus-Minus Method of Hagedoorn (1959), Time-Delay Method, and features the Generalized Reciprocal Method (GRM) of Palmer (1980). Up to four layers can be mapped; one deduced from direct arrivals and three deduced from refractions. Phantoming of all possible travel time pairs can be carried out by adjusting reciprocal times of off shots. Material types were assigned and estimation made of material properties, cross-referenced to borehole data.

Approximate errors for Vp velocities are estimated to be +/- 10%. Errors for the calculated layer thicknesses are of the order of +/-20%. Possible errors due to the "hidden layer" and "velocity inversion" effects may also occur (Soske, 1959).

Spatial Relocation

All the geophysical investigation locations were acquired using Trimble Geo 7X high-accuracy GNSS handheld GPS system using the settings listed below. This system allows collecting GPS data with c.20mm accuracy.

Projection:	Irish Transverse Mercator
Datum:	Ordnance
Coordinate units:	Meters
Altitude units:	Meters
Survey altitude reference:	MSL
Geoid model:	Republic of Ireland

APPENDIX B: SEISMIC DATA

KEY

🟩	**Ground surface**
🟦	**Top of competent bedrock**
TP1	**Summary trial pit log**

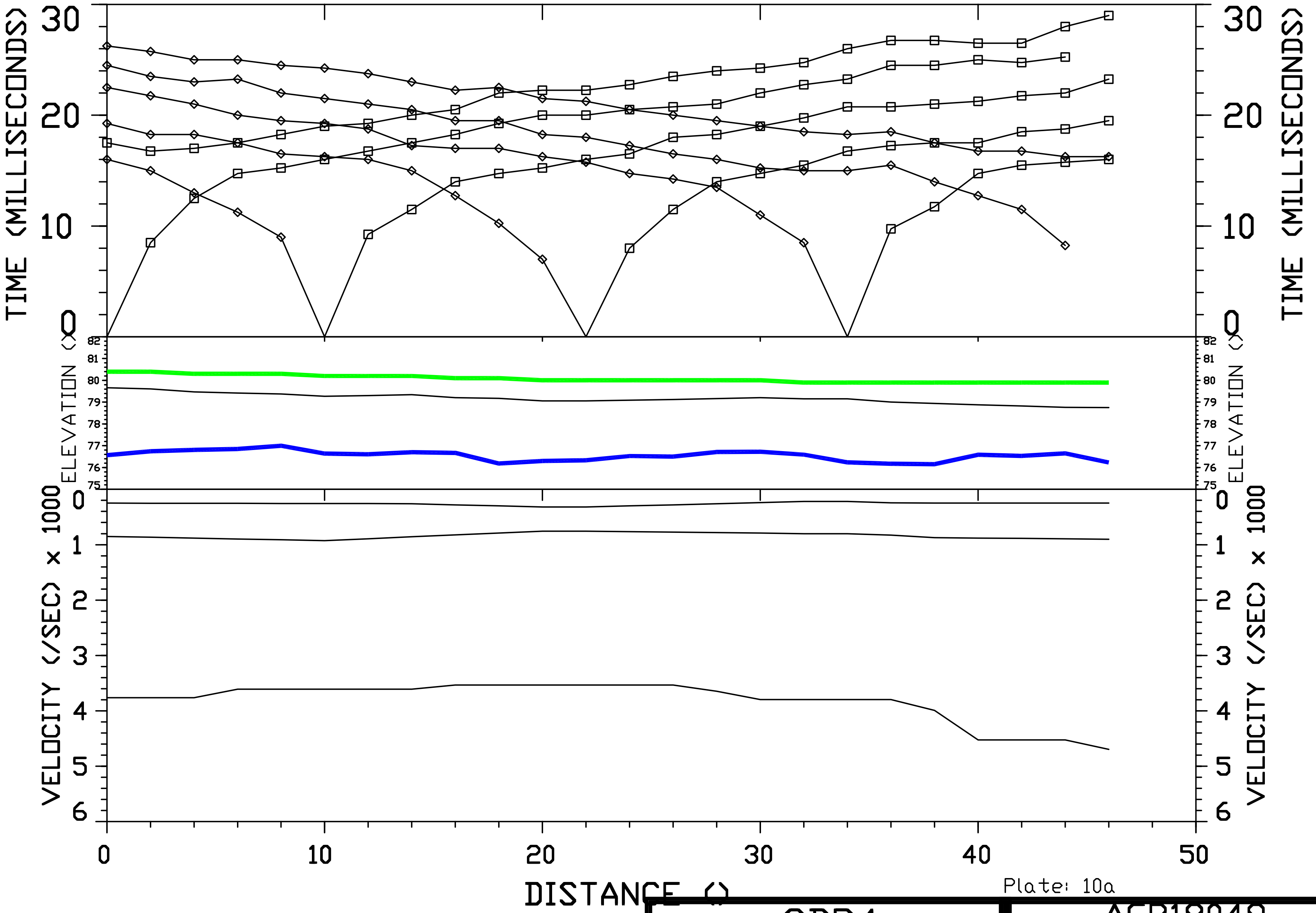


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS1 Date: Jan 2019

Equipment: Geode **Spread: S1**

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

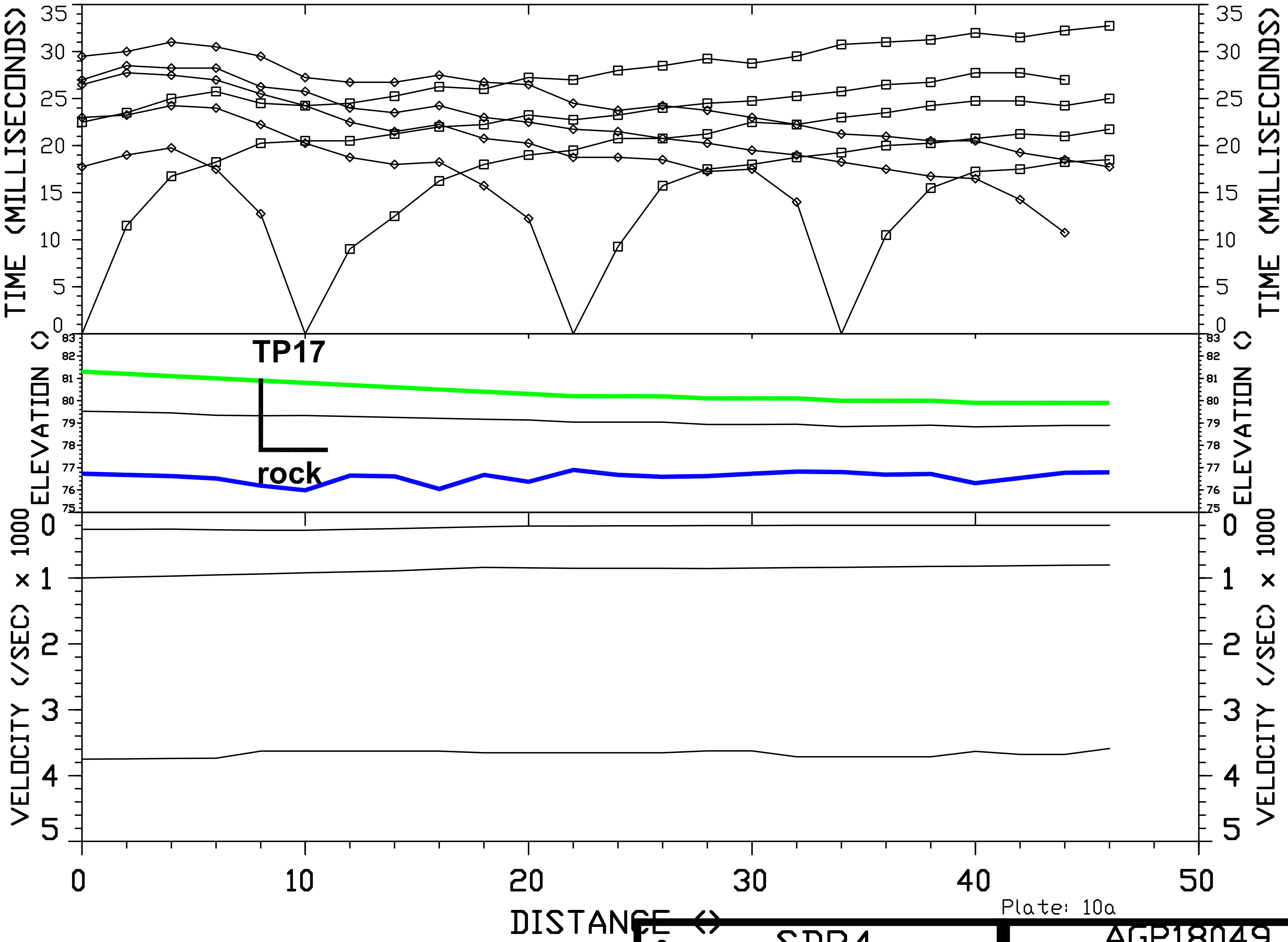


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS2

Date: Jan 2019

Equipment: Geode

Spread: S2

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

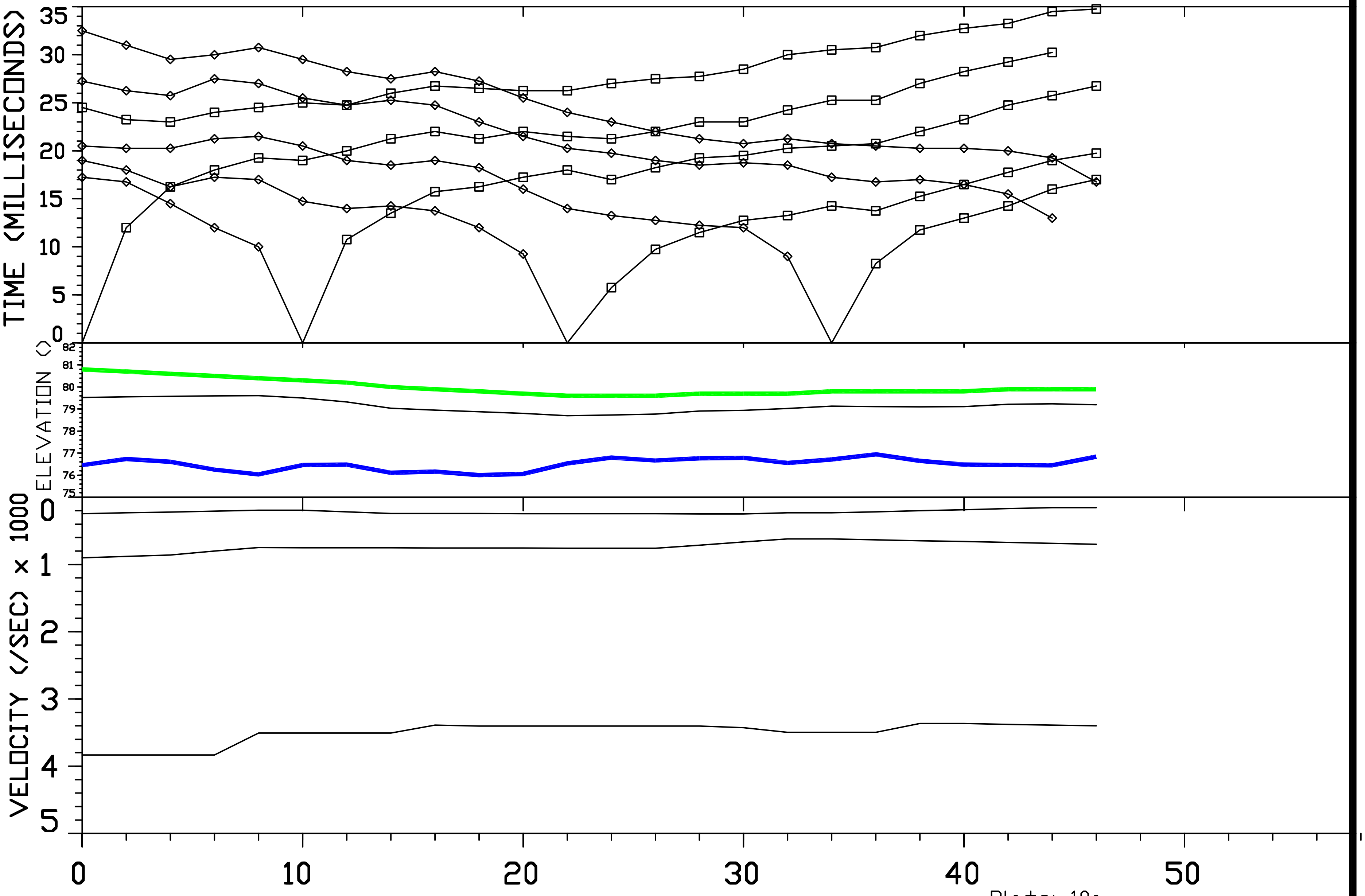


Plate: 10a

for: SDR4	AGP18049
by: APEX Geophysics Ltd.	Brian Daly Transport Site Dublin
Data SetS3 / Date: Jan 2019	
Equipment: Geode / Spread: S3	Azimuth:

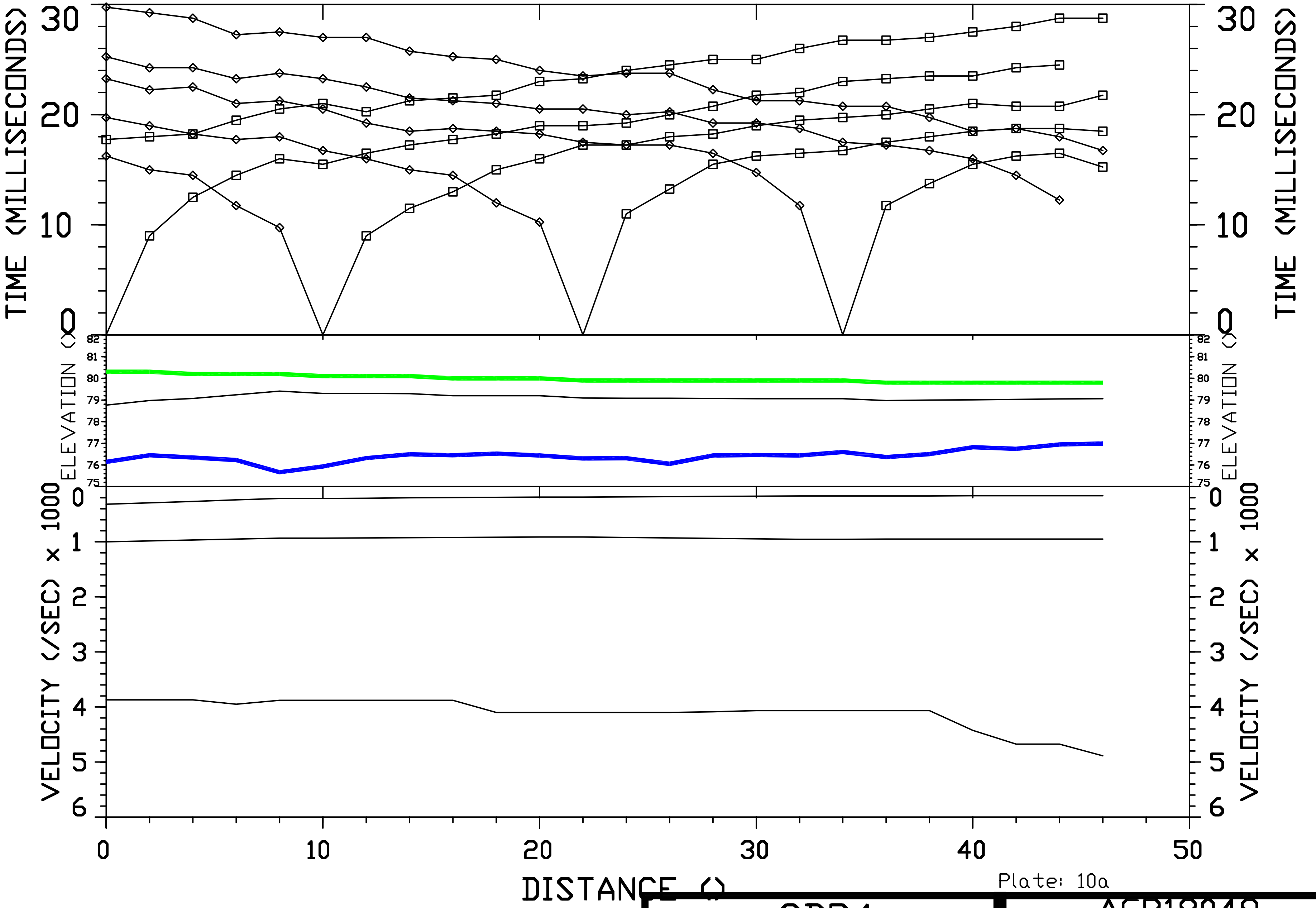


Plate: 10a

for: SDR4	AGP18049
by: APEX Geophysics Ltd.	Brian Daly Transport Site Dublin
Data SetS4 — Date: Jan 2019	
Equipment: Geode — Spread: S4	Azimuth:

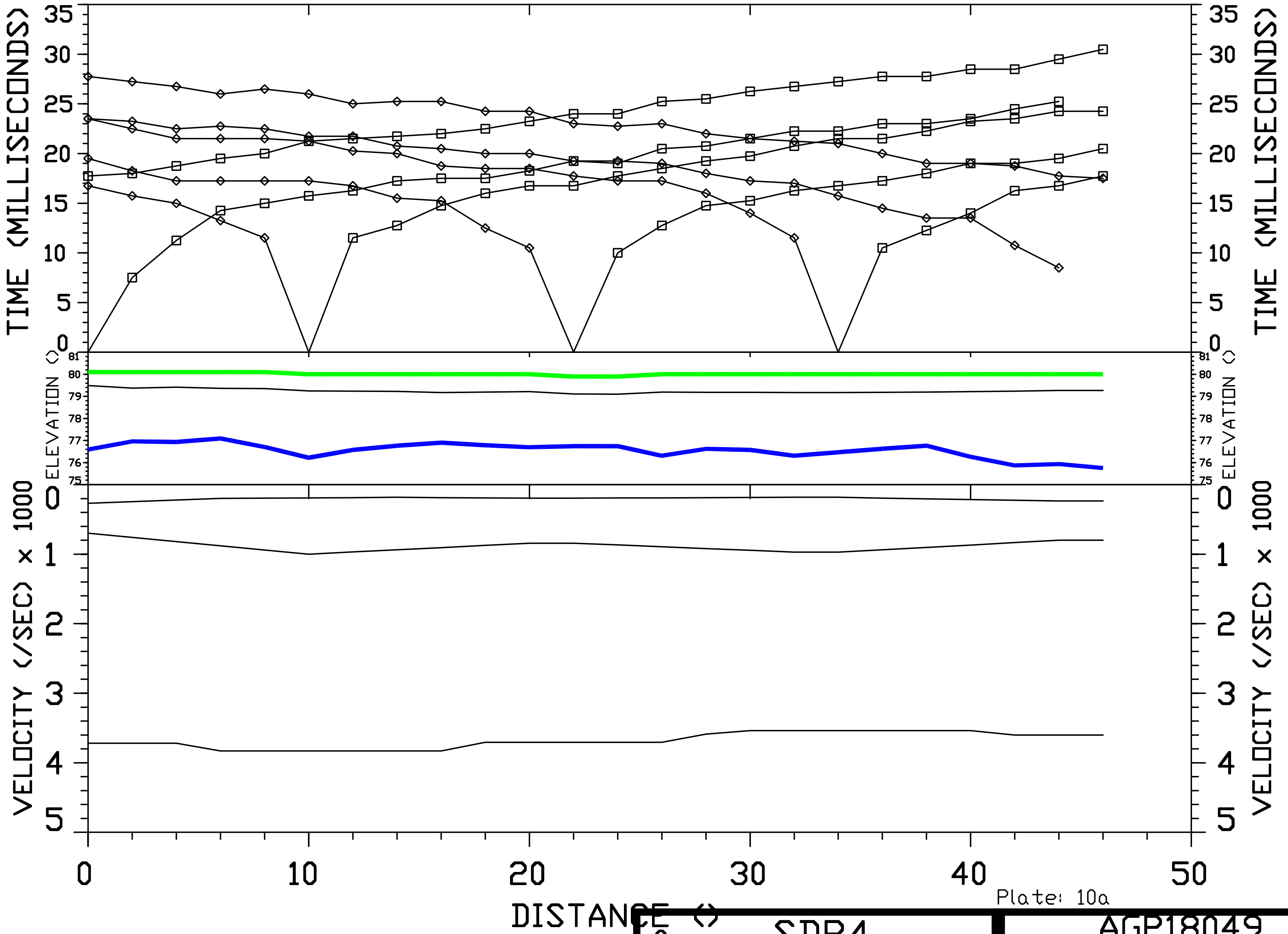


Plate: 10a

for: **SDR4**

by: APEX Geophysics Ltd.

Data SetS5 Date: Jan 2019

Equipment: Geode **Spread: S5**

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

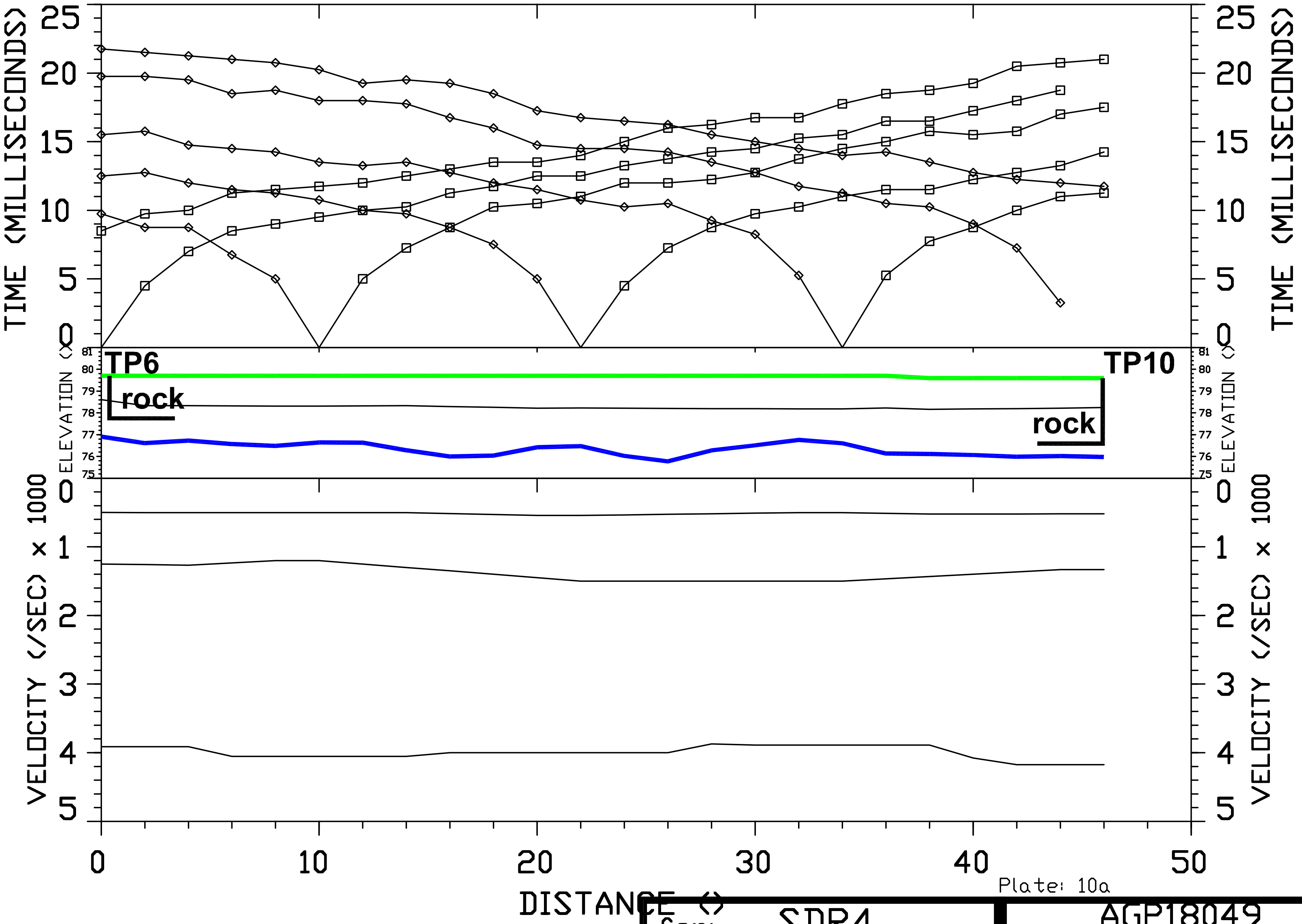


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS6

Date: Jan 2019

Equipment: Geode

Spread: S6

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

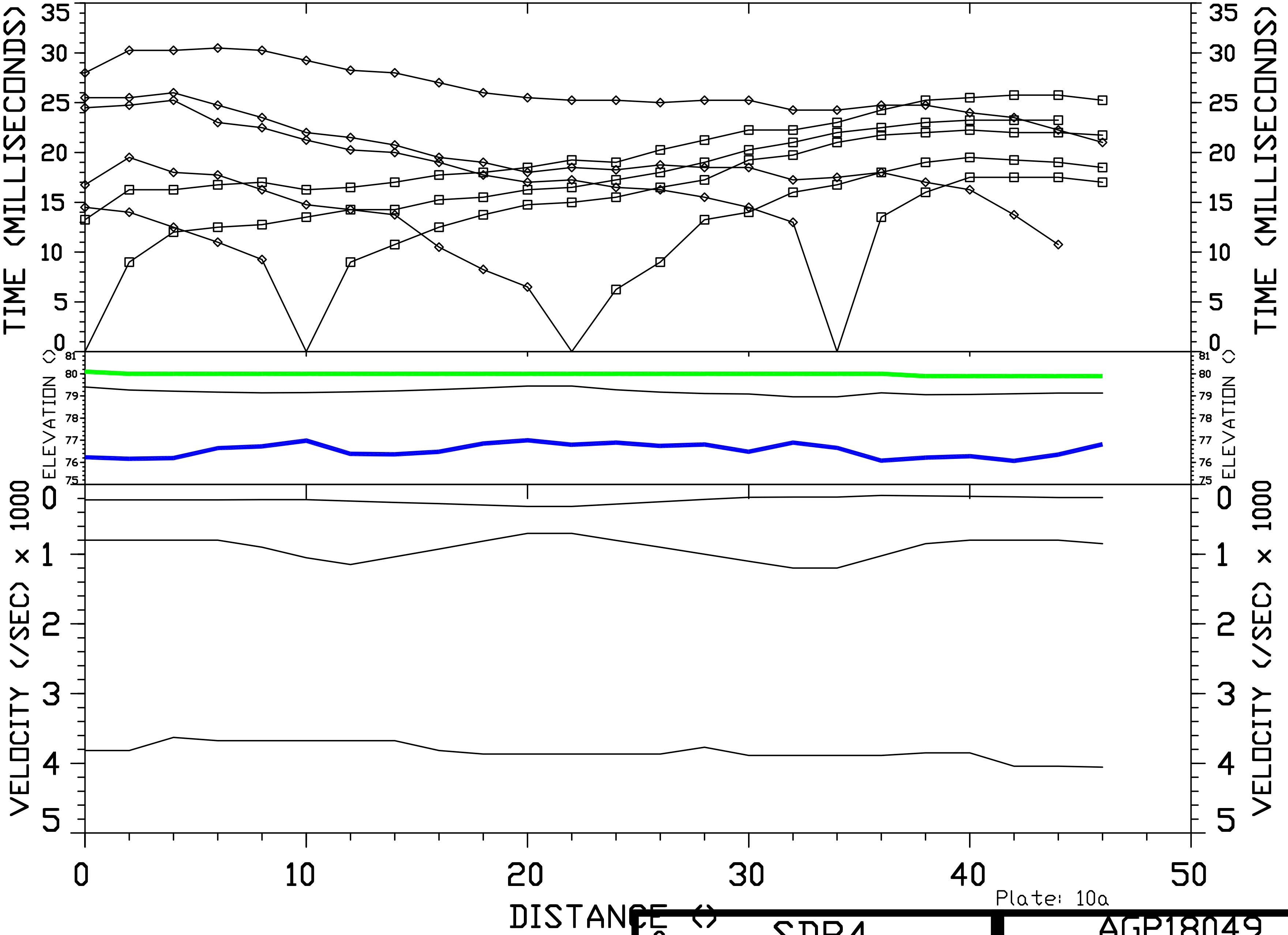


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS7

Date: Jan 2019

Equipment: Geode

Spread: S7

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

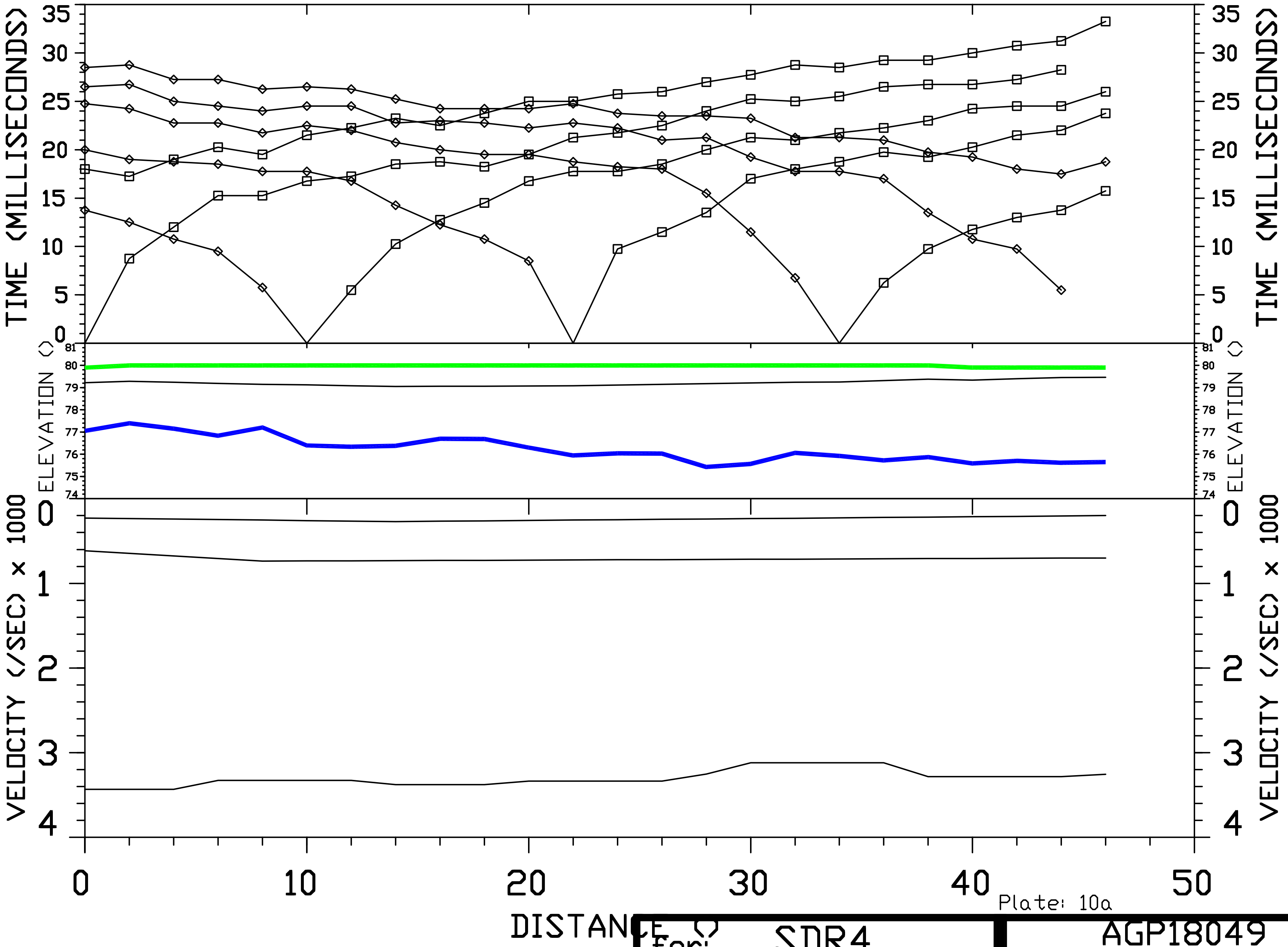


Plate: 10a

For: SDR4	AGP18049
by: APEX Geophysics Ltd.	Brian Daly Transport Site
Data SetS8 Date: Jan 2019	**Dublin**
Equipment: Geode **Spread: S8**	**Azimuth:**

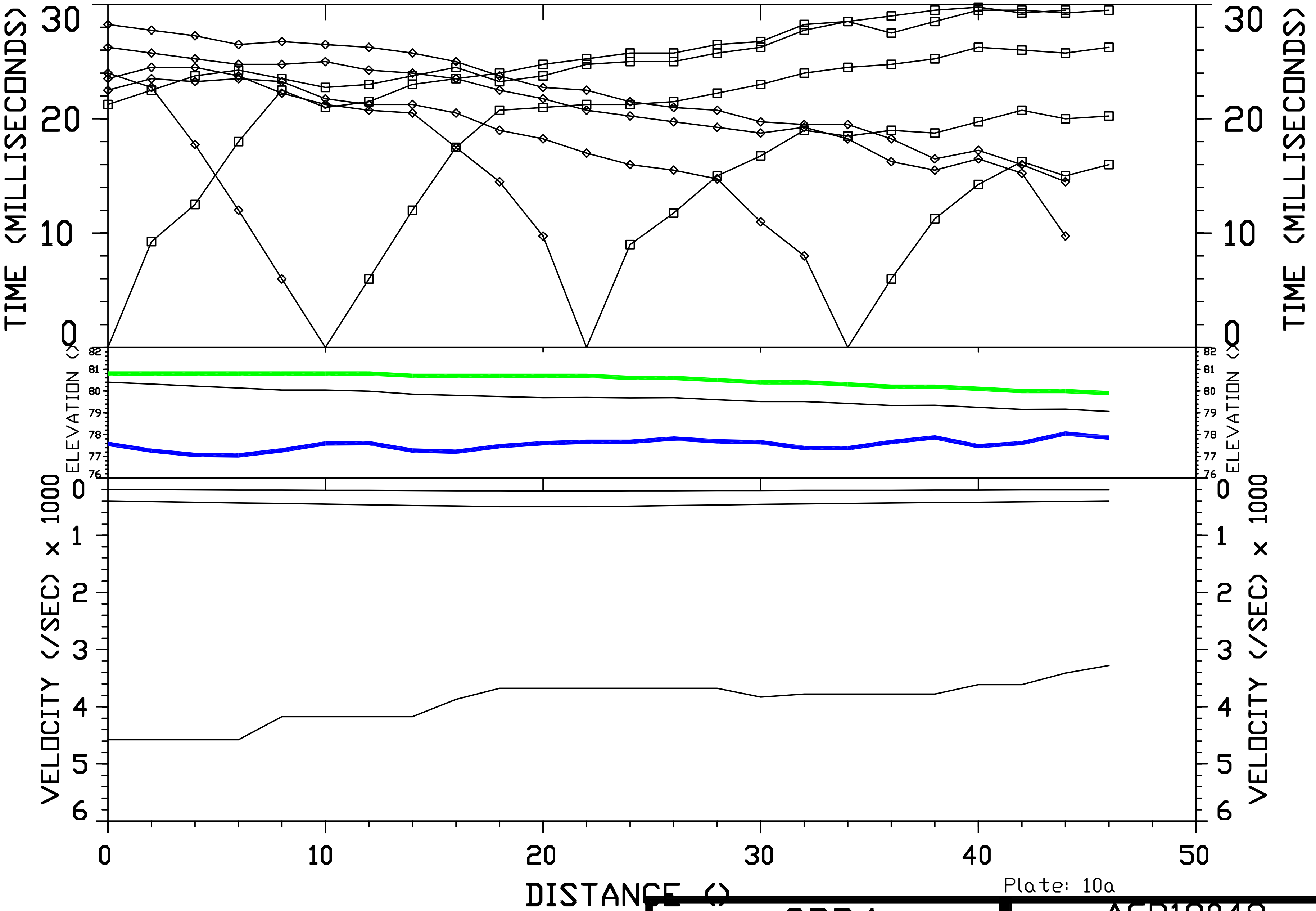


Plate: 10a

for: SDR4	AGP18049
by: APEX Geophysics Ltd.	Brian Daly Transport Site
Data SetS9 — Date: Jan 2019	Dublin
Equipment: Geode — Spread: S9	Azimuth:

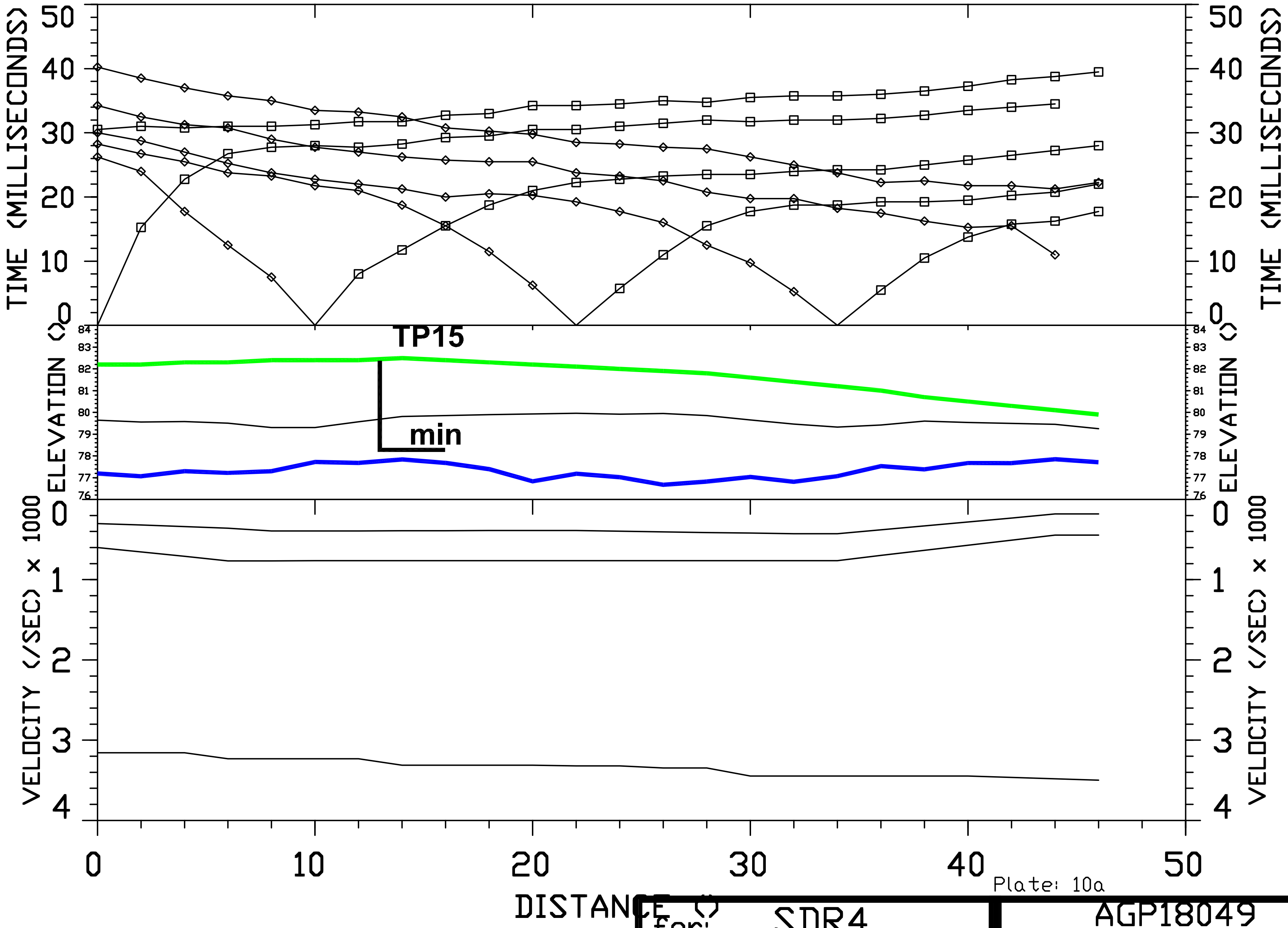


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data Set S10

Date: Jan 2019

Equipment: Geode

Spread: S10

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

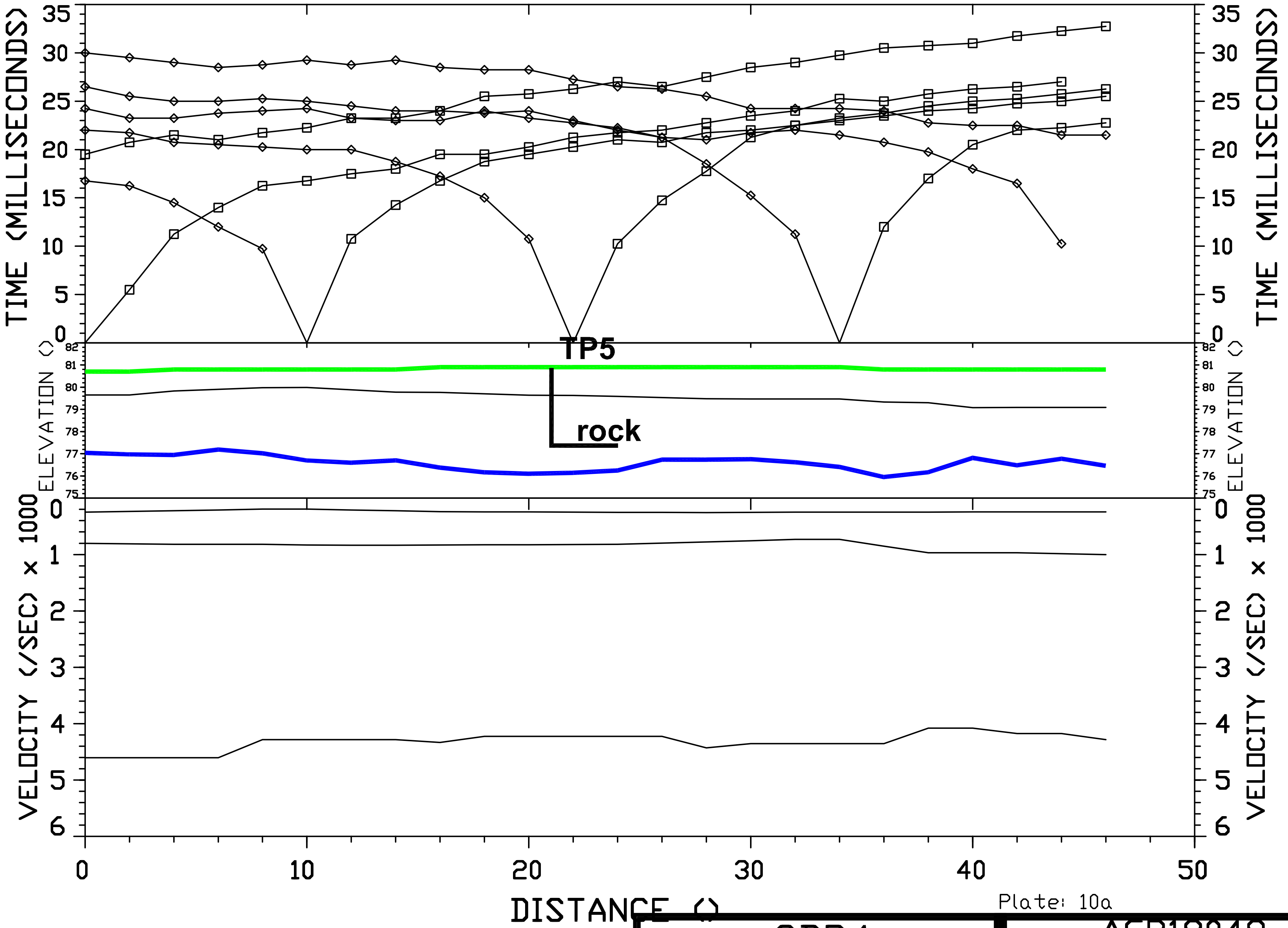


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS11

Date: Jan 2019

Equipment: Geode

Spread: S11

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

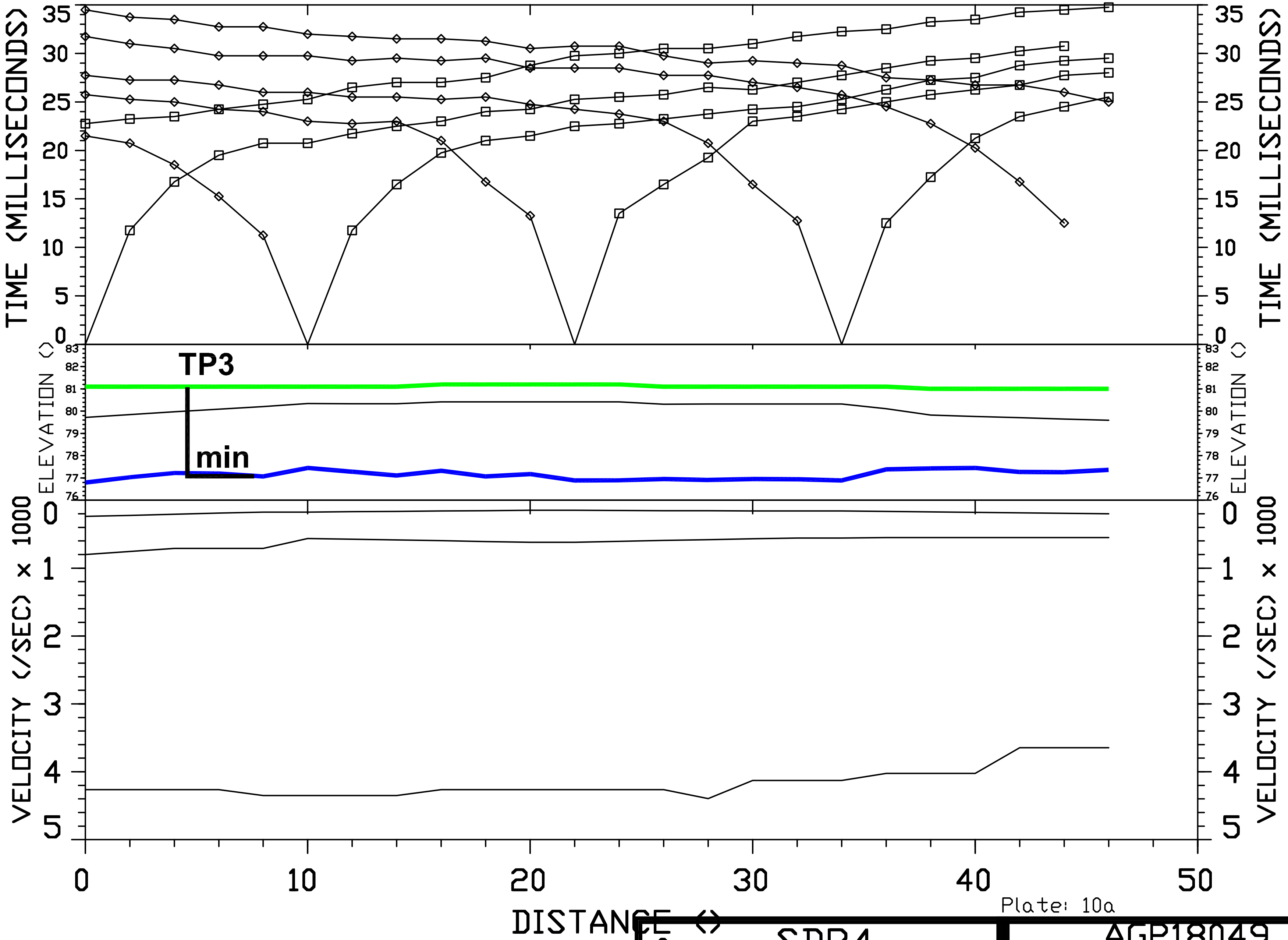


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS12

Date: Jan 2019

Equipment: Geode

Spread: S12

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

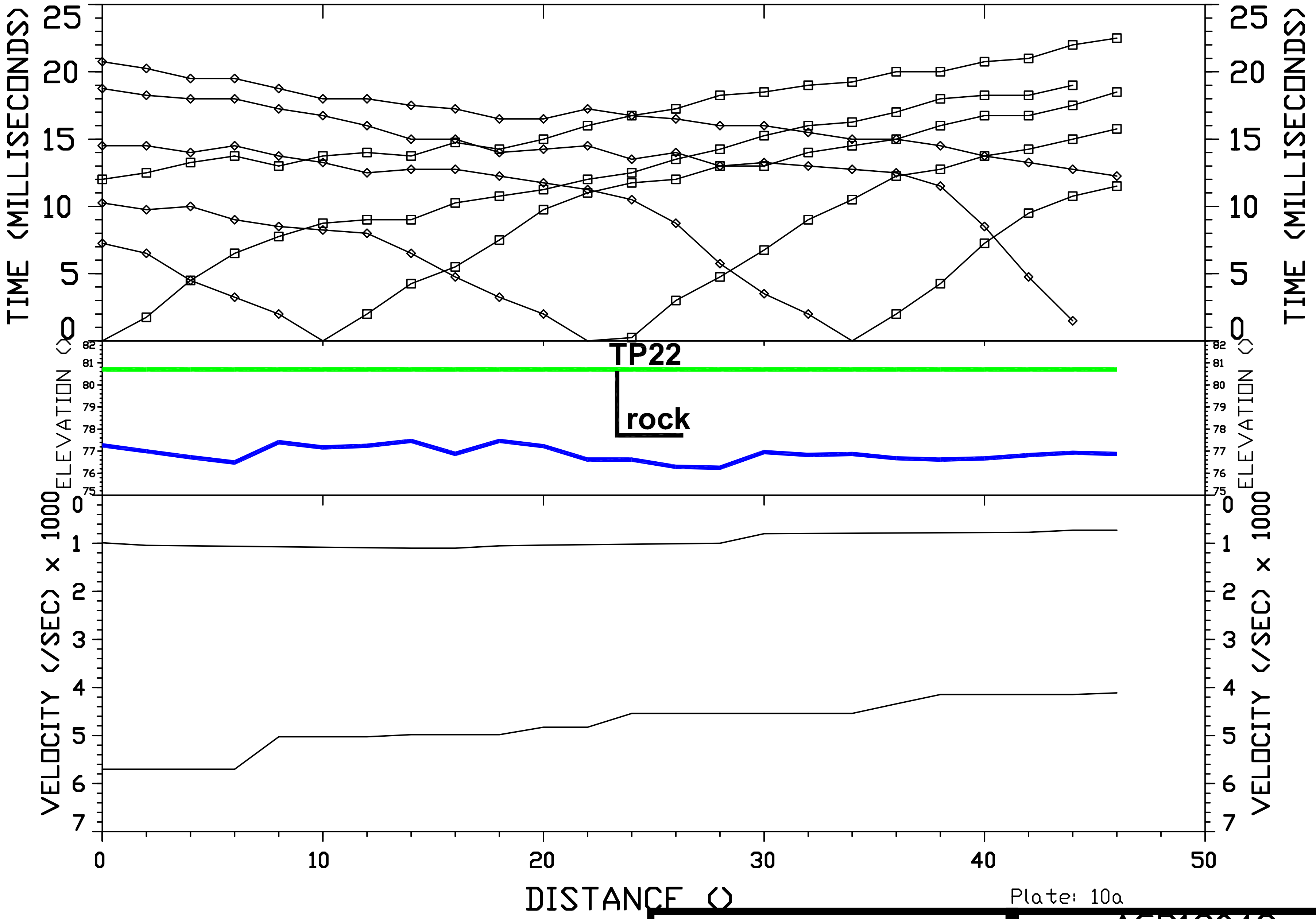


Plate: 10a

for: SDR4
by: APEX Geophysics Ltd.
Data SetS13
Date: Jan 2019
Equipment: Geode
Spread: S13

AGP18049
Brian Daly Transport Site
Dublin
Azimuth:

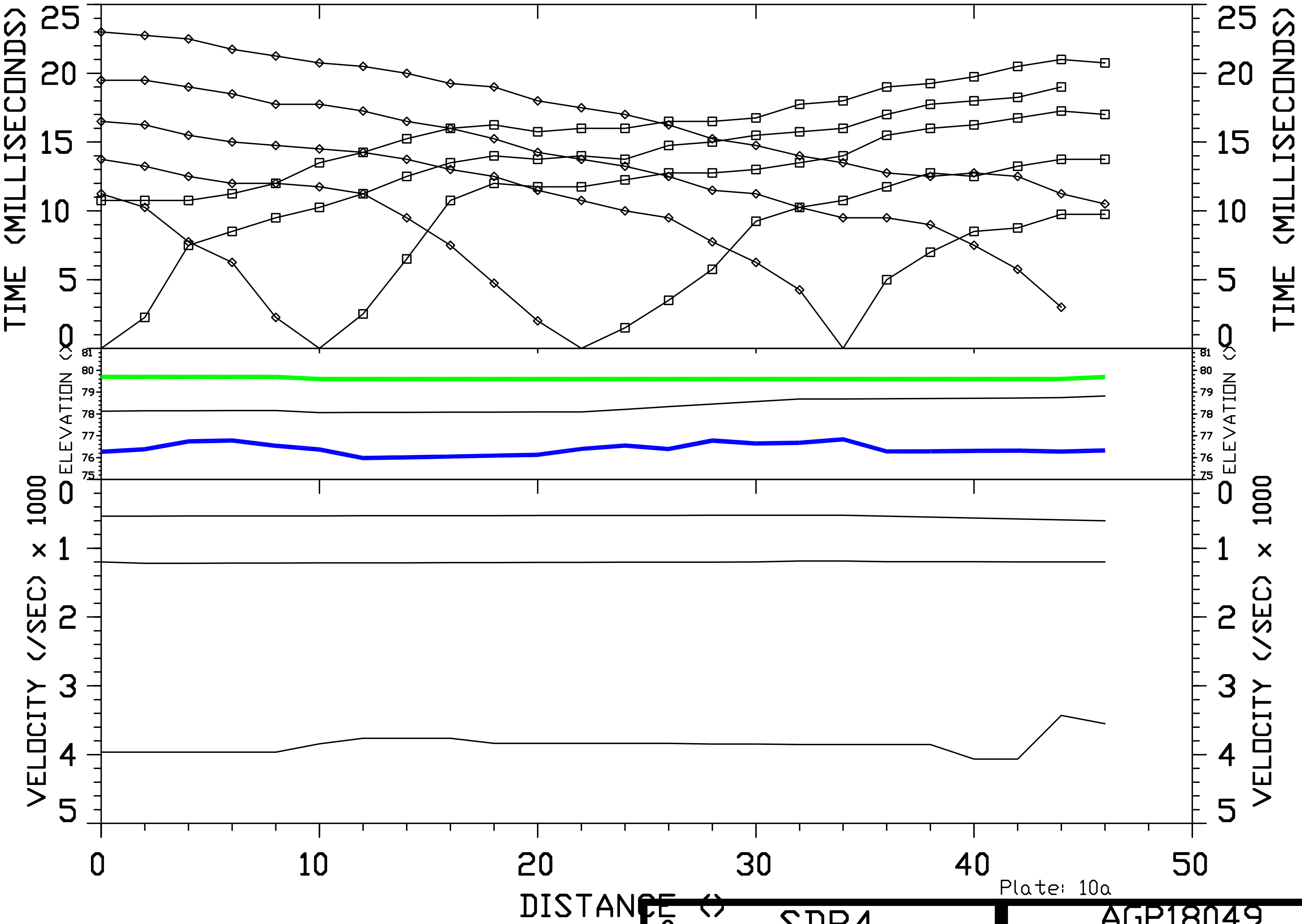


Plate: 10a

for: **SDR4**

by: APEX Geophysics Ltd.

Data SetS14 Date: Jan 2019

Equipment: Geode **Spread: S14**

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

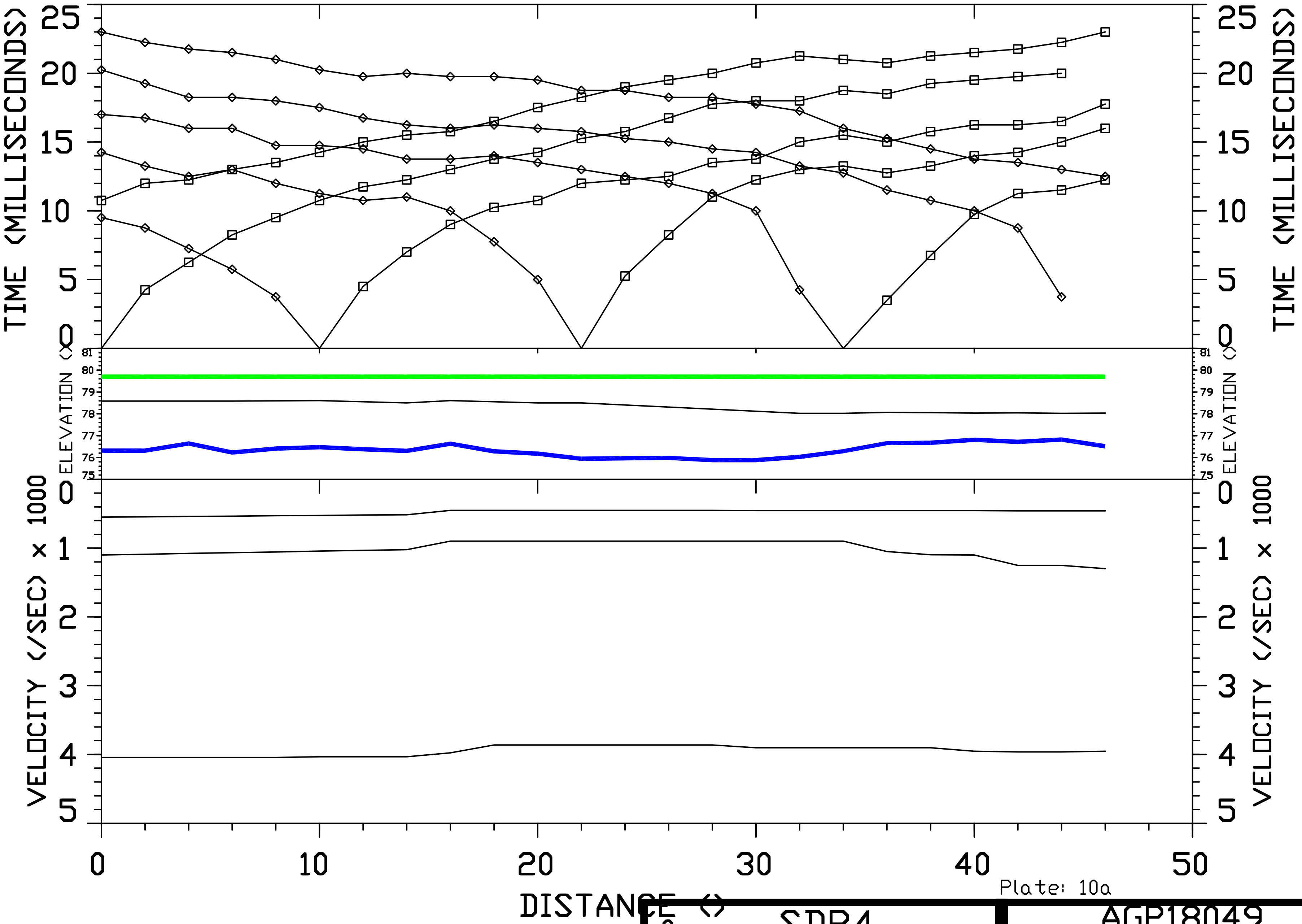


Plate: 10a

for: **SDR4**

by: APEX Geophysics Ltd.

Data SetS15

Date: Jan 2019

Equipment: Geode

Spread: S15

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

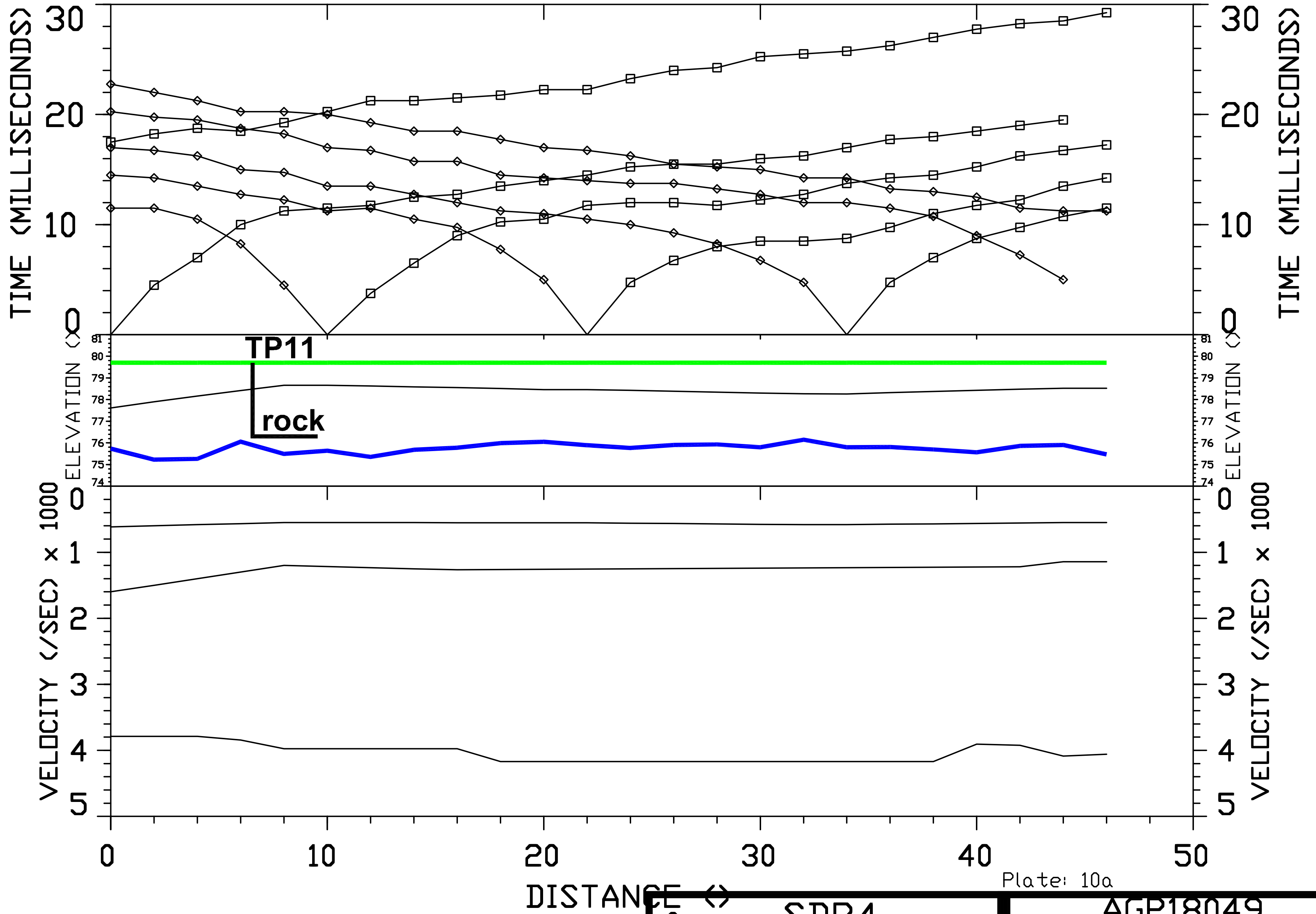


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS16
Date: Jan 2019

Equipment: Geode
Spread: S16

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

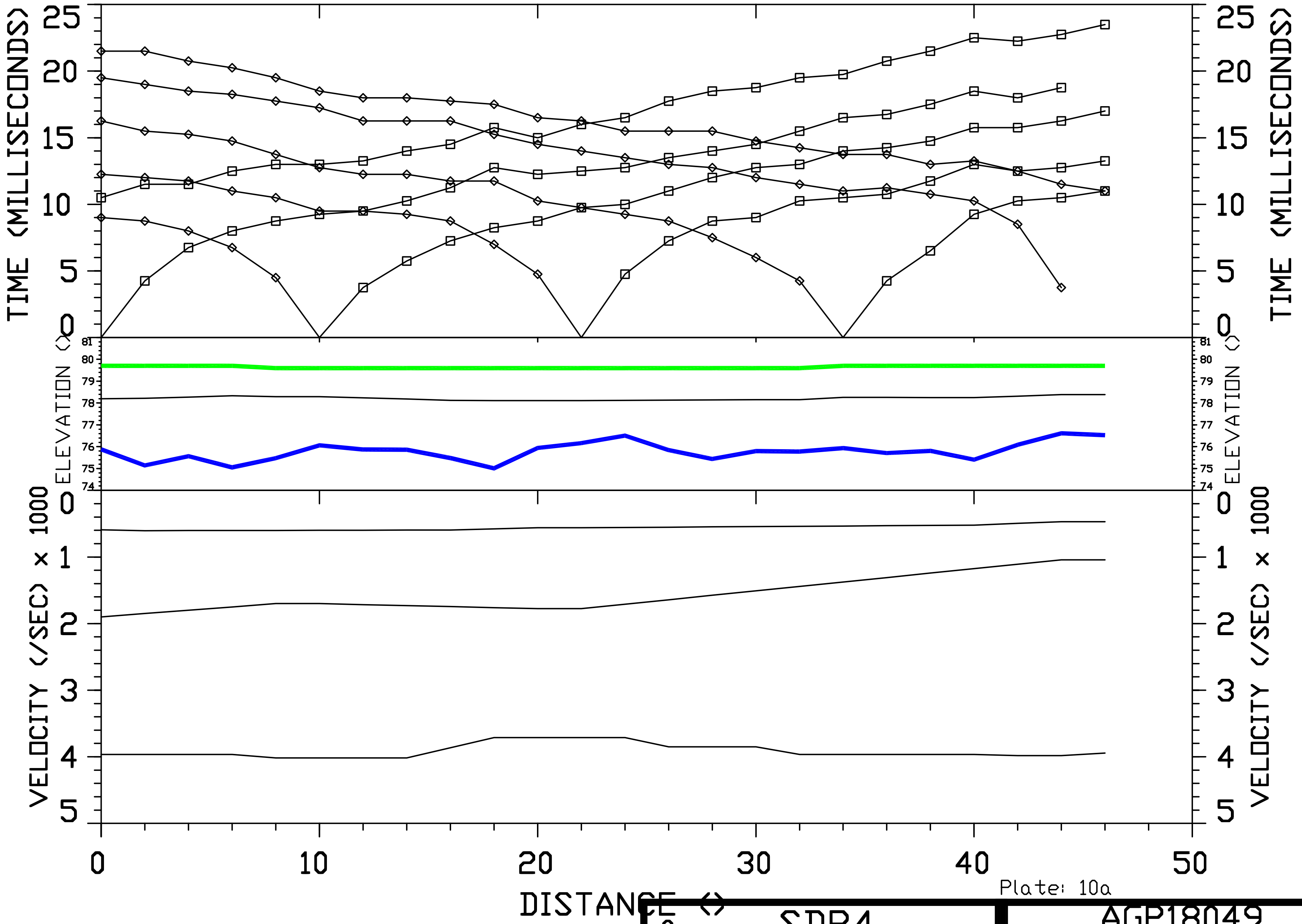


Plate: 10a

for: SDR4	AGP18049
by: APEX Geophysics Ltd.	Brian Daly Transport Site Dublin
Data SetS17 Date: Jan 2019	
Equipment: Geode Spread: S17	Azimuth:

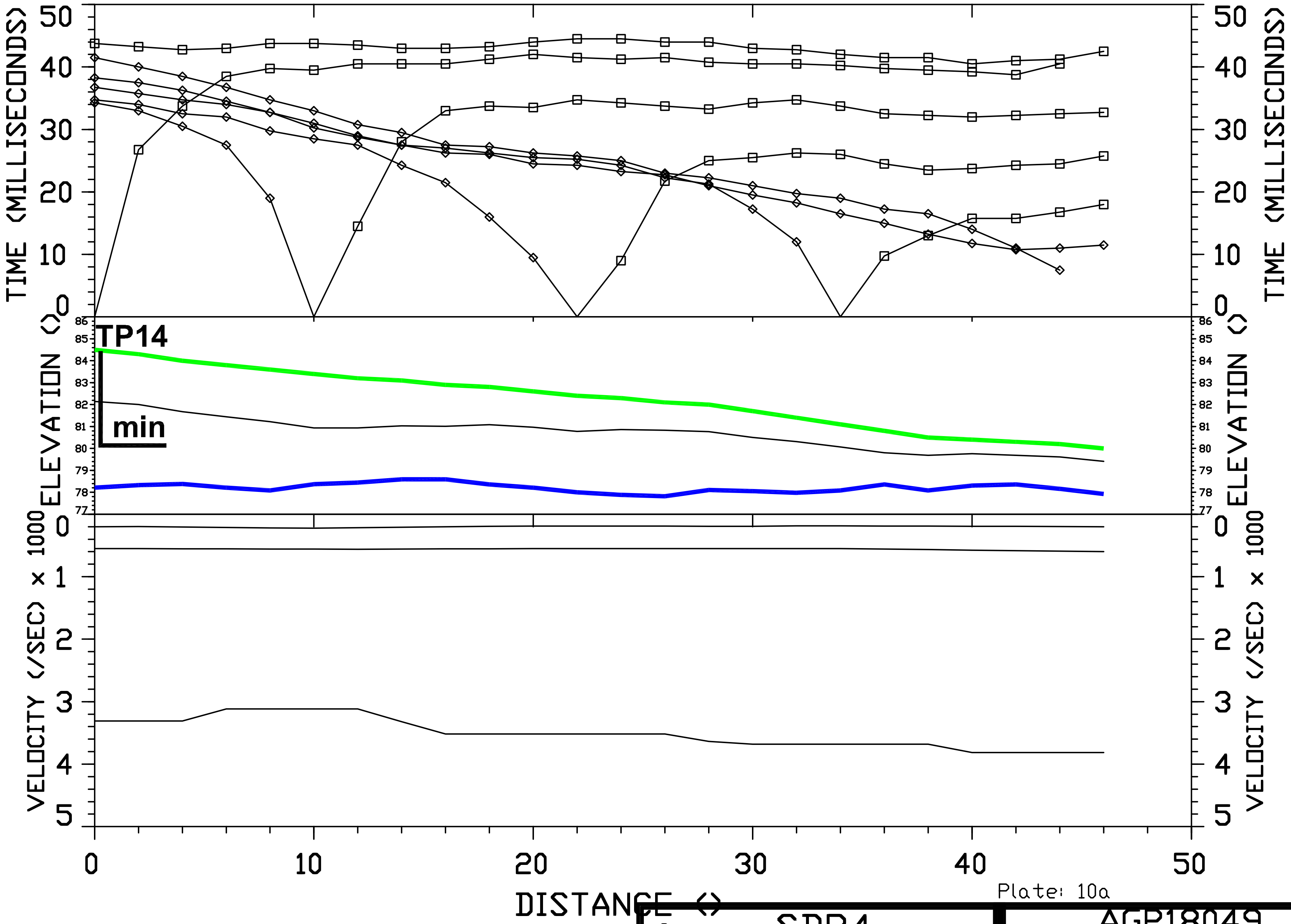


Plate: 10a

for: SDR4		AGP18049
by: APEX Geophysics Ltd.		Brian Daly Transport Site Dublin
Data SetS18	Date: Jan 2019	
Equipment: Geode	Spread: S18	Azimuth:

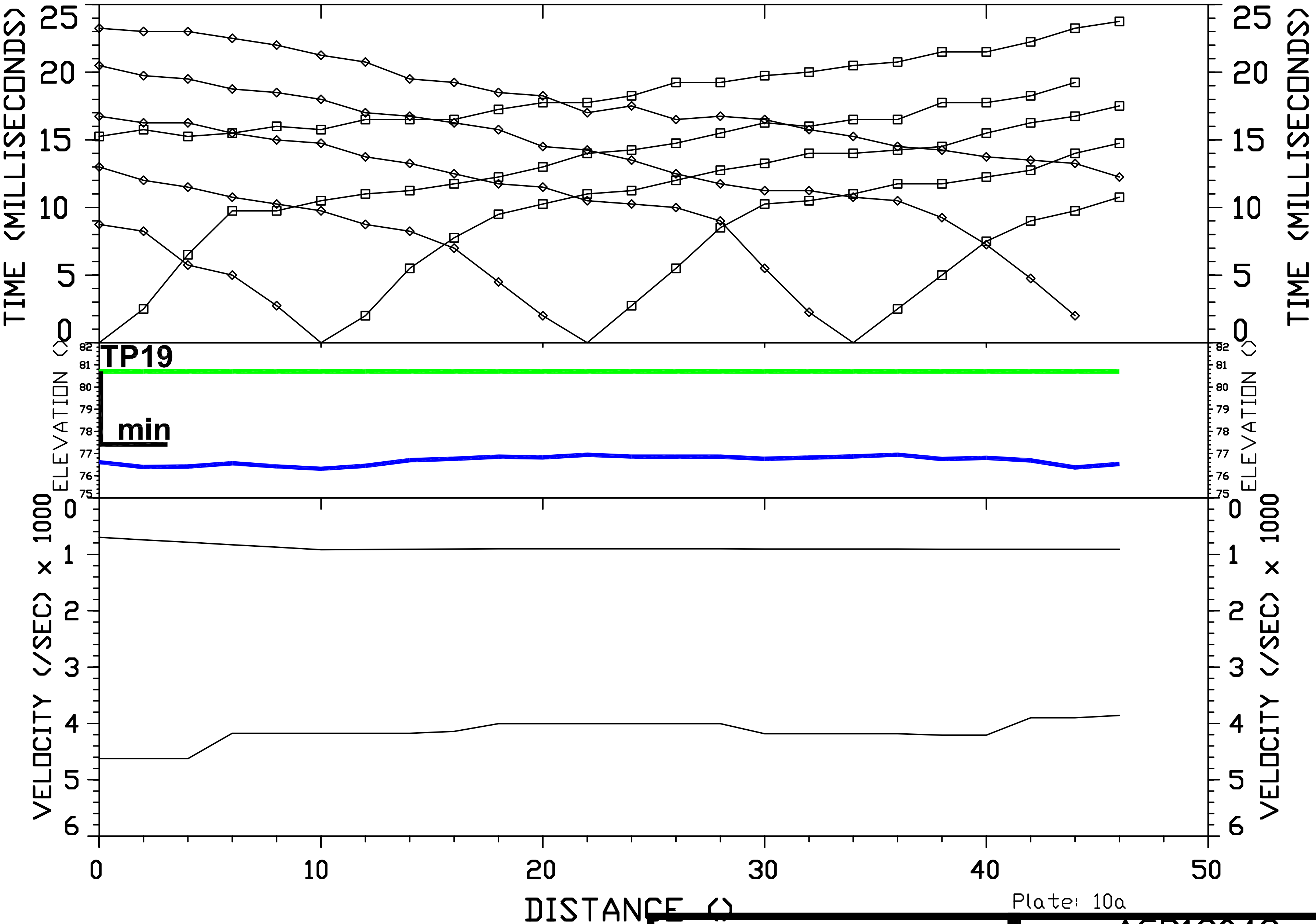


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS19

Date: Jan 2019

Equipment: Geode

Spread: S19

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

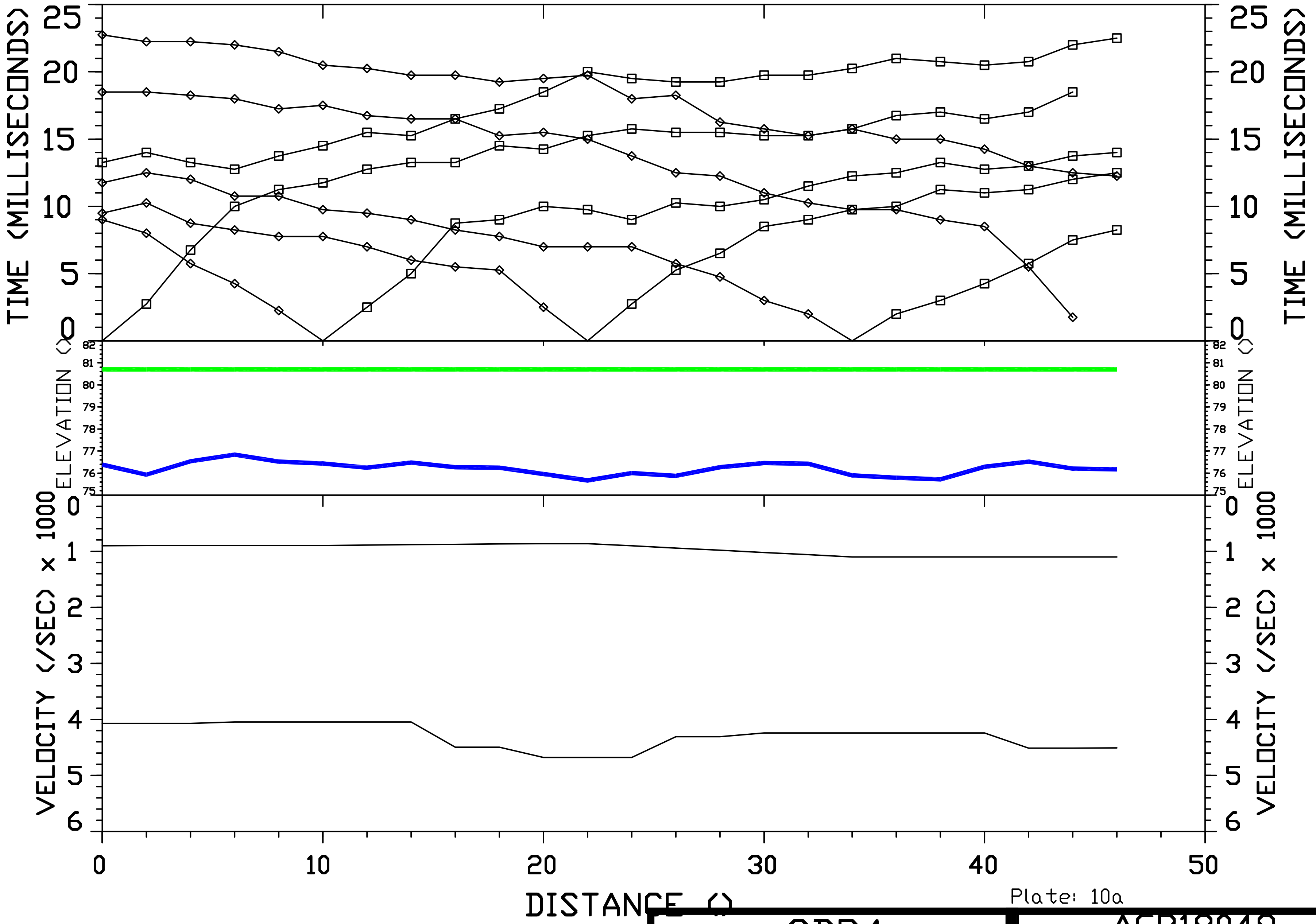


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS20

Date: Jan 2019

Equipment: Geode

Spread: S20

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

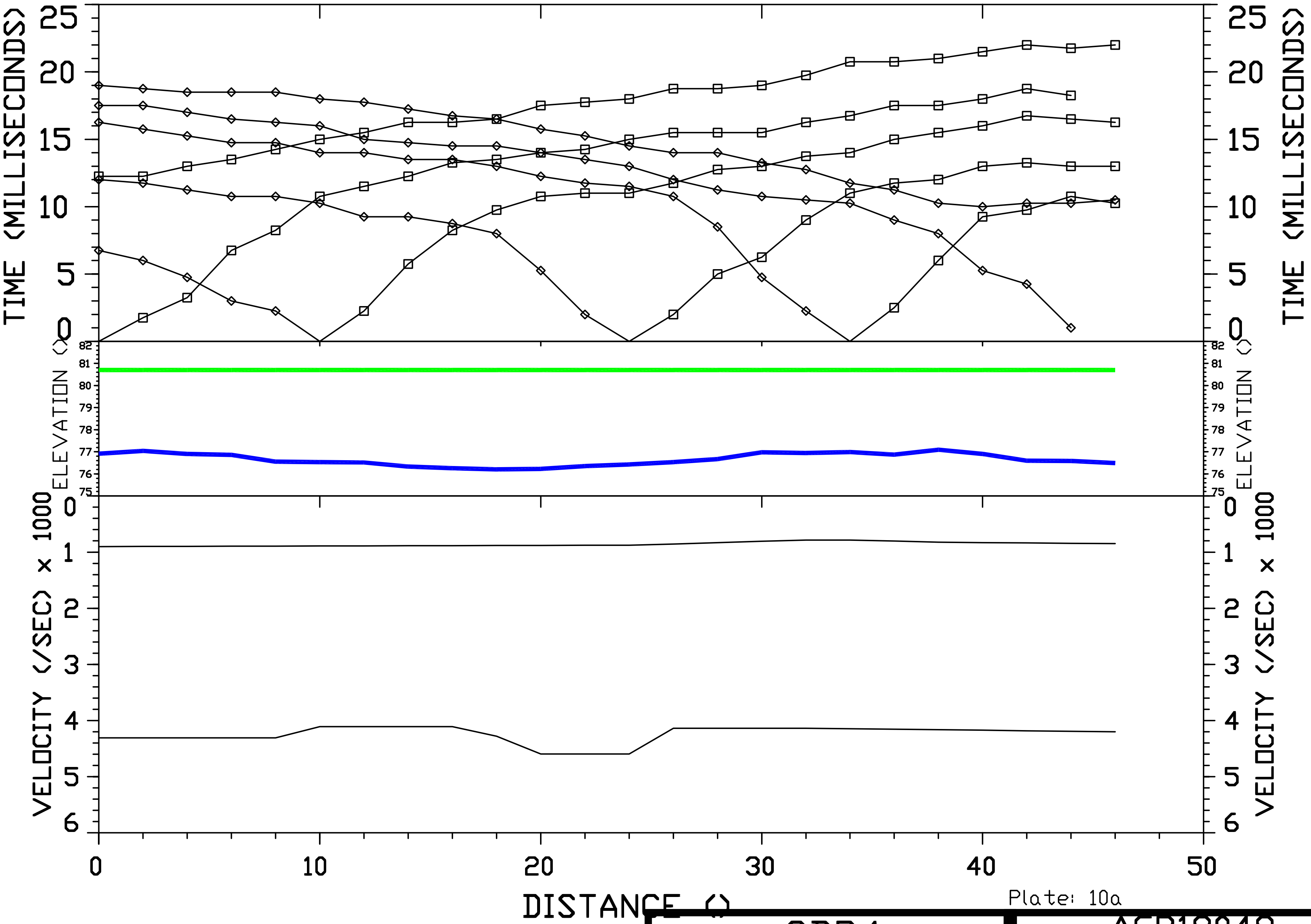


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS21 Date: Jan 2019

Equipment: Geode Spread: S21

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

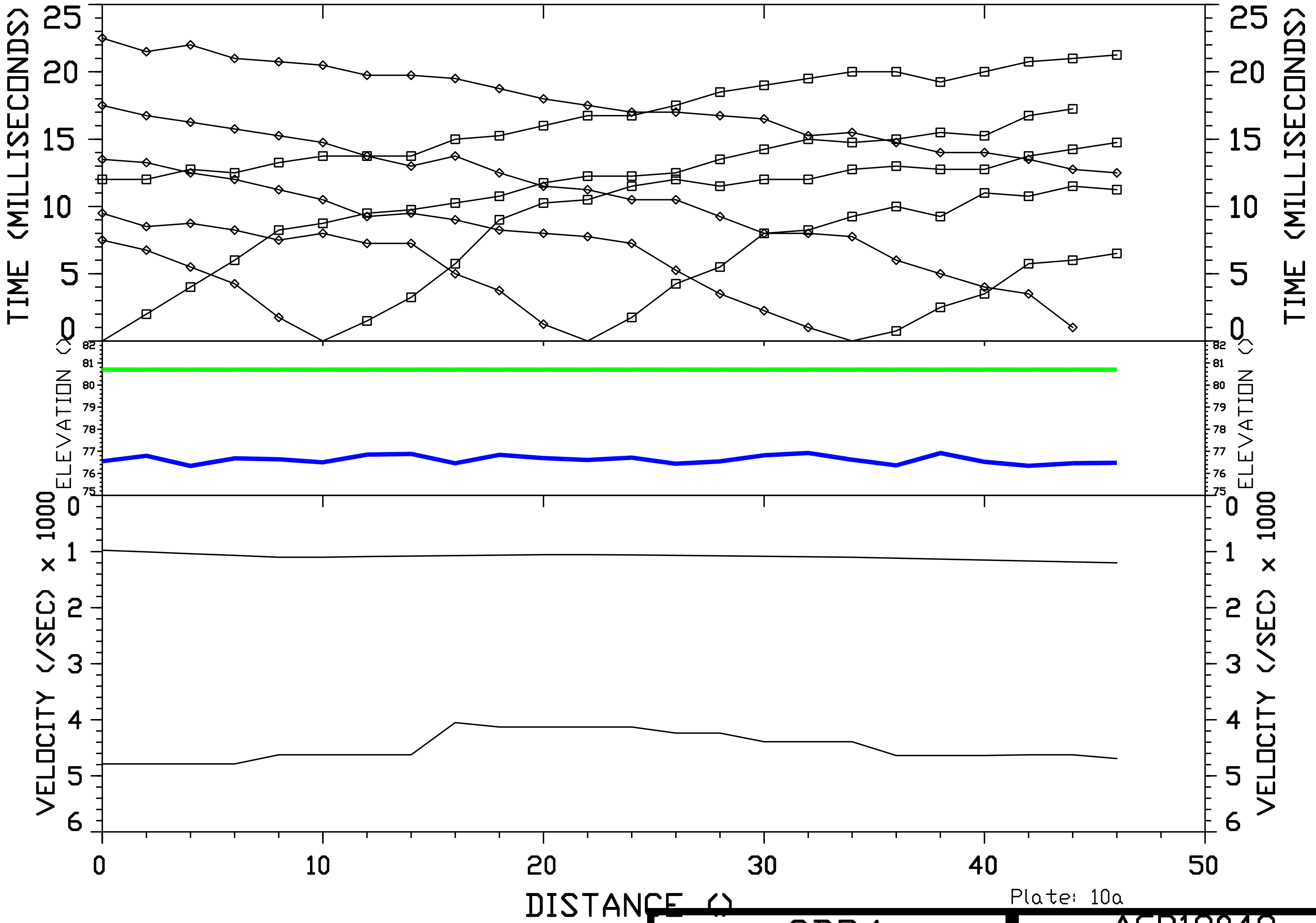


Plate: 10a

for: SDR4

by: APEX Geophysics Ltd.

Data SetS22 Date: Jan 2019

Equipment: Geode Spread: S22

AGP18049

Brian Daly Transport Site

Dublin

Azimuth:

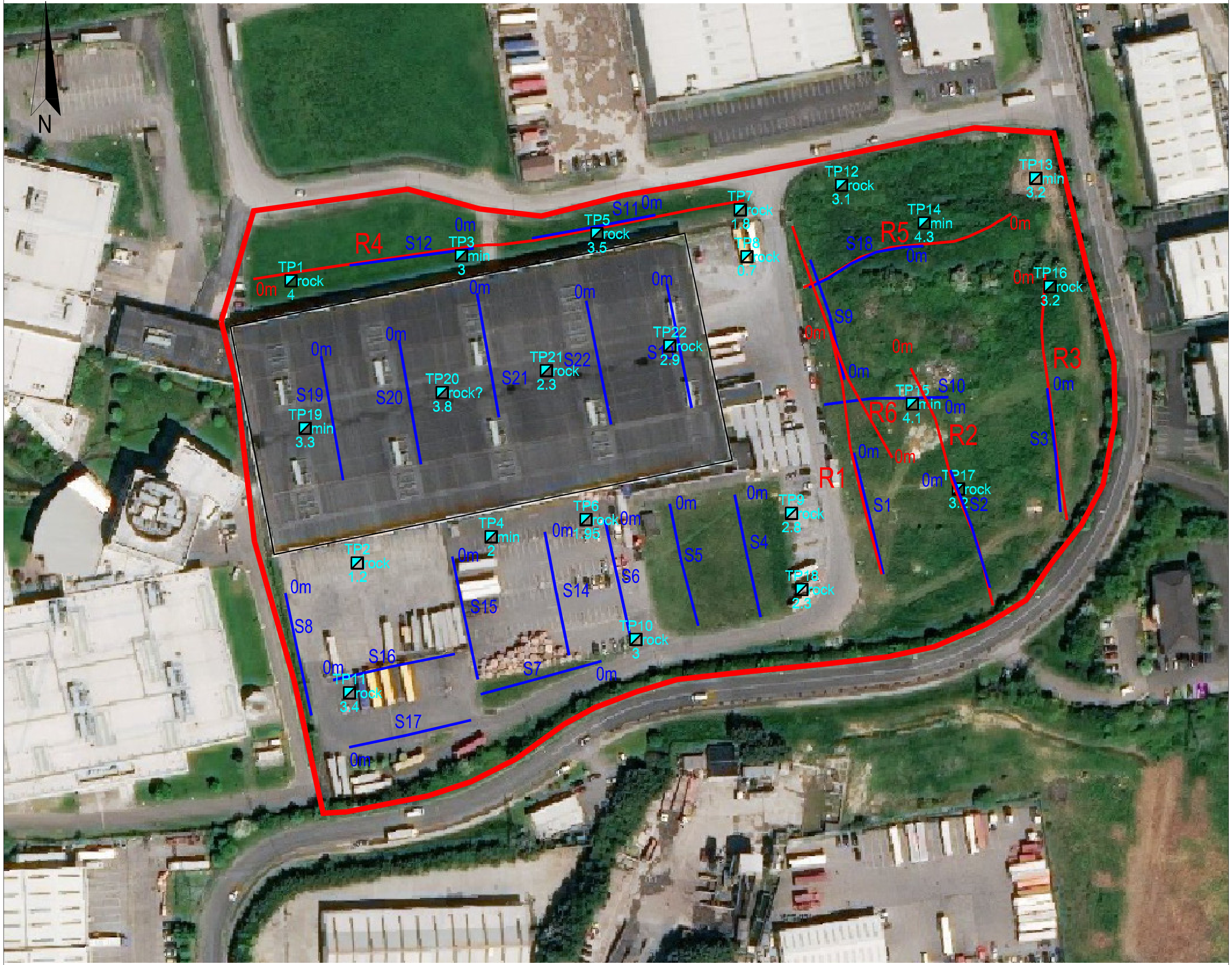
APPENDIX C: DRAWINGS

The information derived from the geophysical investigation as well as correlation with the available direct investigation is presented in the following drawings:

AGP18049_01	Aerial Photo - Geophysical Locations	1:2000	@ A4
AGP18049_02	Depth to Bedrock (m bgl)	1:2000	@ A4
AGP18049_03	Bedrock Surface (mOD)	1:2000	@ A4
AGP18049_04	Bedrock Seismic Velocity (metres/second)	1:2000	@ A4
AGP18049_05	Summary Map	1:2000	@ A4
AGP18049_R1	ERT R1 & Seismic S1 and S9, Results & Interpretation	1: 750	@ A4
AGP18049_R2	ERT R2 & Seismic S2, Results & Interpretation	1: 750	@ A4
AGP18049_R3	ERT R3 & Seismic S3, Results & Interpretation	1: 750	@ A4
AGP18049_R4	ERT R4 & Seismic S11 and S12, Results & Interpretation	1: 1000	@ A4
AGP18049_R5	ERT R5 & Seismic S18, Results & Interpretation	1: 750	@ A4
AGP18049_R6	ERT R6 & Seismic S9, Results & Interpretation	1: 750	@ A4

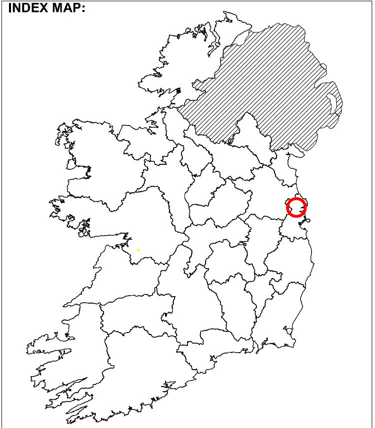
FIGURE 1: AERIAL PHOTO - GEOPHYSICAL LOCATIONS

SCALE 1:2000



OSI Licence No. EN 0038311 © OSI/Government of Ireland

INDEX MAP:



LEGEND:

🟥 Site

R1 2D resistivity profile

S1 Seismic refraction profile

TP1 Existing Trial Pit with depth in metres to rock or minimum depth (min.)

'The information displayed here is to be used in conjunction with Report AGP18049_01 Report on the Geophysical Investigation at Brian Daly Transport Site for SDR4. APEX Geophysics Ltd. 24th January 2019'

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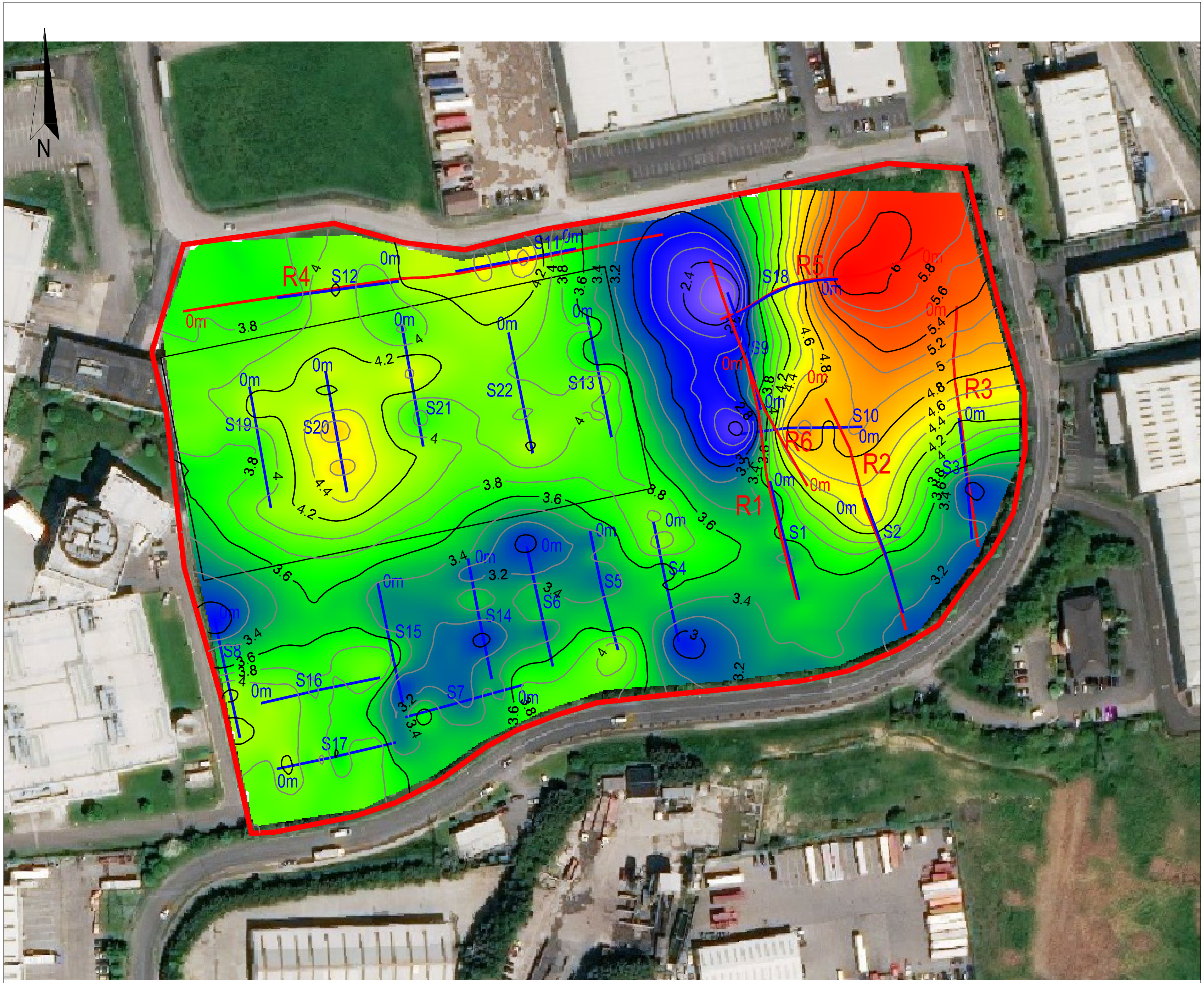
PROJECT:	BRIAN DALY TRANSPORT SITE GEOPHYSICAL SURVEY
CLIENT.:	SDR4
DRAWING NO:	AGP18049_01
SCALE:	AS INDICATED @ A4
DATE:	23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: DEPTH TO BEDROCK (m bgl)

SCALE 1:2000



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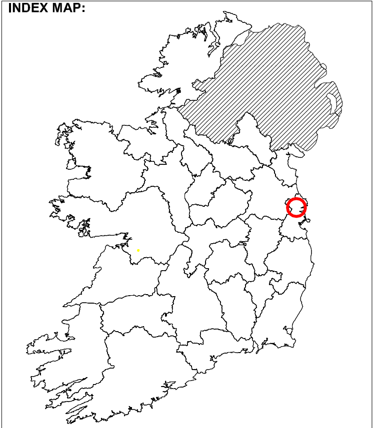
INDEX MAP:



LEGEND:

🟥 Site

R1 2D resistivity profile

S1 Seismic refraction profile

'The contour lines shown are based on interpolation and extrapolation between fixed data seismic points and the number and location of these should be referred to when using this map.

The information displayed here is to be used in conjunction with Report AGP18049_01, Report on the Geophysical Investigation at Brian Daly Transport Site for SDR4. APEX Geophysics Ltd. 24th January 2019.'

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_02

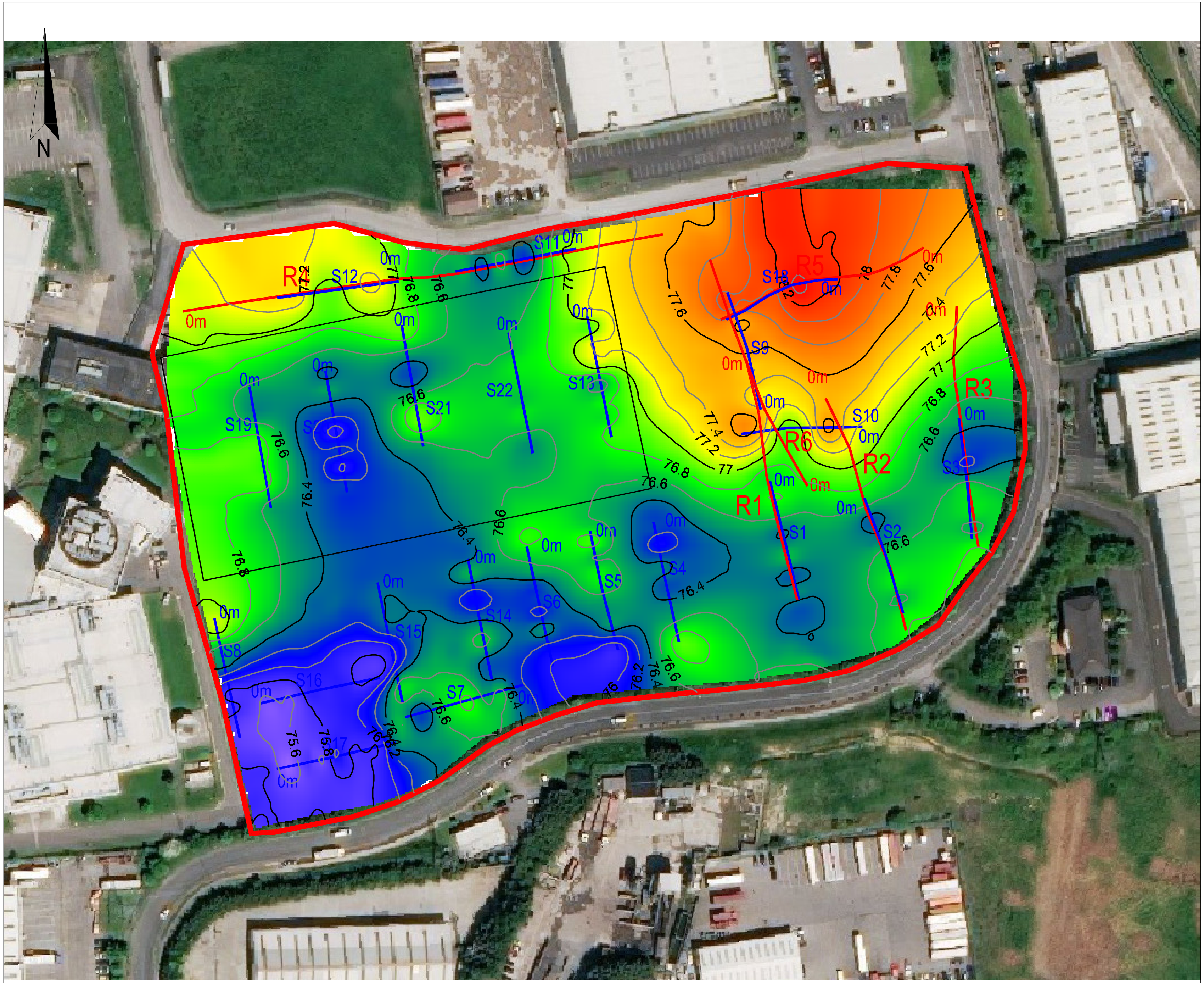
SCALE: AS INDICATED @ A4

DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: BEDROCK SURFACE (mOD)

SCALE 1:2000



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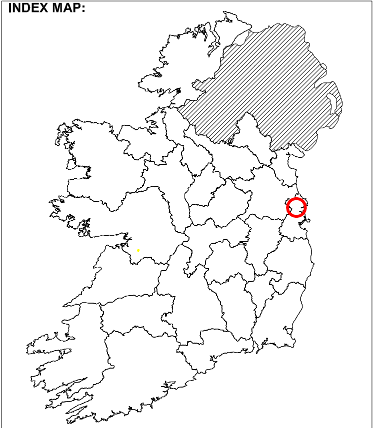
INDEX MAP:



LEGEND:

🟥 Site

R1 2D resistivity profile

S1 Seismic refraction profile

'The contour lines shown are based on interpolation and extrapolation between fixed data seismic points and the number and location of these should be referred to when using this map.

The information displayed here is to be used in conjunction with Report AGP18049_01, Report on the Geophysical Investigation at Brian Daly Transport Site for SDR4. APEX Geophysics Ltd. 24th January 2019.'

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_03

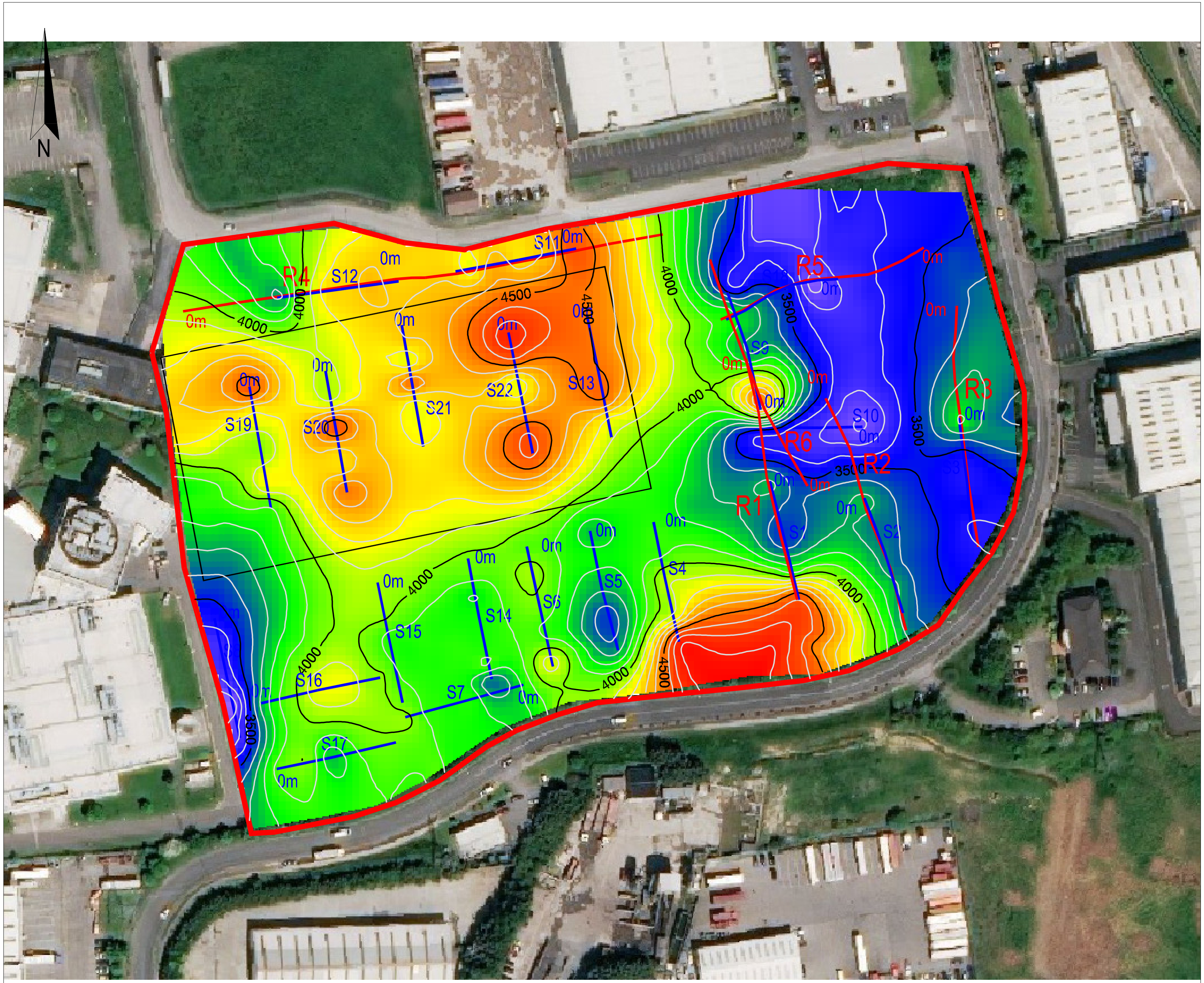
SCALE: AS INDICATED @ A4

DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: BEDROCK SEISMIC VELOCITY (metres/second)

SCALE 1:2000



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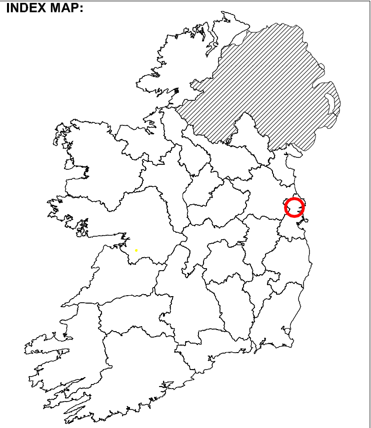
INDEX MAP:



LEGEND:

🟥 Site

R1 2D resistivity profile

S1 Seismic refraction profile

'The contour lines shown are based on interpolation and extrapolation between fixed data seismic points and the number and location of these should be referred to when using this map.

The information displayed here is to be used in conjunction with Report AGP18049_01, Report on the Geophysical Investigation at Brian Daly Transport Site for SDR4. APEX Geophysics Ltd. 24th January 2019.'

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_04

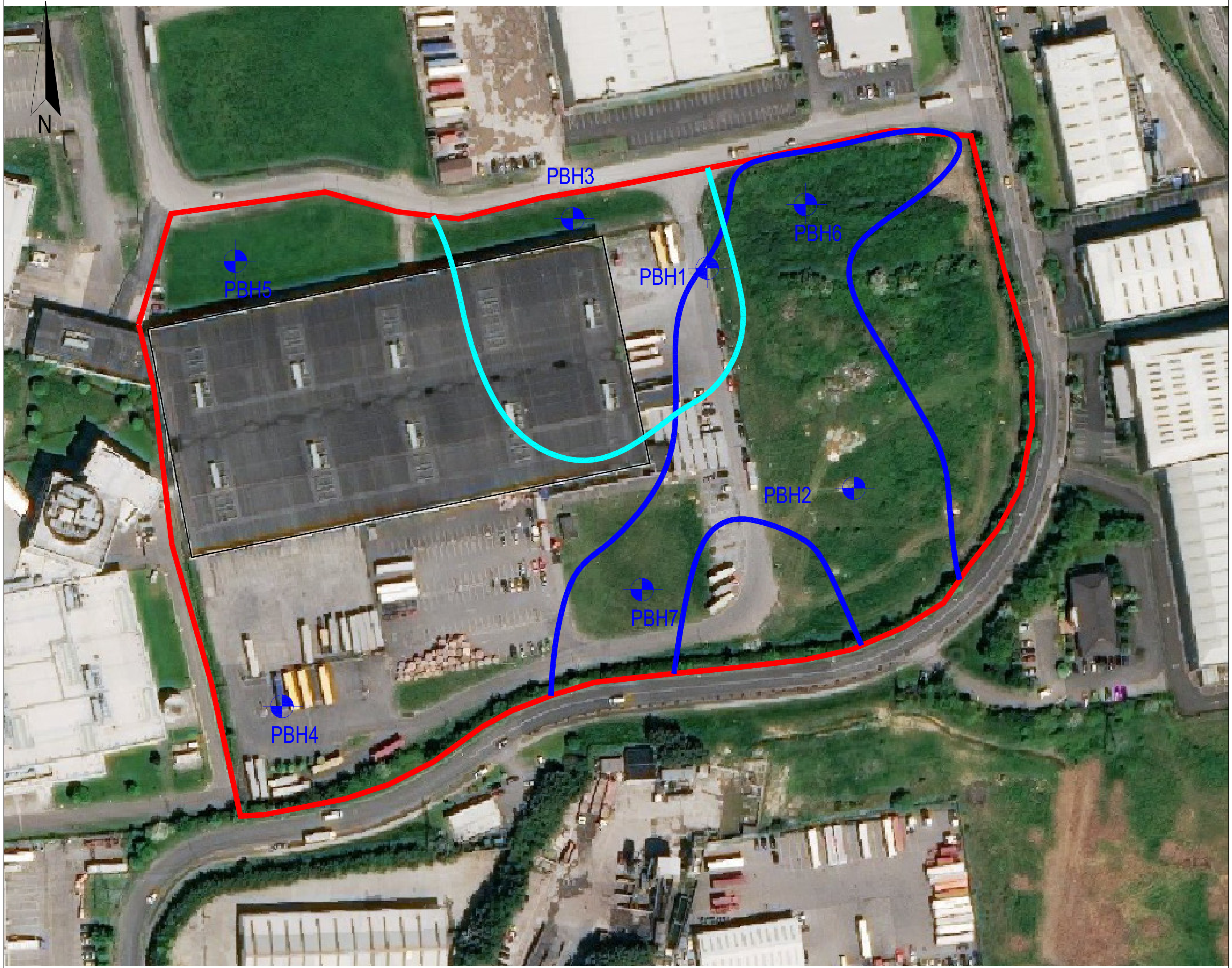
SCALE: AS INDICATED @ A4

DATE: 23-01-2019

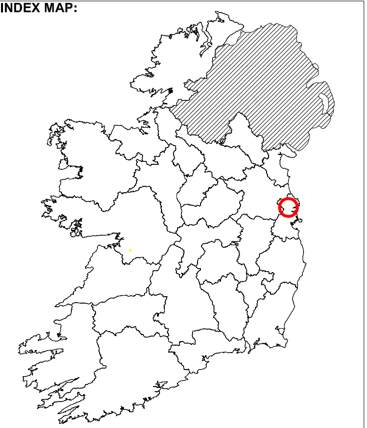
Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: SUMMARY MAP

SCALE 1:2000



INDEX MAP:



LEGEND:

🟥 Site

Shallow bedrock zone from Geophysics and Trial Pits.

Rock outcrop zone on GSI Sheet

PBH2 ⊕ Proposed Borehole

'The information displayed here is to be used in conjunction with Report AGP18049_01, Report on the Geophysical Investigation at Brian Daly Transport Site for SDR4. APEX Geophysics Ltd. 24th January 2019.'

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_05

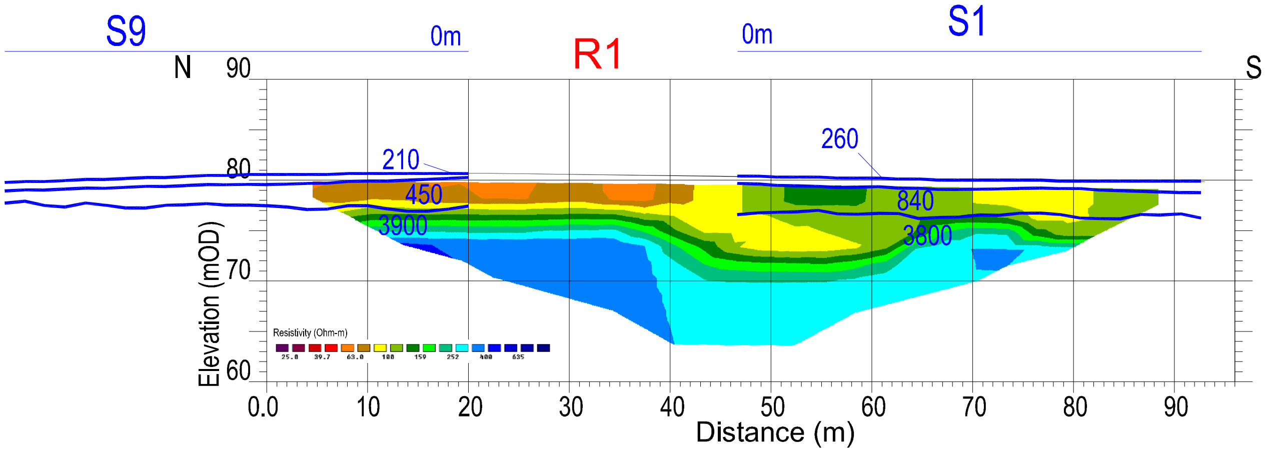
SCALE: AS INDICATED @ A4

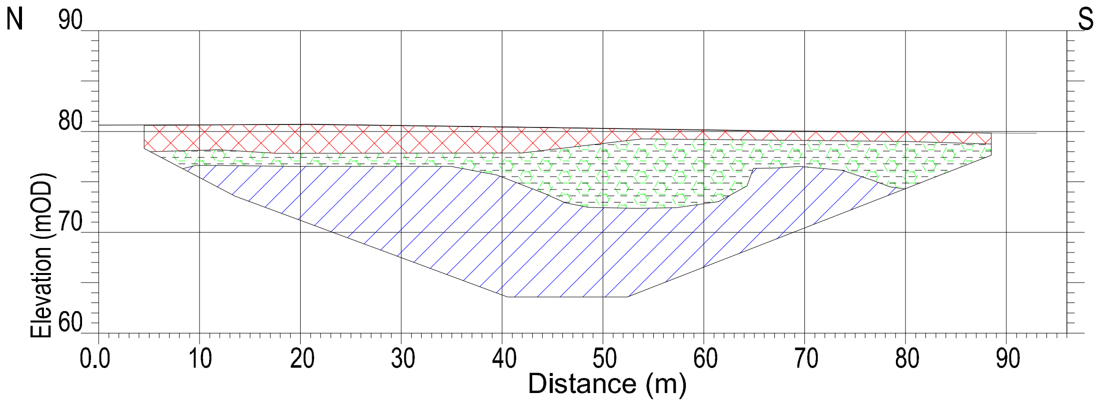
DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: ERT PROFILE R1 & SEISMIC PROFILES S1 AND S9, RESULTS AND INTERPRETATION

SCALE 1:750





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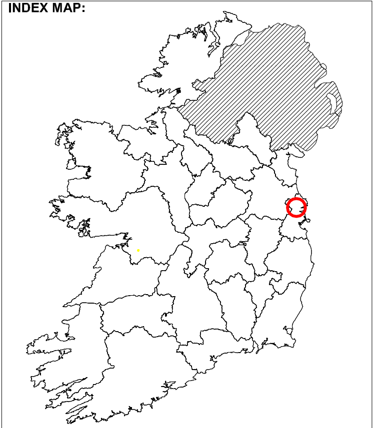

LEGEND:

- ☒ MADE GROUND
- ▨ Gravelly Silty CLAY
- ▨ MUDSTONE/LIMESTONE
- 260 Seismic velocity in m/s
- TP1 Existing Trial Pit with depth to rock or minimum depth (min.)

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PROJECT: BRIAN DALY TRANSPORT SITE GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_R1

SCALE: AS INDICATED @ A4

DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: ERT PROFILE R2 & SEISMIC PROFILE S2, RESULTS AND INTERPRETATION

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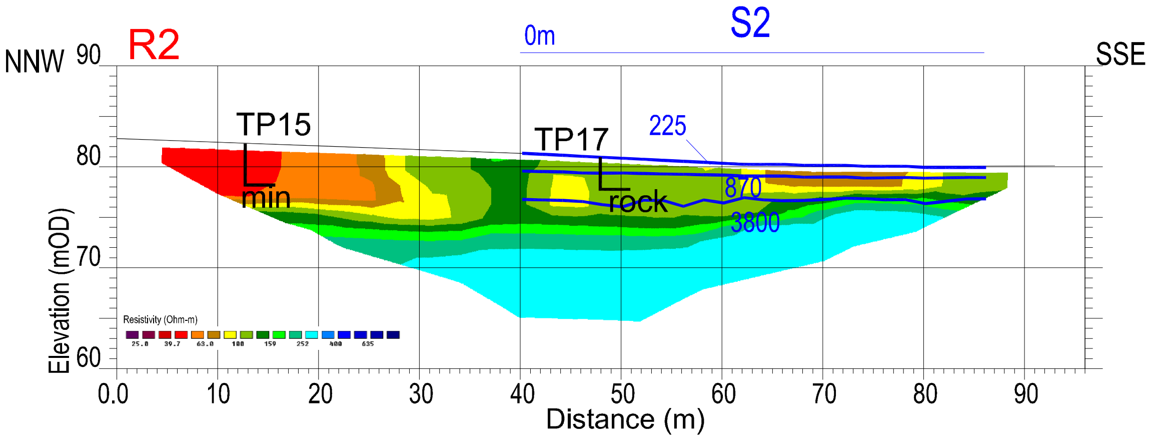

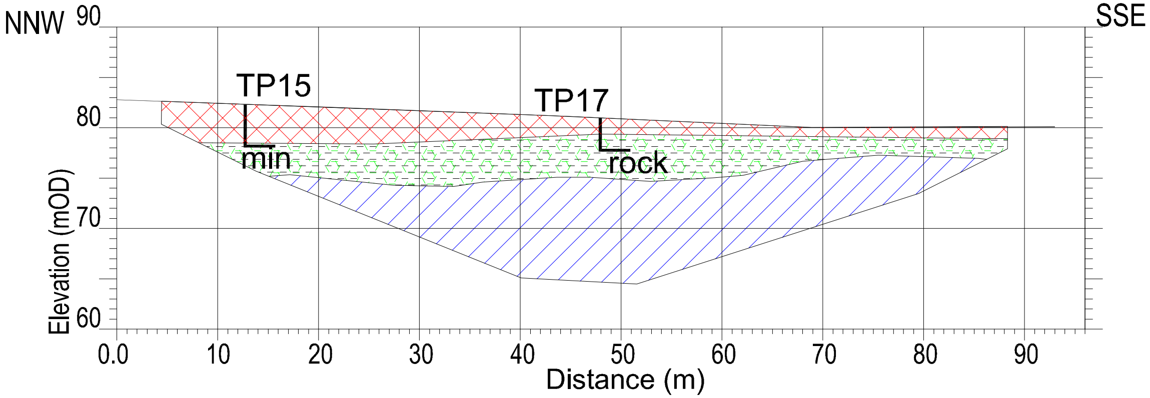

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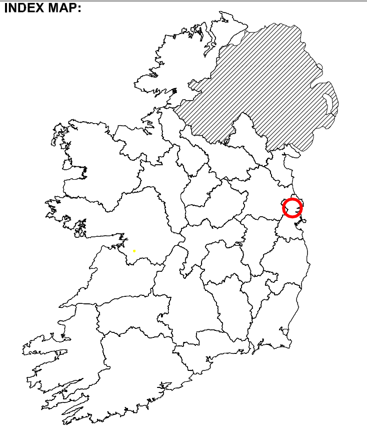
INDEX MAP:



LEGEND:

▨	MADE GROUND
▨	Gravelly Silty CLAY
▨	MUDSTONE/LIMESTONE
260	Seismic velocity in m/s
TP1	Existing Trial Pit with depth to rock or minimum depth (min.)

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_R2

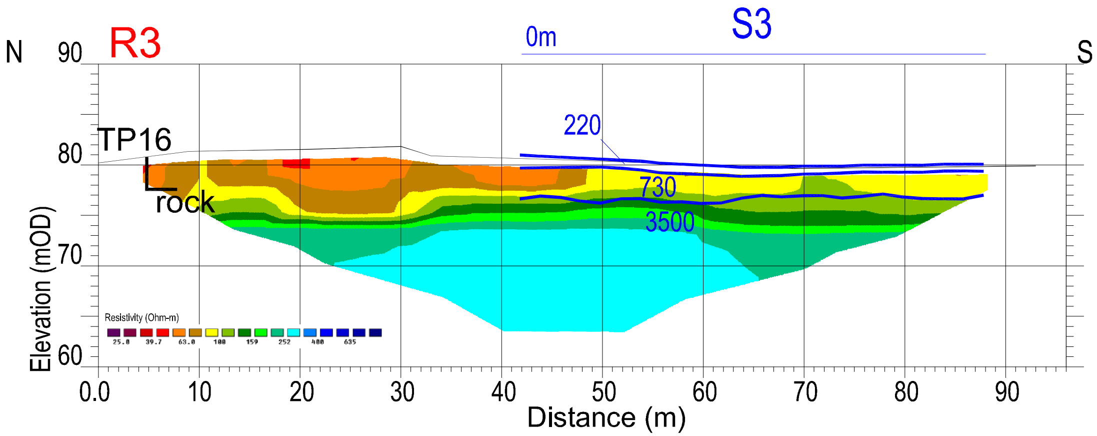
SCALE: AS INDICATED @ A4

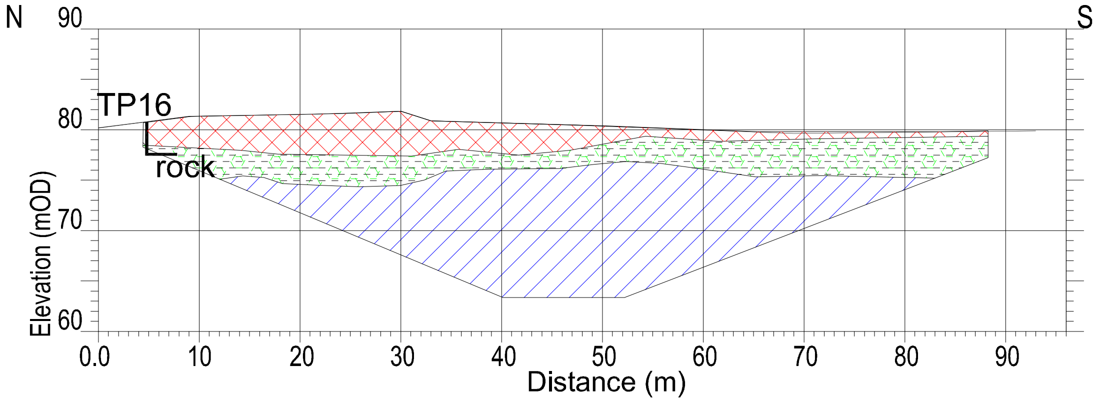
DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: ERT PROFILE R3 & SEISMIC PROFILE S3, RESULTS AND INTERPRETATION

SCALE 1:750





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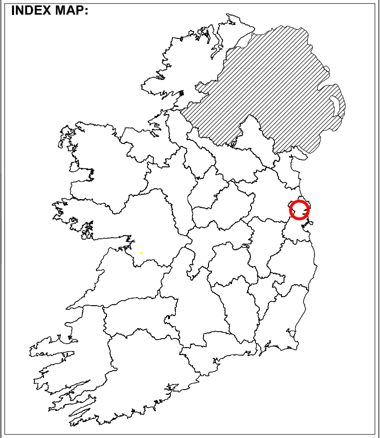

LEGEND:

▨ MADE GROUND

▨ Gravelly Silty CLAY

▨ MUDSTONE/LIMESTONE

260 Seismic velocity in m/s

TP1 Existing Trial Pit with depth to rock or minimum depth (min.)

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_R3

SCALE: AS INDICATED @ A4

DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
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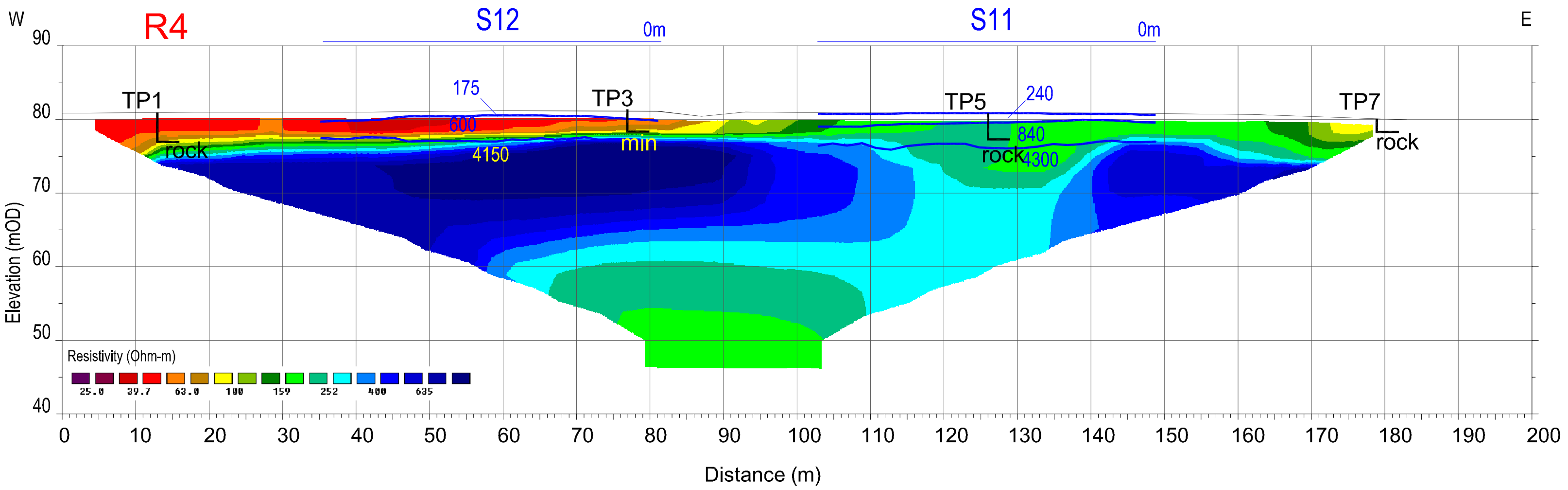
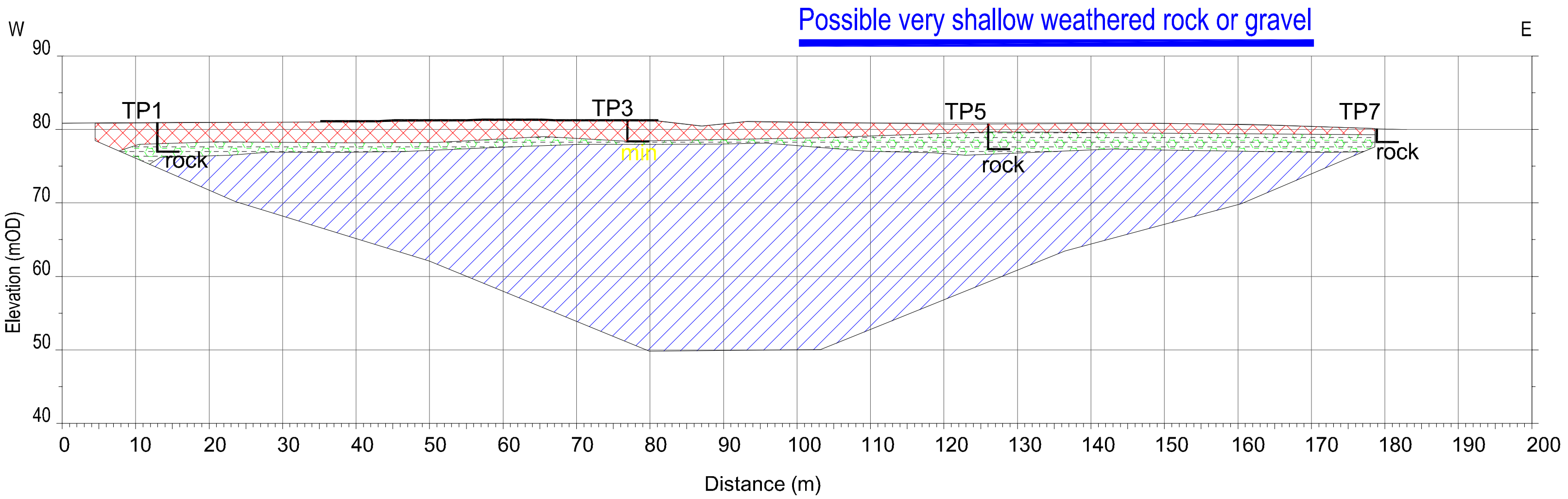
FIGURE 1: ERT PROFILE R4 & SEISMIC PROFILES S11 AND S12, RESULTS AND INTERPRETATION

SCALE 1:1000





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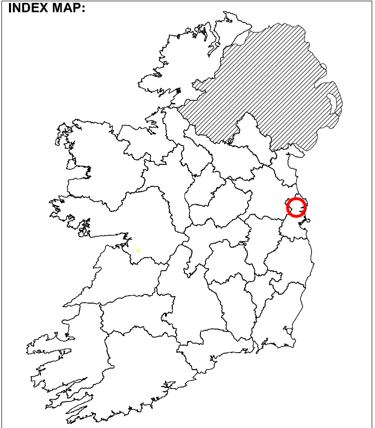

LEGEND:

▨ MADE GROUND

▨ Gravelly Silty CLAY

▨ MUDSTONE/LIMESTONE

260 Seismic velocity in m/s

TP1 Existing Trial Pit with depth to rock or minimum depth (min.)

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_R4

SCALE: AS INDICATED @ A4

DATE: 23-01-2019

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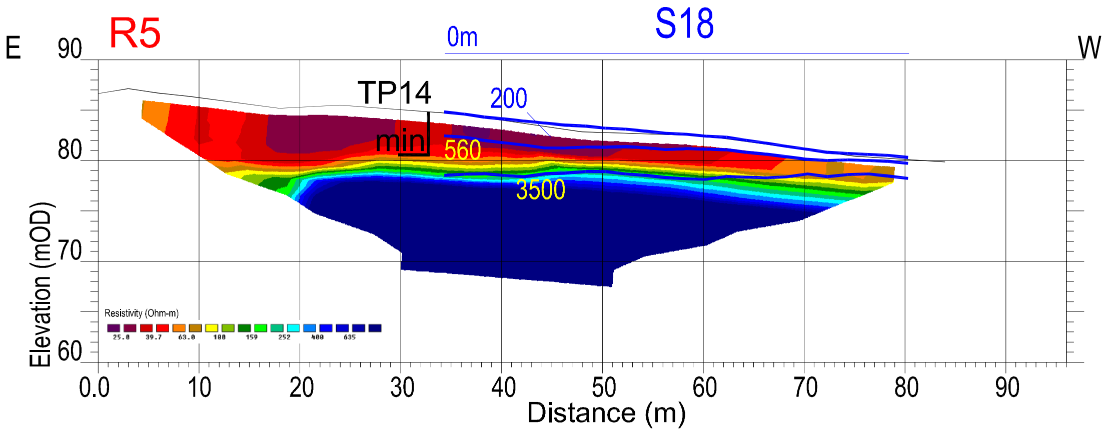
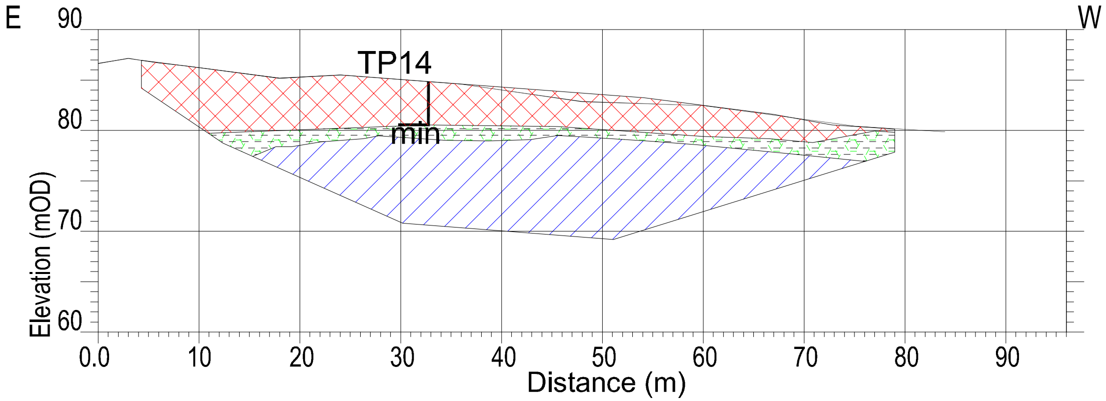
FIGURE 1: ERT PROFILE R5 & SEISMIC PROFILE S18, RESULTS AND INTERPRETATION

SCALE 1:750





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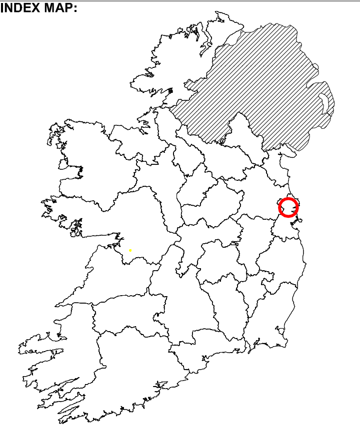

LEGEND:

▨	MADE GROUND
▨	Gravelly Silty CLAY
▨	MUDSTONE/LIMESTONE
260	Seismic velocity in m/s
TP1	Existing Trial Pit with depth to rock or minimum depth (min.)

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PROJECT: BRIAN DALY TRANSPORT SITE GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_R5

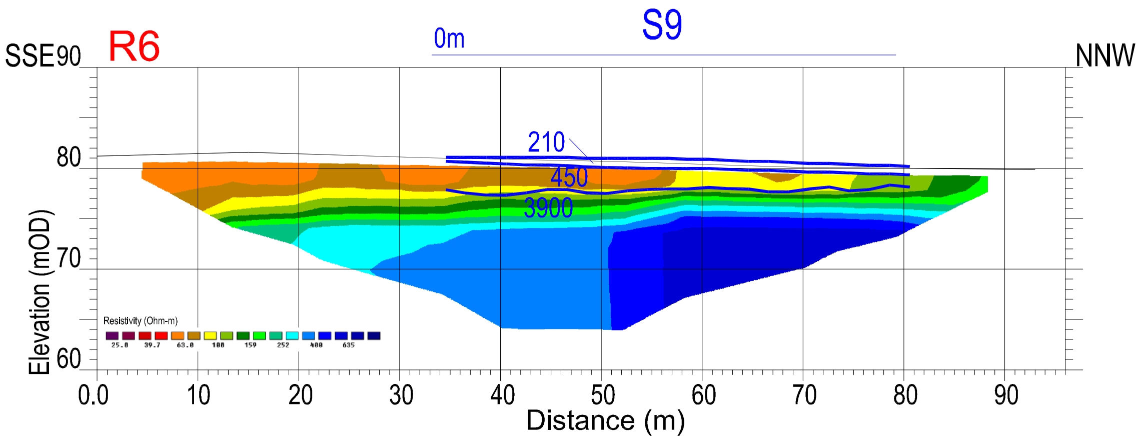
SCALE: AS INDICATED @ A4

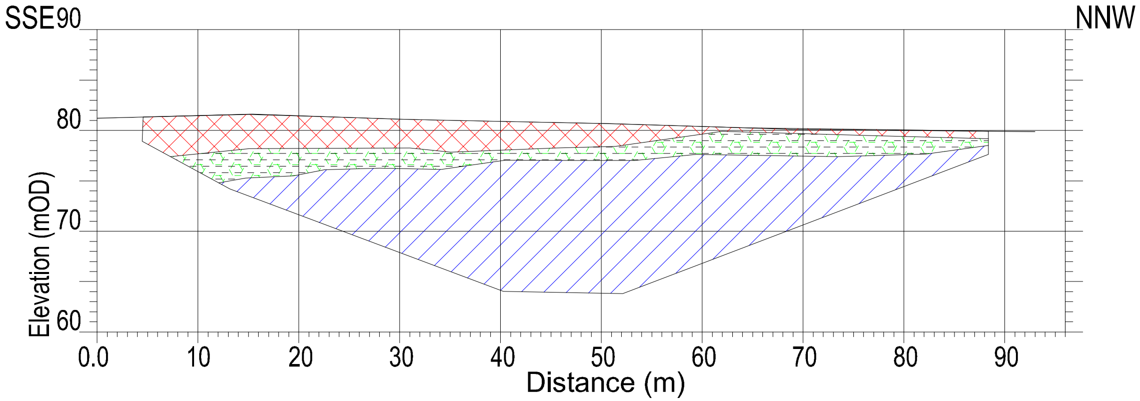
DATE: 23-01-2019

Version:	Date:	Drawn By:	Checked:
No	23-01-2019	POC	TL

FIGURE 1: ERT PROFILE R6 & SEISMIC PROFILE S9, RESULTS AND INTERPRETATION

SCALE 1:750





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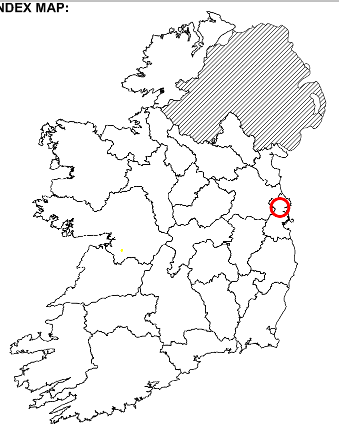

LEGEND:

▨	MADE GROUND
▨	Gravelly Silty CLAY
▨	MUDSTONE/LIMESTONE
260	Seismic velocity in m/s
TP1	Existing Trial Pit with depth to rock or minimum depth (min.)

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PROJECT: BRIAN DALY TRANSPORT SITE
GEOPHYSICAL SURVEY

CLIENT.: SDR4

DRAWING NO: AGP18049_R6

SCALE: AS INDICATED @ A4

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APPENDIX D: EXCAVATABILITY

The seismic velocity of a rock formation is related to characteristics of the rock mass which include rock hardness and strength, degree of weathering and discontinuities. Usually the velocity is just one of several parameters used in the assessment of excavatability. The excavatability of a rock formation is favoured by the following factors:

- Open fractures, faults and other planes of weakness of any kind
- Weathering
- Brittleness and crystalline nature
- High degree of stratification or lamination
- Large grain size
- Low compressive strength

Weaver (1975) presented a comprehensive rippability rating chart (Fig.1) in which the p-wave velocity value and the relevant geological factors could be entered and assigned appropriate weightings. The total weighted index was found to correlate very well with actual rippability.

Fig.1 Rippability Rating Chart

Rock class	I	II	III	IV	V
Description	Very good rock	Good rock	Fair rock	Poor rock	Very poor rock
Seismic velocity (m/s)	>2150	2150-1850	1850-1500	1500-1200	1200-450
Rating	26	24	20	12	5
Rock hardness	Extremely hard rock	Very hard rock	Hard rock	Soft rock	Very soft rock
Rating	10	5	2	1	0
Rock weathering	Unweathered	Slightly weathered	Weathered	Highly weathered	Completely weathered
Rating	9	7	5	3	1
Joint spacing (mm)	>3000	3000-1000	1000-300	300-50	<50
Rating	30	25	20	10	5
Joint continuity	Non continuous	Slightly continuous	Continuous-no gouge	Continuous-some gouge	Continuous-with gouge
Rating	5	5	3	0	0
Joint gouge	No separation	Slight separation	Separation <1mm	Gouge <5mm	Gouge >5mm
Rating	5	5	4	3	1
Strike and dip orientation	Very unfavourable	Unfavourable	Slightly unfavourable	Favourable	Very favourable
Rating	15	13	10	5	3
Total rating	100-90	90-70*	70-50	50-25	<25
Rippability assessment	Blasting	Extremely hard ripping and blasting	Very hard ripping	Hard ripping	Easy ripping
Tractor horsepower		770/385	385/270	270/180	180
Tractor kilowatts		575/290	290/200	200/135	135

APPENDIX B

PRELIMINARY GROUND INVESTIGATION REPORT, PROJECT ORION (BRIAN DALY TRANSPORT) BALLYCOOLIN CO. DUBLIN; (IGSL LIMITED PINNACLE CONSULTING ENGINEERS, 2019)

IGSL Limited

Pinnacle Consulting Engineers

Project Orion
(Brian Daly Transport)
Ballycoolin
Co. Dublin

Preliminary Ground Investigation Report

Report No. 21393

Report

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Pinnacle	Geotechnical Report	0	29/01/2019	David Green

TABLE OF CONTENTS

FOREWORD

The following conditions and notes on the geotechnical site investigation procedures should be read in conjunction with this report.

Standards

The ground investigation works for this project (Brian Daly Transport) have been carried out by IGSL in accordance with Eurocode 7 - Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as BS 5930 (1999), BS 1377 (Parts 1 to 9) and Engineers Ireland Specification & Related Documents for Ground Investigation in Ireland (2006). A new National Annex for use in the Republic of Ireland is currently in circulation for comment and will be adopted in the near future. In the mean time, the following Irish (IS) and European Standards or Norms are referenced:

- IS EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing
- IS EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- IS EN ISO 14688-1:2002 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- IS EN ISO 14688-2:2004 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Classification Principles
- IS EN ISO 14689-1:2004 Geotechnical Investigation and Testing - Identification & Classification of Rock, Part 1: Identification & Description

Reporting

Recommendations made and opinions expressed in this report are based on the strata observed in the exploratory holes, together with the results of in-situ and laboratory tests. No responsibility can be held by IGSL Ltd for ground conditions between exploratory hole locations.

The engineering logs provide ground profiles and configuration of strata relevant to the investigation depths achieved and caution should be taken when extrapolating between exploratory points. No liability is accepted for ground conditions extraneous to the investigation points.

This report has been prepared for Pinnacle Consulting Engineers and the information should not be used without prior written permission. The recommendations developed in this report specifically relate to the proposed development. IGSL Ltd accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Boring Procedures

Unless otherwise stated, 'shell and auger' or cable percussive boring technique has been employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing complies with the recommendations of IS EN 1997-2:2007 and BS 1377:1990 and EN ISO 22476-3:2005. The shell and auger boring technique allows for continuous sampling in clay and silt above the water table and sand and gravel below the water table (Table 2 of IS EN ISO 22475-1:2006).

It is highlighted that some disturbance and variations is unavoidable in particular ground (e.g. blowing sands, gravel / cobble dominant glacial deposits etc). Attention is drawn to this condition, whenever it is suspected. Where cobbles and boulders are recorded, no conclusion should be drawn concerning the size, presence, lithological nature, or numbers per unit volume of ground.

Rotary Drilling Procedures

Rotary drilling methods have been used to recover bedrock samples in line with Section 3.5 of IS EN 1997-2:2007 and IS EN ISO 22475-1. Where cable percussive boreholes terminated prematurely on an obstruction within overburden, open hole drilling methods (odex or symmetrix) were utilized to advance the drillholes through the superficial deposits with coring in bedrock. The key objectives of the rock sampling were to obtain high core recovery (TCR), minimize sample disturbance and facilitate accurate identification of strength, weathering and discontinuity characteristics.

In-Situ Testing

Standard penetration tests were conducted strictly in accordance with Section 4.6 of IS EN 1997-2:2007. The SPT equipment (hammer energy test) has been calibrated in accordance with EN ISO 22476-3:2005 and the Energy Ratio (E_r). A calibration certificate is available upon request. The E_r is defined as the ratio of the actual energy E_{meas} (measured energy during calibration) delivered to the drive weight assembly into the drive rod below the anvil, to the theoretical energy (E_{theor}) as calculated from the drive weight assembly. The measured number of blows (N) reported on the engineering logs are uncorrected. In sands, the energy losses due to rod length and the effect of the overburden pressure should be taken into account (see IS EN ISO 22476-3:2005).

Groundwater

The depth of entry of any influx of groundwater is recorded during the course of boring operations. However, the normal rate of boring does not usually permit the recording of an equilibrium level for any one water strike. Where possible drilling is suspended for a period of twenty minutes to monitor the subsequent rise in water level. Groundwater conditions observed in the borings or pits are those appertaining to the period of investigation. It should be noted however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

Engineering Logging

Soil and rock identification has been based on the examination of the samples recovered and conforms with IS EN ISO 14688-1:2002 and IS EN ISO 14689-1:2004. Rock weathering classification conforms to IS EN ISO 14689-1:2003 while discontinuities (bedding planes, joints, cleavages, faults etc) are classified in accordance with 4.3.3 of IS EN ISO 14689-1:2003. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Retention of Samples

Samples shall be retained for a period of 60 days following approval of the final factual report, as detailed in the Scope of Works.

1.0 Introduction and Objectives

It is proposed to redevelop the existing Brian Daly Transport site, which is located in Ballycoolin, North County Dublin.

The location (and approximate outline) of the site are shown in Figure 1.

Figure 1 – Site Location

IGSL Limited were appointed by Pinnacle Consulting Engineers to conduct a ground investigation at the site. Phase 1 fieldworks (trial pits and probes) were undertaken in November 2018. Phase 2 fieldworks comprising rotary coring are currently in progress.

The objectives of the investigations were as follows:

- Ascertain the composition and condition of the overburden soils
- Determine the depth to bedrock within the area of proposed new structures
- Assess the chemical properties of the limestone bedrock with respect to the potential for Pyritic heave
- Investigate for the presence of contamination within an existing soil mound and categorise the soil with respect to landfill disposal

This report presents the findings of the Phase 1 investigation, including the results of environmental laboratory testing. Also presented is a Waste Categorisation Assessment as produced by environmental specialists O'Callaghan Moran.

2.0 Scope of Works

The Phase 1 exploratory works included the following:

- 22 no. mechanically excavated trial pits (TP01 to TP22)
- 17 no. dynamic probes (DP01 DP17)
- A programme of chemical and environmental testing of recovered soil and rock samples

2.1 Trial Pits

Trial pits were excavated in 22 locations using a JCB 3CX. The trial pits were logged and sampled by an IGSL geotechnical engineer in accordance with BS 5930 (1999+A2:2010).

Trial pits TP01 to TP11 and TP18 were located in landscaped and paved areas within the existing car park and surrounding the existing warehouse structure.

Trial pits TP12 to TP17 were undertaken on the surface of the existing soil mound, which occupies the eastern portion of the site. The prime purpose of these pits was to recover samples for environmental testing.

Trial pits TP19 to TP22 were positioned within the existing building, necessitating the removal of the concrete floor.

Pit sidewalls were assessed in terms of their short term stability and any instances of groundwater ingress were recorded. Large bulk soil samples were also recovered to provide specimens for laboratory testing. The samples were placed in heavy duty polyethene bags and sealed before being transported to Naas for laboratory testing.

The trial pit logs in Appendix 1 include descriptions of the soils encountered, groundwater conditions and stability of the pit sidewalls.

2.2 Dynamic Probes

Dynamic probing was undertaken in 17 locations to obtain a profile of relative soil resistance.

Probes DP01 to DP04 and DP07 to DP11 were located within the existing car park and around the periphery of the existing warehouse structure.

Probes DP05 and DP06 were positioned near the base of the existing soil mound.

Probes DP12 to DP17 were undertaken within the existing building, necessitating pre-coring of the concrete floor.

The dynamic probe utilised by IGSL Ltd complies with the requirements of BS 1377, Part 9 (1990) and Eurocode 7: Part 3. DPH probing comprises a 50 kg drop weight, 500mm drop height and a 43.7mm diameter (90°) cone.

In accordance with the standards, the number of blows required to drive the probe through each 100mm increment of penetration is recorded. Probing is generally terminated when blow counts, N_{100} values, exceed 25, in order to avoid damage to equipment.

Detailed probe records are provided in Appendix 2 on which the blow counts are recorded both numerically and graphically.

Probe results are used primarily in conjunction with known information on soil composition and stratification, to define more accurately the soil profile, and to detect any soft or loose zones. However, experience suggests that blow-counts of less than 3 are generally indicative of soft or loose soils, while blow-counts in excess of 10 suggest very stiff or dense soils.

2.3 Waste Characterisation Assessment

Using the field records and environmental test results, environmental specialists O'Callaghan Moran (OCM) produced a detailed Waste Characterisation Assessment for the site, specifically targeting the soils contained within the eastern soil mound.

Their report, which is presented in Appendix 5, classifies the samples as either non-hazardous or hazardous and assigns the appropriate List of Waste (LoW) code to each sample. Also included are recommended waste receptors for landfill disposal purposes.

2.4 As-Built Survey

On completion of fieldworks, the location (x,y) and elevation (z) of each exploratory location was determined by detailed survey using GPS Realtime Kinetic survey instrument. It is noted that no surveying of internal trial pits or probes could be carried out due to the absence of a satellite signal.

The National Grid survey co-ordinates and ground levels related to Malin Head Datum are presented on the exploratory hole records and these were used to plot the as-built locations on the Aerial Site Plans in Appendix 6 of this report. Internal trial pits and probes were annotated based on ground measurements taken on site.

3.0 Laboratory Testing

Laboratory analyses included the following:

- EN 1744 Test Suite on fragmented rock samples
- RILTA Suite on soil samples

The RILTA suites were undertaken by Chemtest Laboratory and the results are presented in Appendix 3. The EN 1744 Test Suite was undertaken by Nicholls Colton and the results are presented in Appendix 4. The RILTA Suite results are also included in the Waste Characterisation Assessment in Appendix 5.

4.0 Ground Conditions

4.1 Trial Pits

4.1.1 Overburden Soils

The trial pits generally revealed Made Ground overlying firm to stiff and stiff deposits of sandy gravelly clay from shallow depth. In places, the clay strata directly below the Made Ground contained shell fragments and had the appearance of possible re-worked soils. However, there were no instances of extraneous matter to confirm this.

North of the existing structure, the Made Ground was highly variable in thickness (1.2 to >3.0 metres) and appeared to be related to the construction of buried utilities. The Made Ground comprised mostly sandy gravelly clay containing rare extraneous matter including plastic, timber, steel wire and fragments of pipework. Of particular note was trial pit TP03, which terminated in Made Ground (pea gravel) at a depth of 3.05 metres below existing ground level (m BGL) or 78 mOD. In this pit, a buried service pipe (c. 125 to 150 mm in diameter) was uncovered between 2.0 and 2.5 m BGL, and the presence of pea gravel at the base of the pit was a possible indication of an additional buried utility.

Further west, near the site entrance, trial pits TP07 and TP08 encountered Made Ground comprising clayey sandy gravel and gravelly clay to depths of between 0.7 and 1.0 m BGL. Trial pit TP07 penetrated deposits of stiff gravelly clay before meeting an obstruction at a depth of 2.0 m BGL. At TP08, an obstruction was present at the base of the Made Ground.

Further south, within the existing building, TP19 to TP22 penetrated the concrete floor to reveal Made Ground comprising angular gravel (hardcore). The Made Ground contained rare extraneous matter (plastic) and extended to depths of between 1.5 and 1.8 m BGL. Deposits of stiff sandy gravelly clay underlay the Made Ground in all pits.

South of the existing building, trial pit TP04 encountered Made Ground that was similar in composition to the internal trial pits (predominately gravel with rare plastic fragments). Due to instability, this pit was terminated within the granular fill at a depth of 2.0 m BGL. However, adjacent trial pits TP02 and TP06 encountered stiff and very stiff gravelly silt/clay from shallow depth (<1 m BGL) and terminated on obstructions at depths of 1.3 and 2.0 m BGL (78.2 and 77.4 mOD) respectively.

Further south, and within the remainder of the existing car park and hard standing area, trial pits TP09, 10 and 11 encountered 0.8 metres of granular fill overlying stiff and very stiff deposits of sandy gravelly silt/clay. Obstructions were met at depths of between 2.9 and 3.5 m BGL (76.1 to 76.6 mOD).

Within the eastern portion of the site (soil mound), the trial pits penetrated Made Ground soils to depths of up to 4.3 metres. The Made Ground was relatively homogenous in composition, comprising mainly gravelly clay with inclusions of Construction and Demolition (C&D) waste. With the exception of trial pit TP14, the base of the earth mound was penetrated to reveal natural deposits of stiff and very stiff gravelly clay. The pits generally terminated on obstructions, which were occasionally unsighted due to the presence of water.

4.1.2 Possible Limestone Bedrock

The investigation to date has comprised trial pits and dynamic probes. The majority of trial pits terminated on obstructions, which had the appearance of probable weathered limestone.

It is noted that the presence and composition of the limestone could not be confirmed using trial pits alone, since the obstructing materials could not be penetrated or sampled to sufficient depth using the excavator. However, a phase of rotary drilling is in progress. The results of rotary coring will confirm the depth and composition of the limestone bedrock, where present.

Table 1 shows the trial pits at which the obstructing materials had the appearance of weathered limestone bedrock. The ground levels of the obstructions are also listed on the table.

Trial Pit	Depth to Obstruction (m BGL)	Elevation of Obstruction (m OD)	Description of Obstruction
TP01	4.0	77.0	Probable LIMESTONE bedrock
TP02	1.2	78.4	Probable LIMESTONE bedrock
TP05	3.5	77.4	Probable LIMESTONE bedrock
TP06	2.0	77.4	Probable LIMESTONE bedrock
TP07	1.8	78.1	Probable LIMESTONE bedrock
TP08	1.2	78.2	Probable LIMESTONE bedrock
TP09	2.8	76.7	Probable LIMESTONE bedrock
TP10	3.0	76.4	Probable LIMESTONE bedrock
TP11	3.4	76.2	Probable LIMESTONE bedrock
TP12	3.1	78.0	Probable LIMESTONE bedrock
TP16	3.2	77.8	Probable LIMESTONE bedrock
TP17	3.2	77.6	Probable LIMESTONE bedrock
TP18	2.3	77.0	Probable LIMESTONE bedrock
TP20	3.8	Internal pit (No survey)	Possible LIMESTONE (obscured by water)
TP21	2.3	Internal pit (No survey)	Probable LIMESTONE bedrock
TP22	2.9	Internal pit (No survey)	Probable LIMESTONE bedrock

Table 1 – Trial pits terminating on possible limestone bedrock

It can be seen from Table 1 that the possible bedrock levels range between 76.2 and 78.4 mOD across the site. Rock levels appear to be shallowest towards the north of the site, dipping gradually in a north-south direction.

4.2 Dynamic Probes

North of the existing building, the dynamic probes DP01 and DP03 recorded erratic profiles of soil resistance, which were thought to reflect the variable composition of the Made Ground. Abrupt increases in soil resistance at depths of 3.4 and 2.7 m BGL respectively likely indicate the transition to the natural stiff and very stiff gravelly clay soils.

Within the main hardstanding area, the probes revealed generally moderate to high resistance form shallow depth. The triangular patterns of resistance were typical of natural clay soils, indicating increasing strength with depth.

A notable exception to the general profile of soil resistance occurred at DP05, where very low blow counts were recorded to a depth of 2 metres. This probe was located towards the edge of the soil mound and clearly illustrates the transition from Made Ground to the underlying stiff and very stiff soils at 2 m BGL.

Within the existing structure, the probes encountered very high resistance from shallow depth, indicating the high density of the sub-floor granular fill. Most probes met with refusal within the upper metre. However, probe DP13 reached the base of the high resistance material at a depth of 2.0 m BGL, and the subsequent triangular pattern of resistance was indicative of natural soils.

4.3 Groundwater

Water strikes were encountered in 12 of the 22 trial pits, mostly in association with the transition to possible limestone bedrock. The rate of water ingress was generally slow to moderate. However, within the existing building, rapid ingresses occurred at the base of the trial pits (3.3 and 3.7 m BGL), most likely in association with the fractured limestone.

Water ingress also occurred in some locations within Made Ground. However, these were generally in the form of seepage and are more likely confined “pockets” which have either permeated from ground level or were already present within the Made Ground at the time of placement.

5.0 Discussion and Recommendations

5.1 General

The proposed structure will be constructed on pad foundations. It is understood that the maximum column loads will be of the order of 2000 kN (internal columns). Floor slab pressures are expected to be of the order of 25 kPa.

The trial pits revealed predominately firm to stiff and stiff gravelly clay soils from shallow depth. However, in places, deep deposits of Made Ground were present, which were thought to relate to the construction of buried services.

In places the gravelly clay directly beneath the Made Ground had the appearance of “possible Made Ground”, mainly due to its coloration and the presence of shell fragments. However, this may also be due to excessive weathering and / or historical fluvial / alluvial deposition.

In all locations, the basal gravelly clay deposits were in a stiff to very stiff condition and were present within a metre of the excavated depth (i.e. obstruction).

In most trial pits, angular cobbles and boulders of limestone were encountered at elevations of between 76 and 78 mOD and these had the appearance of possible weathered rock. However, it is stressed that rotary coring is in progress and the presence of bedrock should not be presumed until the corehole records are available.

The eastern earth mound has been shown to comprise mainly sandy gravelly clay with some extraneous matter including timber, plastic, steel and organics.

Dynamic probing has indicated the presence of moderate to high strength soils from shallow depth. In places, zones of reduced resistance may be indicative of weathered zones. Very low soil resistance was recorded within the Made Ground soils, including the backfill soils to the north of the existing building and the soils within the eastern mound.

5.2 Groundwater

Groundwater was encountered in association with the transition to the possible rock horizon. Rates of ingress were moderate to rapid. Minor water ingresses were also present within the Made Ground, although these are more likely to be confined pockets or the result of surface water infiltration.

It is stressed that excavations remained open for a period of approximately 45 minutes. During this time, it is unlikely that groundwater levels would have established to their true level.

Standpipes will be constructed within the rotary coreholes, which will permit long term groundwater monitoring.

5.3 Structural Foundations

The internal columns for the proposed structure will loaded to c.2000 kN. While pads are yet to be sized, a 2m x 2m square pad would result in a bearing pressure of the order of 500 kPa.

To support a bearing pressure of this magnitude while maintaining tolerable settlements, it will be necessary to support the foundations on the limestone bedrock.

Proposed formation levels range between 79.7 and 80.3 mOD across the structure. Possible bedrock levels range between 76.2 and 78.4 m OD. With reference to the proposed Cut and Fill drawing as supplied by the client, excavations of the order of 3 to 4 metres deep may be required to reach the limestone bedrock.

While the trial pits undertaken within Made Ground were generally unstable, the underlying stiff and very stiff gravelly clay soils were generally stable and should remain stable in the short term. However, where rapid groundwater ingress occurs at the transition from the clay to the underlying limestone bedrock, this can cause undermining and instability of the overlying soil. Control of groundwater would therefore be a key factor when considering trench / fill techniques to construct foundations.

As previously stated, the use of conventional pad foundations on bedrock will likely entail trench / fill foundation pit depths of between 3 and 4 metres. In addition to the ground stability measures, the cost of excavating to these depths and replacing with lean mix concrete should also be considered. If deemed uneconomical or impractical, consideration could be given to increasing the pad dimensions in order to reduce the imposed bearing pressures. Foundations constructed on the very stiff gravelly clay deposits that directly overlie the (possible) limestone bedrock could assume an allowable bearing pressure of the order of 250 to 300 kPa. The benefits of potentially shallower foundation excavations should be evaluated against the cost of larger pads. In addition, some settlement of the clay soils should be expected.

Alternatively, piles could be used to transfer foundation pressures to the limestone bedrock, thus eliminating the requirement for trench/fill techniques. Consultation with a specialist piling contractor would be recommended with regard to selecting the appropriate pile type, length and installation method that are most suited to the ground conditions. However, it is expected that a rock socket (typically 0.5 to 1.0 m) would be required to achieve sufficient fixity within the limestone.

5.4 Ground Bearing Slab

It is understood that bearing pressures of the order of 25 kPa are expected under the floor slabs.

If construction of the floor slab on the existing ground is under consideration, it will be important to ensure that any Made Ground soils are removed prior to sub-floor construction. These soils have been shown to be in a very soft or loose condition and would be entirely unsuitable as a subgrade.

Dynamic probing has indicated that the natural clay soils, where present at proposed construction depth, are in a generally firm or stiff condition. These soils should be capable of supporting the anticipated slab loads.

It is recommended that the granular fill directly beneath the new floor slab should comprise T0 Struc hardcore in conjunction with T1 hardcore and these should meet the requirements of Annex E SR21:2014+A1;2016. Proof rolling the formation (static rolling with roller having a mass per metre width of roll of not less 5400 kg) is advised to counteract disturbance or loosening due to the bulk excavation works. Under no circumstance should vibratory or dynamic rolling be used on the formation soils as this may lead to dilation and produce ‘cow-bellying’.

Independent testing on samples of the proposed source hardcore is strongly recommended in advance of the material being used on the site. As a minimum, particle size gradings, chemical tests (total sulphur and acid soluble sulphate) and geological classification / simplified petrology are advised to screen the material and independently assess compliance with Annex E, SR21;2014+A1;2016.

5.5 Landfill Disposal of Excavated Soils

Selected samples were submitted for Waste Acceptance Criteria (WAC) analysis.

Samples were tested in accordance with the RILTA Suite, which is used to determine the suitability of soils for disposal to a landfill. The RILTA suite includes Heavy Metals, Polycyclic Aromatic Hydrocarbons (PAH), TPH-CWG, BTEX, PCB and Total Organic Carbon (TOC) carried out on dry soil samples. Also included are leachate analyses, whereby leachate is generated in accordance with CEN 10:1 specification and this is tested for the presence of recognised contaminants including Heavy Metals, Dissolved Organic Carbon (DOC) and Total Dissolved Solids (TDS). An Asbestos Screen is also included in the RILTA Suite.

The results of the RILTA Suite are typically compared with the European limits for inert landfills as set out in the European Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

The environmental analyses are presented in reports prepared by Chemtest Laboratory. The results are interrogated and discussed in the Waste Categorisation Assessment as produced by OCM, which should be furnished to potential waste receivers prior to removing soils from this site.

5.6 Chemical Assessment of Limestone Bedrock

Chemical analyses show very low Sulphate (Acid Soluble and Water Soluble) levels. The Total Sulphur levels (0.13 and 0.19%) are slightly above the desirable level of 0.1% for Annex E hardcore in accordance with SR21. However, since it is not intended to reuse the limestone as hardcore, there should be no concern regarding the potential for pyritic heave.

In line with current good practice, foundation pits in limestone should be blinded rapidly (within 24 hours if possible) to avoid any potential reactions with the surrounding air and moisture.

6.0 References

1. BS 5930:1999 +A2:2010 Code of Practice for Site Investigations; British Standards Institute
2. Manual of Contract Documents for Highway Works, Volume 5, Section 3, Ground Investigation, Part 4: Specification
3. BRE Special Digest 1: 2005 – Concrete in aggressive ground
4. EN 1997-3; Eurocode 7: Geotechnical Design – Part 3: Design assisted by field testing; 1997
5. BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute;1990.
6. BRE Digest 365, September 1991, British Research Establishment
7. Manual of Contract Documents for Road Works, Volume 1: Specification for Road Works (March 2007)
8. Manual of Soil Laboratory Testing, Volume 3; K.H. Head
9. ISRM – Suggested Methods for Determining Point Load Strength
10. ISRM – Suggested Methods for Determining the Uniaxial Compressive Strength and Deformability of Rock Materials
11. TRL Report 447- Sulfate specification for structural backfills
12. CIRIA C580
13. Specification for Roadworks Series 600 – Specification for Roadworks

Appendix 1

Trial Pit Records

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP01**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,621.85 E 741,053.74 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	80.98	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL		0.20	80.78						
	MADE GROUND comprised of: Firm brown gravelly CLAY. Gravel is fine to coarse and angular. Contains occassional rootlets and infrequent old broken pipes.		0.30	80.68						
	Firm to stiff dark grey mottled brown and red slightly sandy gravelly silty CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular. Has a low subangular cobble content. (Possible made ground).		1.20	79.78		AA101701	B	0.50		
1.0						AA101702	B	1.00		
	Stiff dark grey gravelly silty CLAY. Gravel is fine to coarse and angular. Has a low subangular cobble content.		3.70	77.28						
2.0						AA101703	B	2.00		
3.0						AA101704	B	3.00		
					1 (Seepage)					
	Very stiff blue grey slightly silty very gravelly CLAY. Gravel is fine to coarse and angular. Has a low rounded to angular cobble content.		4.00	76.98	2 (Moderate)	AA101705	B	3.80		
4.0	LIMESTONE rock head. End of Trial Pit at 4.00m									

Groundwater Conditions
Seepage at 3.5m and moderate at 4m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,646.00 E 740,950.91 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.58	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE		0.25	79.33						
	MADE GROUND comprised of: Very dense dark grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular.		0.50	79.08						
	Stiff grey mottled brown sandy gravelly very clayey SILT. Sand is fine. Gravel is fine to coarse and angular to subangular.									
1.0	5 inch black pipe uncovered alone northern side of pit.		1.10	78.48		AA101736	B	1.00		
	Very stiff blue grey silty sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular to subrounded. Has a medium angular to subrounded cobble content.		1.20	78.38						
	LIMESTONE rock head.		1.30	78.28						
	End of Trial Pit at 1.20m									
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Walls collapsing from 0.5m to 1.1m around the pipe in pea gravel to the north side of the pit.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. TP03

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,684.02 E
741,062.88 N

GROUND LEVEL (m) 80.98

DATE STARTED 20/11/2018

DATE COMPLETED 20/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples Sample Ref	 Type	 Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL	▒	0.20	80.78						
	MADE GROUND Comprised of: Firm brown sandy gravelly CLAY. Sand is coarse. Gravel is fine to medium and angular. Has a low subangular cobble content. Contains occassional rootlets and rare old broken pipe.	▩	0.70	80.28		AA101706	B	0.50		
1.0	MADE GROUND comprised of: Stiff brown grey mottled red very gravelly very silty CLAY. Gravel is fine to coarse and angular to subrounded. Has a medium subangular to subrounded cobble content. Contains frequent plastic and infrequent broken old pipe and timber.	▩	1.50	79.48		AA101707	B	1.00		
	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is coarse and angular.	▩	1.90	79.08		AA101708	B	1.60		
2.0	MADE GROUND comprised of: Stiff brown very clayey SILT. Stopped pit due to walls collapsing.	▩	2.20	78.78		AA101709	B	2.10		
	MADE GROUND comprised of: Stiff grey gravelly very clayey SILT. Gravel is fine to medium and angular. 5 inch black cable uncovered at the western side of the pit.	▩	3.00	77.98		AA101710	B	2.30		
3.0	MADE GROUND comprised of: Fine angular to rounded PEA GRAVEL.	▩	3.05	77.93						
4.0	Stopped pit due to pea gravel found at 3m. End of Trial Pit at 3.05m									

Groundwater Conditions
Dry

Stability
Walls Collapsing from 1.5m to 1.9m.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP04**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,694.85 E 740,960.43 N
		DATE STARTED	21/11/2018
		DATE COMPLETED	21/11/2018
CLIENT		**GROUND LEVEL (m)**	79.44
ENGINEER	Pinnacle C.E.	**EXCAVATION METHOD**	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Tarmacadam.	▨	0.10	79.34						
	MADE GROUND comprised of: Dense grey GRAVEL. Gravel is fine to coarse and angular. Contains infrequent plastic.	▨								
1.0		▨				AA101729	B	1.00		
		▨			1 (Slow)					
			2.00	77.44						
2.0	End of Trial Pit at 2.00m									
3.0										
4.0										

Groundwater Conditions
Moderate at 1.7m.

Stability
Walls collapsing from 0.1m to base of pit.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	TP05
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,733.43 E 741,070.94 N
GROUND LEVEL (m)	80.86	**DATE STARTED**	20/11/2018
		DATE COMPLETED	20/11/2018
CLIENT		**EXCAVATION METHOD**	JCB
ENGINEER	Pinnacle C.E.		

Geotechnical Description	Depth (m)	Elevation	Water Strike	Samples Sample Ref	Samples Type	Samples Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL	0.40	80.46						
MADE GROUND comprised of: Very dense dark grey clayey very sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Has a low subangular cobble content.	0.90	79.96		AA101711	B	0.50		
MADE GROUND comprised of: Very dense dark grey GRAVEL. Gravel is fine to coarse and angular. Contains a medium subangular cobble content.	1.50	79.36						
Stiff grey mottled brown slightly gravelly very silty CLAY. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to subrounded cobble content. (Possible made ground).	3.00	77.86		AA101712 AA101713	B B	1.50 2.50		
Stiff dark grey sandy silty very gravelly CLAY. Sand us coarse. Gravel is fine to coarse and subangular to subrounded. Has a low subrounded cobble content and a low subrounded boulder content which are >300mm in size.	3.50	77.36	1 (Seepage)	AA101714	B	3.50		
LIMESTONE rock head.	3.60	77.26						
End of Trial Pit at 3.60m								

Groundwater Conditions
Seepage at 3.4m.

Stability
Walls Collapsing from 0.9m to 1.5m.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP06**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,729.41 E 740,966.68 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.42	**EXCAVATION METHOD**	jcb
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Tarmacadam.	▨	0.09	79.33						
	MADE GROUND comprised of: Dense light brown coarse SAND.	▨	0.12	79.30						
	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is fine to coarse and angular.	▨	0.70	78.72						
1.0	Stiff grey mottled brown slightly gravelly very clayey SILT. Gravel is fine to medium and subangular. Contains organic shell fragments.(Possible made ground).		1.60	77.82		AA101726	B	1.00		
	Very stiff blue grey slightly sandy slightly silty gravelly CLAY. Sand is fine. Gravel is fine to coarse and angular to subrounded. Has a medium angular to subrounded cobble content.		1.95	77.47	1 (Slow)	AA101727	B	1.90		
2.0	LIMESTONE rock head.		2.00	77.42		AA101728	B	2.00		
	End of Trial Pit at 2.00m									
3.0										
4.0										

Groundwater Conditions
Slow at 2m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP07**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,785.69 E 741,079.59 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	79.89	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.10	79.79						
	MADE GROUND comprised of: Firm dark grey brown sandy gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular.		0.40	79.49						
	MADE GROUND comprised of: Very dense dark grey slightly clayey sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a medium angular cobble content. Contains infrequent plastic.		1.00	78.89		AA01715	B	0.50		
1.0	Stiff dark grey mottled brown and red gravelly very silty CLAY. Gravel is fine to coarse and subangular to subrounded. (Possible made ground).		1.80	78.09		AA01716	B	1.00		
	LIMESTONE rock head.		2.00	77.89		AA01717	B	1.90		
2.0	End of Trial Pit at 2.00m									
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. TP08

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,788.09 E
741,062.56 N

GROUND LEVEL (m) 79.41

DATE STARTED 20/11/2018

DATE COMPLETED 20/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Dense grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Layer of haram cloth below the hard core.	▨	0.30	79.11						
	MADE GROUND comprised of: Stiff brown mottled grey gravelly very silty CLAY. Gravel is fine to coarse and subangular. Has a lowsubangular cobble content. Contains infrequent plastic.	▨	0.70	78.71		AA01718	B	0.50		
1.0	Rock was found at 0.7m to the eastern side of the pit but 1.2m to the western side of the pit. End of Trial Pit at 0.70m									
						AA01719	B	1.20		
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP09**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,804.33 E 740,968.96 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	79.53	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Very dense grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent concrete slabs and broken old wires.		0.80	78.73						
1.0	Stiff grey mottled brown gravelly very clayey SILT. Gravel is fine to medium and angular. (Possible made ground).		2.50	77.03		AA01720	B	1.00		
2.0						AA01721	B	2.00		
	Stiff dark blue grey silty very gravelly CLAY. Gravel is fine to coarse and angular to subrounded. Has a low angular cobble content.		2.80	76.73						
	LIMESTONE rock head.		2.90	76.63	1 (Slow)	AA01722	B	2.90		
3.0	End of Trial Pit at 2.90m									
4.0										

Groundwater Conditions
Slow at 2.9m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393
CONTRACT	Brian Daly Transport
TRIAL PIT NO.	**TP10**
SHEET	Sheet 1 of 1
LOGGED BY	EK
CO-ORDINATES	709,747.59 E 740,923.02 N
GROUND LEVEL (m)	79.41
DATE STARTED	21/11/2018
DATE COMPLETED	21/11/2018
CLIENT	
ENGINEER	Pinnacle C.E.
EXCAVATION METHOD	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.20	79.21						
	MADE GROUND comprised of: Dense grey slightly sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent plastic.		0.80	78.61						
1.0	Stiff grey mottled brown slightly sandy gravelly very clayey SILT. Sand is dine to medium. Gravel is fine to coarse and subangular to subrounded. (Possible made ground).		2.00	77.41		AA101730	B	1.00		
2.0	Very stiff grey blue silty very sandy very gravelly CLAY. Sand is coarse. Grave is fine to coarse and angular to subrounded. Has a low subangular to subrounded cobble content.		3.00	76.41		AA101731	B	2.00		
3.0	LIMESTONE rock head.		3.10	76.31	1 (Slow)	AA101732	B	3.00		
	End of Trial Pit at 3.10m									
4.0										

Groundwater Conditions
Slow at 3m.

Stability
Walls collapsing from 2.5m to 3m

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP11**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,643.17 E
740,903.55 N

GROUND LEVEL (m) 79.60

DATE STARTED 21/11/2108

DATE COMPLETED 21/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

Geotechnical Description	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
MADE GROUND comprised of: Tarmacadam.	0.05	79.55						
MADE GROUND comprised of: Dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular.	0.20	79.40						
MADE GROUND comprised of: Dense brown very gravelly SAND. Sand is coarse. Gravel is fine and angular.	0.25	79.35						
MADE GROUND comprised of: Dense dark grey clayey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent rebar.	0.80	78.80						
Stiff light grey slightly gravelly sandy very clayey SILT. Sand is fine. Gravel is fine and subrounded. (Possible made ground).	1.60	78.00		AA101733	B	1.00		
Stiff dark grey mottled brown slightly sandy gravelly very clayey SILT. Sand is fine. Gravel is fine and angular. (Possible made ground).	2.20	77.40		AA101734	B	2.00		
Very stiff blue grey silty very sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular to rounded. Has a medium subangular to subrounded cobble content.	3.40	76.20	1 (Seepage)	AA101735	B	3.00		
LIMESTONE rock head.	3.50	76.10	2 (Moderate)					
End of Trial Pit at 3.40m								

Groundwater Conditions
Seepage at 2.9m and Moderate at 3.5m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP12**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,822.62 E 741,088.60 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	81.14	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples Sample Ref	Type	Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.30	80.84						
MADE GROUND comprised of: Firm to stiff brown sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular. Contains occassional rootlets. Contains infrequent concrete bricjs, timber, broken old pipes and plastic.		1.10	80.04		AA101634 AA101635	B B	0.50 1.00		
Stiff very dark grey brown silty gravelly CLAY. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to subrounded cobble content. (Possible made ground).		2.40	78.74		AA101636	B	2.00		
Very stiff dark grey silty very gravelly CLAY. Gravel is fine to coarse and angular to subangular. Has a low angular to subangular cobble content.		3.10	78.04		AA101637	B	3.00		
LIMESTONE rock head.		3.20	77.94						
End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP13**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,893.42 E 741,091.10 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	82.31	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL	▒								
	MADE GROUND comprised of: Stiff dark grey brown slightly sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular. Has a low angular to subangular cobble content. Contains infrequent timber, concrete pieces and old broken pipe.	▨	0.20	82.11						
						AA101643	B	0.50		
1.0						AA101644	B	1.00		
2.0						AA101645	B	2.00		
	Stiff dark brown grey mottled green gravelly very clayey SILT. Gravel is fine to coarse and angular. (Possible made ground).	▨	2.90	79.41						
3.0						AA101646	B	3.00		
	End of Trial Pit at 3.20m		3.20	79.11						
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP14**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,852.73 E 741,074.80 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	84.79	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL									
	MADE GROUND comprised of: Stiff grey brown slightly sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular.	▨	0.30	84.49		AA101638	B	0.50		
1.0	MADE GROUND comprised of: Stiff brown mottled grey and red gravelly very silty CLAY. Sand is medium to coarse. Gravel is fine to medium and subangular.	▨	1.00	83.79		AA101639	B	1.00		
2.0	MADE GROUND comprised of dark grey mottled brown slightly gravellly very clayey SILT. Gravel is fine to medium and angular. Contains infrequent timber, hay and rope.	▨	1.80	82.99		AA101640	B	2.00		
3.0						AA101641	B	3.00		
4.0						AA101642	B	4.00		
	End of Trial Pit at 4.30m		4.30	80.49						

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393
CONTRACT	Brian Daly Transport
TRIAL PIT NO.	**TP15**
SHEET	Sheet 1 of 1
LOGGED BY	EK
CO-ORDINATES	709,848.44 E 741,008.88 N
GROUND LEVEL (m)	82.20
DATE STARTED	19/11/2018
DATE COMPLETED	19/11/2018
CLIENT	
ENGINEER	Pinnacle C.E.
EXCAVATION METHOD	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.30	81.90						
1.0	MADE GROUND comprised of: Stiff dark grey brown slightly silty very gravelly CLAY. Gravel is fine to coarse and subangular. Has a low subangular cobble content. Contains infrequent timber and plastic.		1.10	81.10		AA106420 AA106421	B B	0.50 1.00		
2.0	MADE GROUND comprised of: Dark grey stiff slightly silty gravelly CLAY. Contains infrequernt timber.		2.60	79.60	1 (Seepage)	AA106422	B	2.00		
3.0	Stiff greenish grey very silty CLAY. Contains organic shell fragments. (Possible made ground).		3.60	78.60		AA106423	B	3.00		
4.0	Stiff grey mottled brown gravelly very silty CLAY. Gravel is fine to coarse and angular. (Possible made ground).		4.10	78.10		AA106424	B	4.00		
	End of Trial Pit at 4.10m									

Groundwater Conditions
Seepage at 2.1m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP16**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,898.66 E 741,051.65 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	80.99	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL and infrequent rebar.		0.30	80.69						
1.0	MADE GROUND comprised of: Firm brown gravelly CLAY. Gravel is fine to coarse and angular. Contains occassional rootlets and infrequent timber and plastic.		1.10	79.89		AA106430 AA106431	B B	0.50 1.00		
2.0	MADE GROUND compised of: Very stiff grey brown gravelly very clayey SILT. Gravel is fine and angular.		2.50	78.49		AA106432	B	2.00		
3.0	Very stiff dark grey slightly sandy slightly silty very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and subangular to subrounded. Hhas a low subangular to subrounded cobble content. (Possible made ground).		3.20	77.79		AA106433	B	3.00		
	LIMESTONE rock head.		3.30	77.69						
4.0	End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. TP17

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,865.22 E
740,977.86 N

GROUND LEVEL (m) 80.75

DATE STARTED 19/11/2018

DATE COMPLETED 19/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL and infrequent glass.		0.30	80.45						
1.0	MADE GROUND comprised of: Firm to stiff silty sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular. Has a low angular cobble content. Contains infrequent rebar, rope, plastic and broken old pipe.		1.70	79.05		AA106425 AA106426	B B	0.50 1.00		
2.0	Stiff grey mottled brown slightly gravelly very silty CLAY. Gravel is fine to medium and subangular to subrounded. Has a high organic shell content. (Possible made ground).		3.00	77.75		AA106427	B	2.00		
3.0	Very stiff dark blue grey slightly sandy silty very gravelly CLAY. Sand is coarse. Gravel is coarse and angular.		3.10	77.65		AA106428	B	3.00		
	LIMESTONE rock head.		3.20	77.55		AA106429	B	3.20		
4.0	End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP18**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,808.09 E 740,941.26 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.33	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is fine to coarse and angular. Contains infrequent plastic.									
	Stiff grey mottled brown gravelly very clayey SILT. Gravel is fine to coarse and angular. (Possible made ground).		0.70	78.63	▼1 (Moderate)					
1.0						AA101723	B	1.00		
	Very stiff blue grey slightly silty very gravelly CLAY. Gravel is fine to coarse and angular to subrounded. Has a low subangular to subrounded cobble content.		1.90	77.43						
2.0						AA101724	B	2.00		
	LIMESTONE rock head.		2.30	77.03		AA101725	B	2.30		
	End of Trial Pit at 2.40m		2.40	76.93						
3.0										
4.0										

Groundwater Conditions
Moderate at 0.7m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP19**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	22/11/2018
CO-ORDINATES		**DATE COMPLETED**	22/11/2018
GROUND LEVEL (m)		**EXCAVATION METHOD**	3 tonne digger
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples Sample Ref	Type	Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	CONCRETE with a layer of plastic below it.	▨								
	MADE GROUND comprised of very dense slightly sandy GRAVEL. Sand is coarse. Gravel is medium to coarse and angular. Has a medium angular cobble content. Contains infrequent plastic.	▩	0.30							
1.0						AA101737	B	1.00		
	Stiff dark grey mottled brown sandy gravelly very silty CLAY. Sand is medium to coarse. Gravel is fine to coarse and subangular to subrounded.Has a low subangular to subrounded cobble content.	▤	1.80							
2.0						AA101738	B	2.00		
3.0					1	AA101739	B	3.00		
	Stiff dark grey silty very sandy very gravelly CLAY. Sand is coarse. Gravel is fine to medium and subangular to rounded. Has a low subangular to subrounded cobble content.	▤	3.10		(Moderate)	AA101740	B	3.20		
	Stopped as the machine couldn't reach further and high amount of water. End of Trial Pit at 3.30m		3.30		(Rapid)					
4.0										

Groundwater Conditions
Moderate at 3.2m and rapid at 3.3m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP20**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	22/11/2018
CO-ORDINATES		**DATE COMPLETED**	22/11/2018
GROUND LEVEL (m)		**EXCAVATION METHOD**	3 tonne digger
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE with a layer of plastic below it.									
1.0	MADE GROUND comprised of: Very dense grey very gravelly COBBLES. Gravel is coarse and angular. Cobbles are angular.		0.20							
2.0	Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		1.80			AA101741	B	1.80		
3.0	Stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.80		1 (Rapid)	AA101742 AA101743	B B	2.80 3.70		
4.0	Possible limestone rock head at 3.8m not visible due to groundwater. End of Trial Pit at 3.80m		3.80							

Groundwater Conditions
Rapid at 3.7m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP21**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES

GROUND LEVEL (m)

DATE STARTED 22/11/2018

DATE COMPLETED 22/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD 3 tonne digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
					Sample Ref	Type	Depth		
CONCRETE with a layer of plastic below it.	∴	0.20							
MADE GROUND comprised of: Very dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a high angular cobble content.	▩	1.70							
Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).	⊗	2.00			AA101744	B	1.80		
Very stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.	⊗	2.30			AA101745	B	2.10		
LIMESTONE rock head.	▦	2.40			AA101746	B	2.30		
End of Trial Pit at 2.30m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP22**
SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES

GROUND LEVEL (m)

DATE STARTED 22/11/2018
DATE COMPLETED 22/11/2018

CLIENT
ENGINEER Pinnacle C.E.

EXCAVATION METHOD 3 tonne digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE with a layer of plastic below it.		0.20							
1.0	MADE GROUND comprised of: Very dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a high angular cobble content.		1.50							
2.0	Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		2.20			AA101747	B	1.50		
	Very stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.90		1 (Seepage) 2 (Moderate)	AA101748	B	2.50		
3.0	LIMESTONE rock head.		3.00			AA101749	B	2.90		
	End of Trial Pit at 3.00m									
4.0										

Groundwater Conditions
Seepage at 2.5m and moderate at 2.8m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TP01 photo 1 of 2

TP01 photo 2 of 2

TP02 photo 1 of 2

TP02 photo 2 of 2

TP03 photo 1 of 2

TP03 photo 2 of 2

TP04 photo 1 of 2

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TP05 photo 2 of 2

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TP21 photo 2 of 2

TP22 photo 1 of 2

TP22 photo 2 of 2

Appendix 2

Dynamic Probe Records

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. **DP01**

SHEET Sheet 1 of 1

CO-ORDINATES 709,641.43 E
741,066.99 N

GROUND LEVEL (mOD) 80.96

HAMMER MASS (kg) 50

INCREMENT SIZE (mm) 100

FALL HEIGHT (mm) 500

DATE COMMENCED 21/11/2018

DATE COMPLETED 21/11/2018

CLIENT

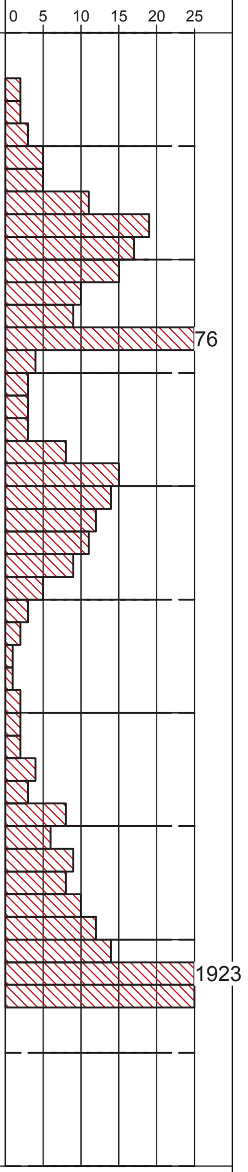
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
1.0					
2.0					
3.0					
4.0					
	End of Probe at 4.30 m			76.66	

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	2
0.30	2
0.40	3
0.50	5
0.60	5
0.70	11
0.80	19
0.90	17
1.00	15
1.10	10
1.20	9
1.30	76
1.40	4
1.50	3
1.60	3
1.70	3
1.80	8
1.90	15
2.00	14
2.10	12
2.20	11
2.30	9
2.40	5
2.50	3
2.60	2
2.70	1
2.80	1
2.90	2
3.00	2
3.10	2
3.20	4
3.30	3
3.40	8
3.50	6
3.60	9
3.70	8
3.80	10
3.90	12
4.00	14
4.10	1923
4.20	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

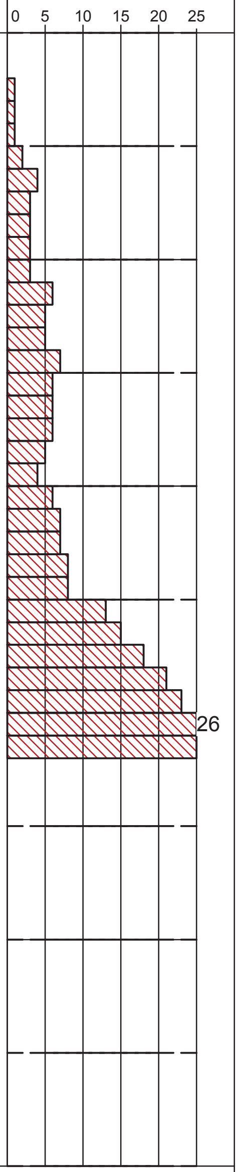
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP02**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,682.64 E 741,072.10 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	80.89	**DATE COMPLETED**	21/11/2018
CLIENT		**PROBE TYPE**	DPH
ENGINEER	Pinnacle C.E		
HAMMER MASS (kg)	50		
INCREMENT SIZE (mm)	100		
FALL HEIGHT (mm)	500		

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0					
3.20	End of Probe at 3.20 m			77.69	

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	1
0.30	1
0.40	1
0.50	2
0.60	4
0.70	3
0.80	3
0.90	3
1.00	3
1.10	6
1.20	5
1.30	5
1.40	7
1.50	6
1.60	6
1.70	6
1.80	5
1.90	4
2.00	6
2.10	7
2.20	7
2.30	8
2.40	8
2.50	13
2.60	15
2.70	18
2.80	21
2.90	23
3.00	26
3.10	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

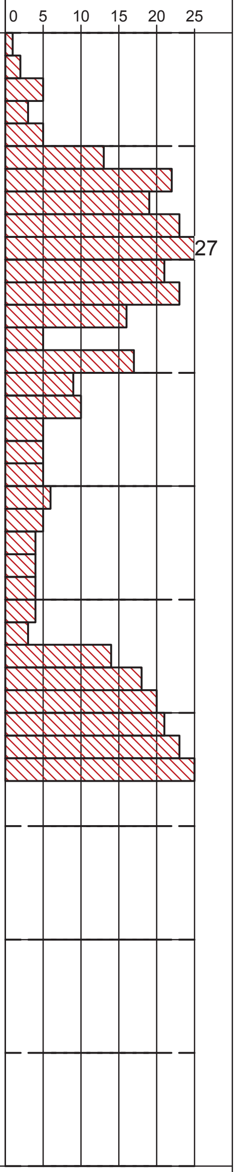
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP03**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,708.32 E 741,067.44 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	80.83	**DATE COMPLETED**	21/11/2018
CLIENT		**PROBE TYPE**	DPH
ENGINEER	Pinnacle C.E		
HAMMER MASS (kg)	50		
INCREMENT SIZE (mm)	100		
FALL HEIGHT (mm)	500		

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
	End of Probe at 3.30 m			77.53	

Depth (m)	Probe Readings (Blows/Increment)
0.00	1
0.10	2
0.20	5
0.30	3
0.40	5
0.50	13
0.60	22
0.70	19
0.80	23
0.90	27
1.00	21
1.10	23
1.20	16
1.30	5
1.40	17
1.50	9
1.60	10
1.70	5
1.80	5
1.90	5
2.00	6
2.10	5
2.20	4
2.30	4
2.40	4
2.50	4
2.60	3
2.70	14
2.80	18
2.90	20
3.00	21
3.10	23
3.20	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. **DP04**
SHEET Sheet 1 of 1

CO-ORDINATES 709,759.86 E
741,074.04 N
GROUND LEVEL (mOD) 80.54

HAMMER MASS (kg) 50
INCREMENT SIZE (mm) 100
FALL HEIGHT (mm) 500

DATE COMMENCED 21/11/2018
DATE COMPLETED 21/11/2018

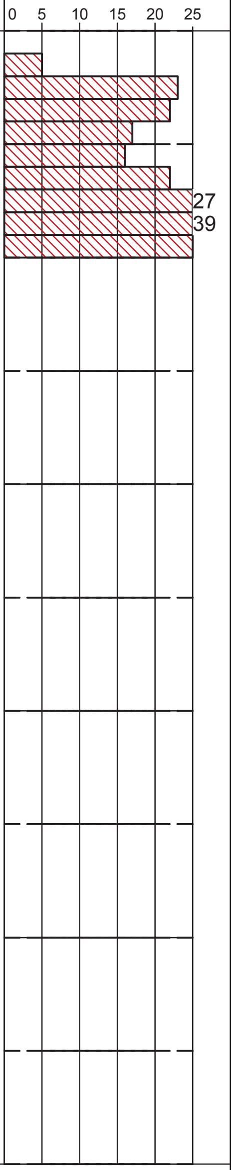
CLIENT
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
1.0	End of Probe at 1.00 m			79.54	
2.0					
3.0					
4.0					

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	5
0.20	23
0.30	22
0.40	17
0.50	16
0.60	22
0.70	27
0.80	39
0.90	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

IGSL DP LOG 100MM INCREMENTS 21393.GPJ IGSL.GDT 29/1/19

DYNAMIC PROBE RECORD

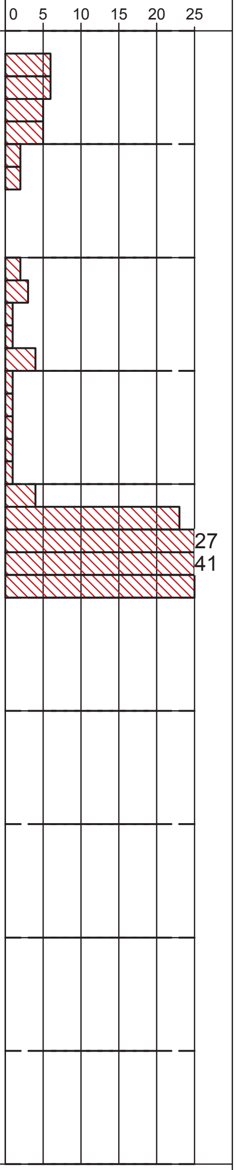
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP05**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,820.44 E 741,021.14 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	80.26	**DATE COMPLETED**	21/11/2018
HAMMER MASS (kg)	50	**PROBE TYPE**	DPH
INCREMENT SIZE (mm)	100		
FALL HEIGHT (mm)	500		
CLIENT			
ENGINEER	Pinnacle C.E		

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
	End of Probe at 2.50 m			77.76	

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	6
0.20	6
0.30	5
0.40	5
0.50	2
0.60	2
0.70	0
0.80	0
0.90	0
1.00	2
1.10	3
1.20	1
1.30	1
1.40	4
1.50	1
1.60	1
1.70	1
1.80	1
1.90	1
2.00	4
2.10	23
2.20	27
2.30	41
2.40	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP06**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,822.42 E 741,000.87 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	79.99	**DATE COMPLETED**	21/11/2018
CLIENT		**PROBE TYPE**	DPH
ENGINEER	Pinnacle C.E		

HAMMER MASS (kg) 50

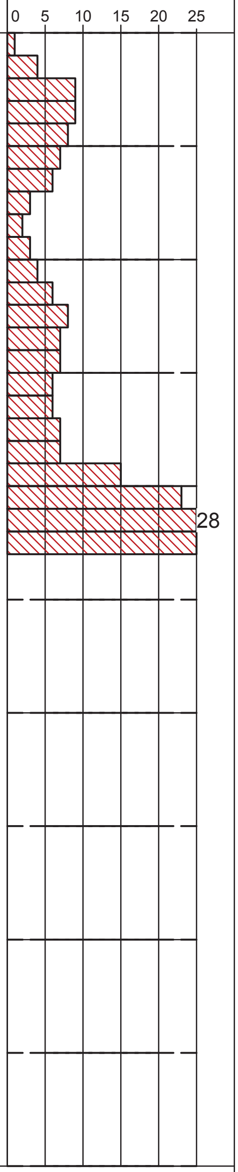
INCREMENT SIZE (mm) 100

FALL HEIGHT (mm) 500

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
2.30	End of Probe at 2.30 m			77.69	

Depth (m)	Probe Readings (Blows/Increment)
0.00	1
0.10	4
0.20	9
0.30	9
0.40	8
0.50	7
0.60	6
0.70	3
0.80	2
0.90	3
1.00	4
1.10	6
1.20	8
1.30	7
1.40	7
1.50	6
1.60	6
1.70	7
1.80	7
1.90	15
2.00	23
2.10	28
2.20	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. DP07
SHEET Sheet 1 of 1

CO-ORDINATES 709,835.04 E
740,934.22 N
GROUND LEVEL (mOD) 79.58

HAMMER MASS (kg) 50
INCREMENT SIZE (mm) 100
FALL HEIGHT (mm) 500

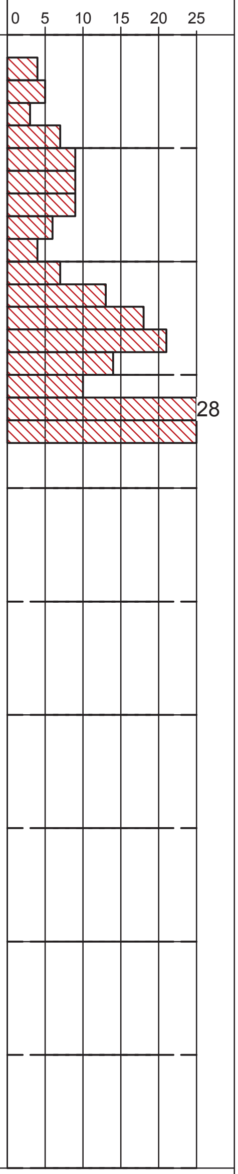
DATE COMMENCED 21/11/2018
DATE COMPLETED 21/11/2018

CLIENT
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water	Depth (m)	Probe Readings (Blows/Increment)
0.0	.					0.00	0
						0.10	4
						0.20	5
						0.30	3
						0.40	7
						0.50	9
						0.60	9
						0.70	9
						0.80	6
						0.90	4
1.0						1.00	7
						1.10	13
						1.20	18
						1.30	21
						1.40	14
						1.50	10
						1.60	28
						1.70	25
	End of Probe at 1.80 m			77.78			
2.0							
3.0							
4.0							

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

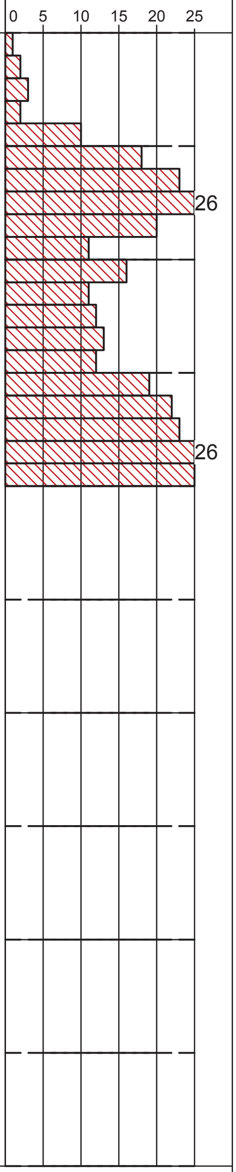
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP08**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,794.07 E 740,941.58 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	79.70	**DATE COMPLETED**	21/11/2018
CLIENT		**PROBE TYPE**	DPH
ENGINEER	Pinnacle C.E		
HAMMER MASS (kg)	50		
INCREMENT SIZE (mm)	100		
FALL HEIGHT (mm)	500		

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
2.0	End of Probe at 2.00 m			77.70	

Depth (m)	Probe Readings (Blows/Increment)
0.00	1
0.10	2
0.20	3
0.30	2
0.40	10
0.50	18
0.60	23
0.70	26
0.80	20
0.90	11
1.00	16
1.10	11
1.20	12
1.30	13
1.40	12
1.50	19
1.60	22
1.70	23
1.80	26
1.90	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. **DP09**
SHEET Sheet 1 of 1

CO-ORDINATES 709,746.44 E
740,924.04 N
GROUND LEVEL (mOD) 79.37

HAMMER MASS (kg) 50
INCREMENT SIZE (mm) 100
FALL HEIGHT (mm) 500

DATE COMMENCED 21/11/2018
DATE COMPLETED 21/11/2018

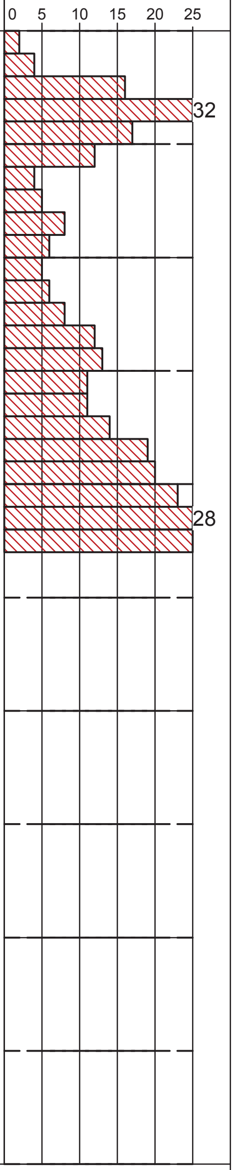
CLIENT
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
2.30	End of Probe at 2.30 m			77.07	

Depth (m)	Probe Readings (Blows/Increment)
0.00	2
0.10	4
0.20	16
0.30	32
0.40	17
0.50	12
0.60	4
0.70	5
0.80	8
0.90	6
1.00	5
1.10	6
1.20	8
1.30	12
1.40	13
1.50	11
1.60	11
1.70	14
1.80	19
1.90	20
2.00	23
2.10	28
2.20	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

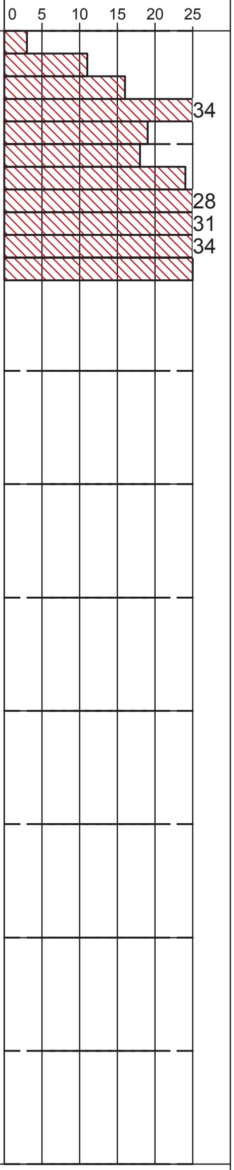
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP10**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,649.16 E 740,875.51 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	79.63	**DATE COMPLETED**	21/11/2018
HAMMER MASS (kg)	50	**PROBE TYPE**	DPH
INCREMENT SIZE (mm)	100		
FALL HEIGHT (mm)	500		
CLIENT			
ENGINEER	Pinnacle C.E		

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
1.0	End of Probe at 1.10 m			78.53	

Depth (m)	Probe Readings (Blows/Increment)
0.00	3
0.10	11
0.20	16
0.30	34
0.40	19
0.50	18
0.60	24
0.70	28
0.80	31
0.90	34
1.00	25

Graphic Probe Record



Depth (m): 0.0, 1.0, 2.0, 3.0, 4.0

GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

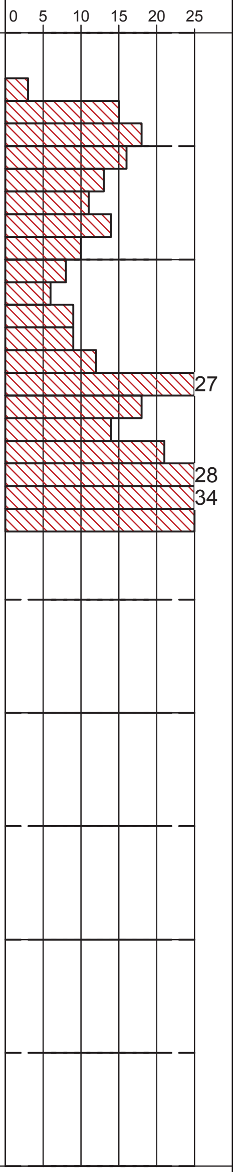
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP11**
		SHEET	Sheet 1 of 1
CO-ORDINATES	709,640.61 E 740,951.54 N	**DATE COMMENCED**	21/11/2018
GROUND LEVEL (mOD)	79.54	**DATE COMPLETED**	21/11/2018
HAMMER MASS (kg)	50	**PROBE TYPE**	DPH
INCREMENT SIZE (mm)	100		
FALL HEIGHT (mm)	500		
CLIENT			
ENGINEER	Pinnacle C.E		

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
	End of Probe at 2.20 m			77.34	

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	3
0.30	15
0.40	18
0.50	16
0.60	13
0.70	11
0.80	14
0.90	10
1.00	8
1.10	6
1.20	9
1.30	9
1.40	12
1.50	27
1.60	18
1.70	14
1.80	21
1.90	28
2.00	34
2.10	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. **DP12**

SHEET Sheet 1 of 1

CO-ORDINATES

GROUND LEVEL (mOD)

DATE COMMENCED 22/11/2018

DATE COMPLETED 22/11/2018

HAMMER MASS (kg) 50

INCREMENT SIZE (mm) 100

FALL HEIGHT (mm) 500

CLIENT

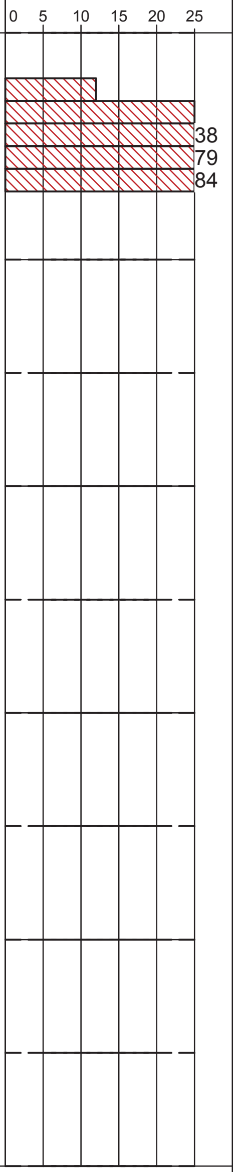
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
	End of Probe at 0.70 m				
1.0					
2.0					
3.0					
4.0					

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	12
0.30	25
0.40	38
0.50	79
0.60	84

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

Cored to 0.20m

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. DP13

SHEET Sheet 1 of 1

CO-ORDINATES

GROUND LEVEL (mOD)

HAMMER MASS (kg) 50

INCREMENT SIZE (mm) 100

FALL HEIGHT (mm) 500

DATE COMMENCED 22/11/2018

DATE COMPLETED 22/11/2018

CLIENT

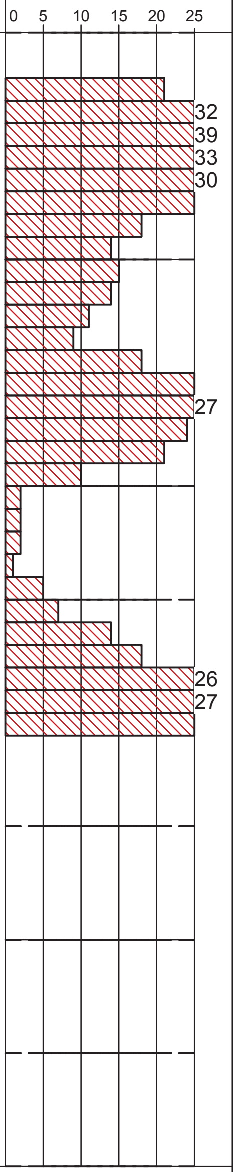
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
3.0	End of Probe at 3.10 m				

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	21
0.30	32
0.40	39
0.50	33
0.60	30
0.70	25
0.80	18
0.90	14
1.00	15
1.10	14
1.20	11
1.30	9
1.40	18
1.50	25
1.60	27
1.70	24
1.80	21
1.90	10
2.00	2
2.10	2
2.20	2
2.30	1
2.40	5
2.50	7
2.60	14
2.70	18
2.80	26
2.90	27
3.00	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

Cored to 0.20m

IGSL DP LOG 100MM INCREMENTS 21393.GPJ IGSL.GDT 29/1/19

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. **DP14**
SHEET Sheet 1 of 1

CO-ORDINATES

GROUND LEVEL (mOD)

DATE COMMENCED 22/11/2018
DATE COMPLETED 22/11/2018

HAMMER MASS (kg) 50
INCREMENT SIZE (mm) 100
FALL HEIGHT (mm) 500

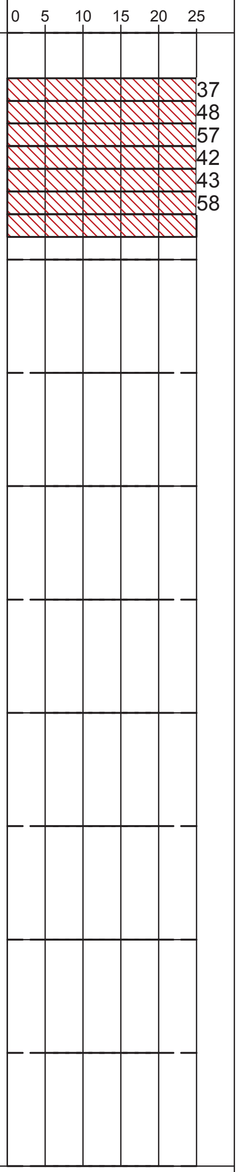
CLIENT
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
	End of Probe at 0.90 m				

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	37
0.30	48
0.40	57
0.50	42
0.60	43
0.70	58
0.80	25

Graphic Probe Record



Depth scale: 0.0, 1.0, 2.0, 3.0, 4.0

GROUNDWATER OBSERVATIONS

REMARKS
Cored to 0.20m

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport Site , Ballycoolin , Dublin

PROBE NO. **DP15**
SHEET Sheet 1 of 1

CO-ORDINATES

GROUND LEVEL (mOD)

DATE COMMENCED 22/11/2018
DATE COMPLETED 22/11/2018

HAMMER MASS (kg) 50
INCREMENT SIZE (mm) 100
FALL HEIGHT (mm) 500

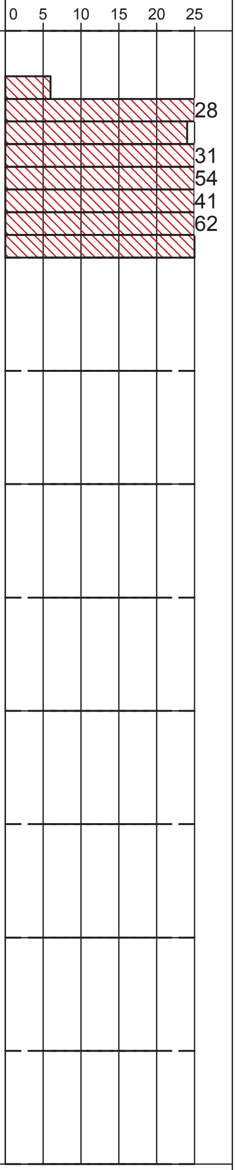
CLIENT
ENGINEER Pinnacle C.E

PROBE TYPE DPH

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water
0.0	.				
1.0	End of Probe at 1.00 m				
2.0					
3.0					
4.0					

Depth (m)	Probe Readings (Blows/Increment)
0.00	0
0.10	0
0.20	6
0.30	28
0.40	24
0.50	31
0.60	54
0.70	41
0.80	62
0.90	25

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS
Cored to 0.20m

DYNAMIC PROBE RECORD

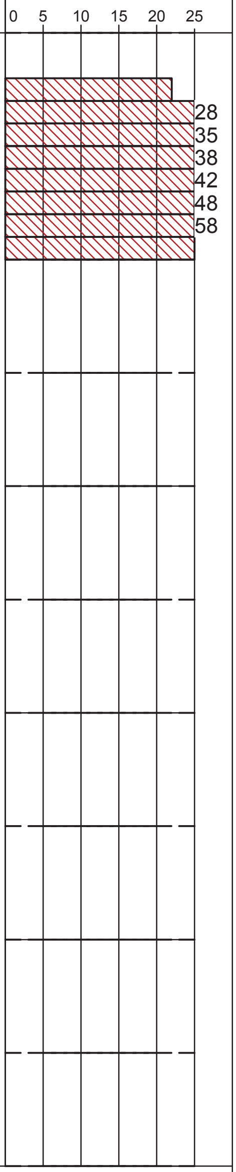
REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP16**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**DATE COMMENCED**	22/11/2018
GROUND LEVEL (mOD)		**DATE COMPLETED**	22/11/2018
CLIENT		**PROBE TYPE**	DPH
ENGINEER	Pinnacle C.E		

HAMMER MASS (kg)	50
INCREMENT SIZE (mm)	100
FALL HEIGHT (mm)	500

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water	Depth (m)	Probe Readings (Blows/Increment)
0.0	.					0.00	0
						0.10	0
						0.20	22
						0.30	28
						0.40	35
						0.50	38
						0.60	42
						0.70	48
						0.80	58
						0.90	25
1.0	End of Probe at 1.00 m						
2.0							
3.0							
4.0							

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

Cored to 0.20m

DYNAMIC PROBE RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport Site , Ballycoolin , Dublin	**PROBE NO.**	**DP17**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**DATE COMMENCED**	22/11/2018
GROUND LEVEL (mOD)		**DATE COMPLETED**	22/11/2018
CLIENT		**PROBE TYPE**	DPH
ENGINEER	Pinnacle C.E		

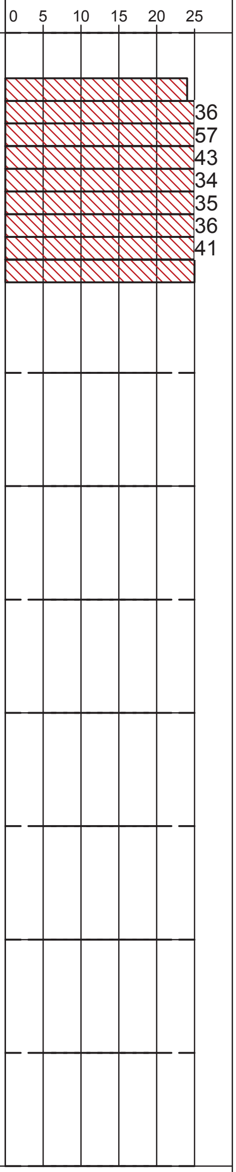
HAMMER MASS (kg) 50

INCREMENT SIZE (mm) 100

FALL HEIGHT (mm) 500

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation (mOD)	Water	Depth (m)	Probe Readings (Blows/Increment)
0.0	.					0.00	0
						0.10	0
						0.20	24
						0.30	36
						0.40	57
						0.50	43
						0.60	34
						0.70	35
						0.80	36
						0.90	41
1.0						1.00	25
	End of Probe at 1.10 m						
2.0							
3.0							
4.0							

Graphic Probe Record



GROUNDWATER OBSERVATIONS

REMARKS

Cored to 0.20m

Appendix 3

Environmental Laboratory Testing (Chemtest)

UKAS
TESTING
2183

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 18-38199-1 18-38199-1

Initial Date of Issue: 20/Dec/2018 20/Dec/2018

Client IGSL IGSL

Client Address:
M7 Business Park
Naas
County Kildare
Ireland M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh Darren Keogh

Project 21393 21393 Brian Daily Transport Site
Ballycoolin

Quotation No.:

Date Received: 05/Dec/2018 0

Order No.:

Date Instructed: 05/Dec/2018 0

No. of Samples: 13 13

Turnaround (Wkdays): 7 7

Results Due: 13/Dec/2018 1

Date Approved: 20/Dec/2018 20/Dec/2018

Approved By:

M. D

Details: Martin Dyer, Laboratory Manager

Results - Leachate

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114	736115	736116	736117	738318
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16	TP16	TP17	TP18	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20	2.00	1.00	1.00	1.00
	Bottom Depth (m):												0.50				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
Ammonium	U	1220	mg/l	0.050	0.16	0.15	0.22	0.30	0.24	0.19	13	1.5	0.23	0.18	0.13	0.15	0.26
Ammonium	N	1220	mg/kg	0.10	1.6	1.5	2.2	3.0	2.4	1.9	130	15	2.3	1.8	1.3	1.5	2.6
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20	< 20	< 20	38	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Boron (Dissolved)	U	1450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.38	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20
	Bottom Depth (m):												0.50
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	5.1	24	14	13	18	32	24	20
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.68	< 0.40	0.69	0.44	< 0.40	0.66	1.3	0.78	1.0
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] 1.2	[A] 1.5	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 2.9	[A] 180	[A] 4.5
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 9.8	[A] 8.4	[A] 4.1	[A] 9.8	[A] 11	[A] 7.5	[A] 7.6	[A] 13	[A] 4.6
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.11	[A] 0.057	[A] 0.053	[A] 0.078	[A] 0.042	[A] 0.079	[A] 0.14	[A] 0.087	[A] 0.11
Arsenic	U	2450	mg/kg	1.0	23	41	12	20	18	17	17	23	18
Barium	U	2450	mg/kg	10	130	61	380	57	47	370	360	110	370
Cadmium	U	2450	mg/kg	0.10	1.1	0.27	0.64	0.83	0.79	2.0	1.6	1.0	1.3
Chromium	U	2450	mg/kg	1.0	22	8.4	30	16	15	26	25	18	30
Molybdenum	U	2450	mg/kg	2.0	2.5	< 2.0	2.4	< 2.0	< 2.0	2.6	2.6	2.0	2.1
Antimony	N	2450	mg/kg	2.0	< 2.0	3.4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	21	11	14	18	15	31	28	23	36
Mercury	U	2450	mg/kg	0.10	0.11	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	0.28	0.19
Nickel	U	2450	mg/kg	0.50	37	15	47	35	34	57	48	45	61
Lead	U	2450	mg/kg	0.50	42	110	27	23	19	44	54	43	69
Selenium	U	2450	mg/kg	0.20	2.2	< 0.20	2.3	0.89	0.61	1.6	1.9	2.4	1.9
Zinc	U	2450	mg/kg	0.50	84	50	60	64	57	110	110	72	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	8.4	30	16	15	26	25	18	30
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 1.6	[A] 1.1	[A] 1.1	[A] 1.3	[A] 0.48	[A] 2.3	[A] 3.5	[A] 1.6	[A] 2.5
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20
	Bottom Depth (m):												0.50
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.34
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.28
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736115	736116	736117	738318
	Sample Location:				TP16	TP17	TP18	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				2.00	1.00	1.00	1.00
	Bottom Depth (m):							
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	16	12	0.55
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.45	0.45	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] 7.3	[A] < 1.0	[A] 4.8
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 19	[A] 12	[A] 20	[A] 4.6
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.023	[A] 0.034	[A] 0.042	[A] 0.062
Arsenic	U	2450	mg/kg	1.0	13	22	17	48
Barium	U	2450	mg/kg	10	70	180	67	46
Cadmium	U	2450	mg/kg	0.10	0.49	0.98	1.2	< 0.10
Chromium	U	2450	mg/kg	1.0	22	15	16	5.6
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	2.4
Copper	U	2450	mg/kg	0.50	9.8	17	16	2.8
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	34	32	47	5.0
Lead	U	2450	mg/kg	0.50	18	27	16	14
Selenium	U	2450	mg/kg	0.20	0.58	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	43	52	67	14
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	15	16	5.6
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 0.55	[A] 0.64	[A] 0.57	[A] 3.4
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0

Results - Soil

Project: 21393

Client: IGSL				**Chemtest Job No.:**	18-38199	18-38199	18-38199	18-38199
Quotation No.:				**Chemtest Sample ID.:**	736115	736116	736117	738318
				Sample Location:	TP16	TP17	TP18	TP19
				Sample Type:	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.00	1.00	1.00	1.00
				Bottom Depth (m):				
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[AC] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.40
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.42
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.35
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[AC] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736106						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP3						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.6	3	5	6
Loss On Ignition	2610	U	%	4.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0029	0.029	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.8	28	800	15000	25000
Fluoride	1220	U	0.52	5.2	10	150	500
Sulphate	1220	U	42	420	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736107						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP4						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	0.86	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.14	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.018	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0017	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0016	0.016	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.2	32	800	15000	25000
Fluoride	1220	U	0.44	4.4	10	150	500
Sulphate	1220	U	25	250	1000	20000	50000
Total Dissolved Solids	1020	N	85	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736108						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP12						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.061	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0042	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0020	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0034	< 0.050	0.5	10	30
Nickel	1450	U	0.0022	< 0.050	0.4	10	40
Lead	1450	U	0.0013	0.013	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0030	0.030	0.1	0.5	7
Zinc	1450	U	0.0017	< 0.50	4	50	200
Chloride	1220	U	3.6	36	800	15000	25000
Fluoride	1220	U	0.36	3.6	10	150	500
Sulphate	1220	U	23	230	1000	20000	50000
Total Dissolved Solids	1020	N	78	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	17	170	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	24

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736109						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.3	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		9.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.078	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0045	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0016	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0026	< 0.050	0.5	10	30
Nickel	1450	U	0.0016	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0023	0.023	0.1	0.5	7
Zinc	1450	U	0.0015	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	33	330	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736110						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.48	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.22	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0041	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0040	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0022	0.022	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	37	370	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736111						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 2.3	3	5	6
Loss On Ignition	2610	U	%	5.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.045	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0065	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0030	0.030	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	4.5	45	800	15000	25000
Fluoride	1220	U	0.46	4.6	10	150	500
Sulphate	1220	U	11	110	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	11	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-38199						
Chemtest Sample ID:	736112						
Sample Ref:							
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	4.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 3.5	3	5	6
Loss On Ignition	2610	U	%	9.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.027	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0026	< 0.050	0.5	2	25
Barium	1450	U	0.0094	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0037	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0042	< 0.050	0.5	10	30
Nickel	1450	U	0.0035	< 0.050	0.4	10	40
Lead	1450	U	0.0022	0.022	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0025	0.025	0.1	0.5	7
Zinc	1450	U	0.0016	< 0.50	4	50	200
Chloride	1220	U	5.7	57	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	14	140	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	25	250	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	32

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736113				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Ref:							
Sample ID:							
Sample Location:	TP15						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.6	3	5	6
Loss On Ignition	2610	U	%	5.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.39	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.033	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0043	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.020	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.5	25	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	37	370	1000	20000	50000
Total Dissolved Solids	1020	N	78	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	24

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736114						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	0.20						
Bottom Depth(m):	0.50						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 2.5	3	5	6
Loss On Ignition	2610	U	%	7.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.083	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0046	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0018	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.020	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.2	22	800	15000	25000
Fluoride	1220	U	0.73	7.3	10	150	500
Sulphate	1220	U	4.8	48	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	20

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736115						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.55	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.18	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0037	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0046	0.046	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.45	4.5	10	150	500
Sulphate	1220	U	22	220	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	14	140	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736116						
Sample Ref:							
Sample ID:							
Sample Location:	TP17						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 0.64	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.22	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0053	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0027	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0015	0.015	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.58	5.8	10	150	500
Sulphate	1220	U	10	100	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736117						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP18						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.57	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.49	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0014	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0039	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0014	0.014	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	17	170	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	738318						
Sample Ref:							
Sample ID:							
Sample Location:	TP19						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 3.4	3	5	6
Loss On Ignition	2610	U	%	0.68	--	--	10
Total BTEX	2760	U	mg/kg	[AC] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[AC] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.26	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0061	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0016	0.016	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	19	190	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	16	160	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	0.55

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
736106			TP3		A	Amber Glass 250ml
736106			TP3		A	Amber Glass 60ml
736107			TP4		A	Amber Glass 250ml
736107			TP4		A	Amber Glass 60ml
736108			TP12		A	Amber Glass 250ml
736108			TP12		A	Amber Glass 60ml
736109			TP13		A	Amber Glass 250ml
736109			TP13		A	Amber Glass 60ml
736110			TP13		A	Amber Glass 250ml
736110			TP13		A	Amber Glass 60ml
736111			TP14		A	Amber Glass 250ml
736111			TP14		A	Amber Glass 60ml
736112			TP14		A	Amber Glass 250ml
736112			TP14		A	Amber Glass 60ml
736113			TP15		A	Amber Glass 250ml
736113			TP15		A	Amber Glass 60ml
736114			TP16		A	Amber Glass 250ml
736114			TP16		A	Amber Glass 60ml
736115			TP16		A	Amber Glass 250ml
736115			TP16		A	Amber Glass 60ml
736116			TP17		A	Amber Glass 250ml
736116			TP17		A	Amber Glass 60ml

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
736117			TP18		A	Amber Glass 250ml
736117			TP18		A	Amber Glass 60ml
738318			TP19		AC	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 4

Chemical Analysis of Limestone (Nicholls Colton)

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

IGSL
Unit F
M7 Business Park
Nass

Analytical Test Report: L18/2877/IGS/001

Your Project Reference:	**21393 - Brian Daly Transport - Pinnacle**	Samples Received on:	10/12/2018
Your Order Number:	14923	Testing Instruction Received:	10/12/2018
Report Issue Number:	1	Sample Tested:	10/12 to 19/12/2018
Samples Analysed:	2 Samples	Report issued:	19/12/2018

Signed

James Gane
Commercial Manager
Nicholls Colton Group

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Samples were supplied by customer, results are representative of the material provided

Accreditation Key

UKAS = UKAS Accreditation, u = Unaccredited

Date of Issue 24.01.2017
Owned by Emily Blissett - Customer Services Supervisor
Authorised by James Gane - Commercial Manager
J:\Public\Projects\2018\L18\IGS - IGLS\L18-2877-IGS\[L18-2877-IGS-001.xlsx]Cover Sheet

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

L18/2877/IGS/001

Project Reference - 21393 - Brian Daly Transport - Pinnacle

Analytical Test Results - Aggregate Testing

NC Reference			**23212**	**23213**
Client Sample Reference			AA101714	AA101749
Material			Hardcore Aggregate	Hardcore Aggregate
Source/Client Ref.			TP5 - 3.50-3.50m	TP22 - 2.90-3.00
Sample Description			Black crushed rock	Black crushed rock
EN 1744 Determinations	**Units**	**Accreditation**		
Total Sulphur content (as S)	(%)	UKAS	0.13	0.19
Acid soluble sulphate content (as SO_3)	(%)	UKAS	0.05	0.06
Acid soluble sulphate content (as SO_4)	(%)	u	0.06	0.07
Water soluble sulphate content (as SO_3)	(%)	UKAS	< 0.01	< 0.01
Water soluble sulphate content (as SO_3)	(mg/l)	u	< 50	< 50
Water soluble sulphate content (as SO_4)	(%)	u	< 0.01	< 0.01
Water soluble sulphate content (as SO_4)	(mg/l)	u	< 60	< 60

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

L18/2877/IGS/001

Project Reference - 21393 - Brian Daly Transport - Pinnacle

Analysis Methodologies and Notes

Determinant	Test method and notes
EN 1744 Total Sulphur	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 11.
EN 1744 Acid Soluble Sulphate	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 12.
EN 1744 Water Soluble Sulphate	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 10.

Appendix 5

Waste Characterisation Assessment (OCM)

Unit 15
Melbourne Business Park
Model Farm Road
Cork T12 WR89

O'Callaghan Moran & Associates
ENVIRONMENTAL MANAGEMENT FOR BUSINESS

T: 021 434 5366
E:info@ocallaghanmoran.com
www.ocallaghanmoran.com

Waste Characterisation Assessment
Ballycoolin Road,
Grange,
Dublin 15

Prepared For: -

IGSL Limited
Unit F,
M7 Business Park,
Naas,
County Kildare.

Prepared By: -

O' Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road,
Cork.

January 2019

Project	Waste Characterisation : Ballycoolin, Dublin 15			
Client	IGSL Limited.			
Report No	Date	Status	Prepared By	Reviewed By
190010101	18/01/2019	Draft	Austin Hynes	Sean Moran

TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION

IGSL Limited (IGSL) requested O'Callaghan Moran & Associates (OCM) to undertake a waste characterisation assessment of samples of made and natural ground collected from ten trial pits (TP3, TP4, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19) at the Brian Daly Transport Site in Ballycoolin Business Park in Grange, Dublin 15.

1.1 Methodology

IGSL provided a description of the ground conditions and collected samples of the soils from ten trial pit locations. The samples were analysed at an accredited laboratory and the results formed the basis for a waste classification assessment, which was undertaken by OCM in accordance with the Environmental Protection Agency (EPA) Guidelines on the Classification of Waste (2015).

2 WASTE CLASSIFICATION ASSESSMENT

2.1 Soil Sampling and Laboratory Analysis

2.1.1 *Site Investigation*

The site investigation was completed by IGSL in November 2018 and included the collection of thirteen composite samples from ten trial pits (TP3, TP4, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19). The locations are shown on Figure 2.1.

The logs of the trial pits indicate that the subsurface of the site comprises of MADE GROUND the depth of which varies across the site from 1.80-4.00m underlain by natural ground. In areas covered by concrete/tarmacadam (TP4, TP19), the sub surface consists of dense, grey slightly sandy GRAVEL to c.1.80m underlain by stiff, dark grey, mottled brown, slightly sandy gravelly SILT/CLAY. In areas covered by topsoil (TP3, TP12-18), the subsurface comprises of MADE GROUND consisting of firm to stiff, grey brown, gravelly CLAY containing timber, plastic and concrete to between 1.90-3.00m. The natural ground consists of very stiff, blue grey, slightly sandy very gravelly CLAY and is found at depths generally greater than 2.0m which was found to overlie Limestone bedrock. Bedrock was encountered at varying depths across the site. In TP12, TP16 and TP17 bedrock was encountered at c.3.0m. In TP18 bedrock was encountered at 2.30m. The Trial Pit sample logs are contained in Appendix 1.

2.1.2 *Sample Collection*

The samples were collected by IGSL and were placed in laboratory prepared containers and stored in coolers prior to shipment to Chemtest Ltd.

2.1.3 *Laboratory Analysis*

The samples were tested for Total Heavy Metals, Total Organic Carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, Polychlorinated Biphenyls (PCB), Mineral Oil, Polyaromatic Hydrocarbons (PAH) and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range facilitates an assessment of the hazardous properties of the waste, and also allows a determination of appropriate off-site management options based on the Waste Acceptance Criteria (WAC) applied by landfill operators.

The analytical methods were all ISO/CEN approved and the method detection limits were below the relevant guidance/threshold values. The full laboratory report is in Appendix 2.

2.2 Waste Classification

The Haz Waste Online Classification Engine, developed in the UK by One Touch Data Ltd, was used to determine the waste classification. This tool was developed specifically to establish whether waste is non-hazardous or hazardous and has been approved for use in Ireland by the Environmental Protection Agency.

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366

Email: info@ocallaghanmoran.com

This drawing is the property of O'Callaghan Moran & Associates and shall not be used, reproduced or disclosed to anyone without the prior written permission of O'Callaghan Moran & Associates and shall be returned upon request.

Title:

Figure 2.1 Site Layout

Client:

IGSL

Legend

● - Trial Pit

○ - Waste Characterisation Carried out

The full Waste Classification Report is in Appendix 3 and the results are summarised in Table 2.1.

Table 2.1 Waste Classification

Sample No.	Depth	Classification	LoW Code
TP3	1.00	Non-Hazardous	17 05 04
TP4	1.00	Non-Hazardous	17 05 04
TP12	0.50	Non-Hazardous	17 09 04
TP13	1.00	Non-Hazardous	17 09 04
TP13	2.00	Non-Hazardous	17 05 04
TP14	1.00	Non-Hazardous	17 05 04
TP14	4.00	Non-Hazardous	17 09 04
TP15	2.00	Non-Hazardous	17 05 04
TP16	0.20-0.50	Non-Hazardous	17 05 04
TP16	2.00	Non-Hazardous	17 09 04
TP17	1.00	Non-Hazardous	17 05 04
TP18	1.00	Non-Hazardous	17 05 04
TP19	1.00	Non-Hazardous	17 05 04

Asbestos was not detected in any of the samples.

The soils are all classified as non-hazardous. The Made Ground samples from TP12, TP13 (1.0m), TP14 (4.0m) and TP16 (2.0m) contain construction demolition waste. The appropriate LoW Code for these samples is 17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 03). The appropriate LoW Code for the remaining samples is 17 05 04 (Soil and stone other than those mentioned in 17 05 03).

2.3 Waste Acceptance Criteria

The results of the WAC testing are presented in Table 2.2, which includes for comparative purposes the WAC for Inert, Non Hazardous and Hazardous Waste Landfills pursuant to Article 16 of the EU Landfill Directive 1999/31/EC Annex II which establishes criteria and procedures for the acceptance of waste at landfills.

The made ground meets the Inert WAC, with the exception of TP14 at 4.0m and TP19 at 1.0m which exceeds the Inert WAC for Total Organic Carbon (TOC).

The natural ground meets the inert WAC.

2.4 Waste Management Options

Asbestos was not detected in any of the samples analysed from the site.

Samples from TP3, TP4, TP13, TP15, TP16 (0.2-0.5m), TP17 and TP18 meet the inert WAC and the appropriate LoW is code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03). This material is suitable for retention on site or if it requires removal is suitable for recovery at a permitted waste recovery facility subject to the approval of the facility operator.

Samples from TP-14 (1m) and TP-19 exceed the inert WAC for TOC and the appropriate LoW is code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03). Annex II of the Directive allows a derogation for TOC if the DOC is less than 500mg/kg then the TOC can be considered as meeting the inert WAC. The DOC are below 500mg/kg in these samples. The material may be suitable for recovery at a permitted waste recovery facility if the derogation is accepted. Otherwise the material in these trial pits must be sent to a Non Hazardous Waste Landfill subject to the approval of the facility operator.

The sample from TP-12, TP-14 (4m) and TP-16 (2m) contains construction demolition waste and the appropriate LoW is 17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 03). This material is suitable for disposal to non-hazardous landfill in Ireland subject to approval of the facility operator.

Table 2.2 WAC Results

Parameter	Unit	TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16	TP16	TP17	TP18	TP19	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	**m**	**1.00**	**1.00**	**0.50**	**1.00**	**2.00**	**1.00**	**4.00**	**2.00**	**0.20-0.50**	**2.00**	**1.00**	**1.00**	**1.00**			
		Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Nat. Ground	Made Ground			
Antimony	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.06	0.7	5
Arsenic	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.5	2	25
Barium	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	20	100	300
Cadmium	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.04	1	5
Chromium	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.5	10	70
Copper	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	2	50	100
Lead	mg/kg	< 0.010	< 0.010	0.013	< 0.010	< 0.010	< 0.010	0.022	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.5	10	50
Molybdenum	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.5	10	30
Nickel	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.4	10	40
Selenium	mg/kg	0.029	0.016	0.030	0.023	0.022	0.030	0.025	0.020	0.020	0.046	0.015	0.014	0.016	0.1	0.5	7
Zinc	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4	50	200
Mercury	mg/kg	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	NE	NE
Fluoride	mg/kg	5.2	4.4	3.6	2.5	2.2	4.6	2.5	2.5	7.3	4.5	5.8	3.0	2.3	10	150	500
Chloride	mg/kg	28	32	36	30	30	45	57	25	22	21	21	12	< 10	800	15,000	25,000
Sulphate	mg/kg	420	250	230	330	370	110	140	370	48	220	100	170	190	1000*	20000*	50,000
DOC **	mg/kg	150	180	170	130	150	110	250	210	150	140	130	130	160	500	800	1,000
pH	pH units	7.9	8.6	8.1	9.5	8.3	7.9	7.7	8.1	8.1	8.2	8.4	8.3	8.5	NE	NE	NE
TDS ***	mg/kg	1200	850	770	840	910	1000	1200	770	710	710	780	910	1400	4,000	60,000	100,000
TOC	%	1.6	1.1	1.1	1.3	0.48	2.3	3.5	1.6	2.5	0.55	0.64	0.57	3.4	3	NE	6
Benzene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
Toluene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
Ethylbenze	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
m/p-Xylene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
o-Xylene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
PCB Total o	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1	NE	NE
Total 17 PA	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NE	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

Asbestos was not detected in any of the samples analysed from the site.

Samples from TP3, TP4, TP13, TP15, TP16 (0.2-0.5m), TP17 and TP18 meet the inert WAC. This material is suitable for retention on site or if it requires removal is suitable for recovery at a permitted waste recovery facility subject to the approval of the facility operator

Samples from TP-14 (1m) and TP-19 exceed the inert WAC for TOC but may be suitable for recovery at a permitted waste recovery facility if the derogation for TOC is accepted. Otherwise the material in these trial pits must be sent to a Non Hazardous Waste Landfill subject to approval of the facility operator.

The sample from TP-12, TP-14 (4m) and TP-16 (2m) contain construction demolition waste and is suitable for disposal to non-hazardous landfill in Ireland subject to approval of the facility operator.

3.2 Recommendations

OCM recommend that a copy of this report be provided in full to the relevant waste management facilities to which the made ground and subsoils may be consigned to confirm its suitability for acceptance.

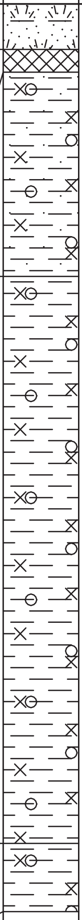
Appendix 1

Trial Pit Logs

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP01**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,621.85 E 741,053.74 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	80.98	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		



Geotechnical Description	Depth (m)	Elevation	Water Strike	Samples Sample Ref	Samples Type	Samples Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL	0.20	80.78						
MADE GROUND comprised of: Firm brown gravelly CLAY. Gravel is fine to coarse and angular. Contains occassional rootlets and infrequent old broken pipes.	0.30	80.68						
Firm to stiff dark grey mottled brown and red slightly sandy gravelly silty CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular. Has a low subangular cobble content. (Possible made ground).	1.20	79.78		AA101701 AA101702	B B	0.50 1.00		
Stiff dark grey gravelly silty CLAY. Gravel is fine to coarse and angular. Has a low subangular cobble content.	3.70	77.28	1 (Seepage)	AA101703 AA101704	B B	2.00 3.00		
Very stiff blue grey slightly silty very gravelly CLAY. Gravel is fine to coarse and angular. Has a low rounded to angular cobble content.	4.00	76.98	2 (Moderate)	AA101705	B	3.80		
LIMESTONE rock head. End of Trial Pit at 4.00m								

Groundwater Conditions
Seepage at 3.5m and moderate at 4m.

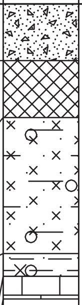
Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,646.00 E 740,950.91 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.58	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		



Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
CONCRETE		0.25	79.33						
MADE GROUND comprised of: Very dense dark grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular.		0.50	79.08						
Stiff grey mottled brown sandy gravelly very clayey SILT. Sand is fine. Gravel is fine to coarse and angular to subangular. 5 inch black pipe uncovered alone northern side of pit.		1.10	78.48		AA101736	B	1.00		
Very stiff blue grey silty sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular to subrounded. Has a medium angular to subrounded cobble content.		1.20	78.38						
LIMESTONE rock head.		1.30	78.28						
End of Trial Pit at 1.20m									

Groundwater Conditions
Dry

Stability
Walls collapsing from 0.5m to 1.1m around the pipe in pea gravel to the north side of the pit.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,684.02 E 741,062.88 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	80.98	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL		0.20	80.78						
	MADE GROUND Comprised of: Firm brown sandy gravelly CLAY. Sand is coarse. Gravel is fine to medium and angular. Has a low subangular cobble content. Contains occassional rootlets and rare old broken pipe.	▨	0.70	80.28		AA101706	B	0.50		
1.0	MADE GROUND comprised of: Stiff brown grey mottled red very gravelly very silty CLAY. Gravel is fine to coarse and angular to subrounded. Has a medium subangular to subrounded cobble content. Contains frequent plastic and infrequent broken old pipe and timber.	▨	1.50	79.48		AA101707	B	1.00		
	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is coarse and angular.	▨	1.90	79.08		AA101708	B	1.60		
2.0	MADE GROUND comprised of: Stiff brown very clayey SILT. Stopped pit due to walls collapsing.	▨	2.20	78.78		AA101709	B	2.10		
	MADE GROUND comprised of: Stiff grey gravelly very clayey SILT. Gravel is fine to medium and angular. 5 inch black cable uncovered at the western side of the pit.	▨	3.00	77.98		AA101710	B	2.30		
3.0	MADE GROUND comprised of: Fine angular to rounded PEA GRAVEL.	▨	3.05	77.93						
	Stopped pit due to pea gravel found at 3m. End of Trial Pit at 3.05m									
4.0										

Groundwater Conditions
Dry

Stability
Walls Collapsing from 1.5m to 1.9m.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER

21393

CONTRACT	Brian Daly Transport			**TRIAL PIT NO.**	**TP04**
				SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,694.85 E 740,960.43 N	**DATE STARTED**	21/11/2018
				DATE COMPLETED	21/11/2018
CLIENT		**GROUND LEVEL (m)**	79.44	**EXCAVATION METHOD**	JCB
ENGINEER	Pinnacle C.E.				

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Tarmacadam.	▨	0.10	79.34						
	MADE GROUND comprised of: Dense grey GRAVEL. Gravel is fine to coarse and angular. Contains infrequent plastic.	▨								
1.0		▨				AA101729	B	1.00		
		▨			1 ▼ (Slow)					
2.0	End of Trial Pit at 2.00m		2.00	77.44						
3.0										
4.0										

Groundwater Conditions
Moderate at 1.7m.

Stability
Walls collapsing from 0.1m to base of pit.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP05**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,733.43 E 741,070.94 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	80.86	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.40	80.46						
	MADE GROUND comprised of: Very dense dark grey clayey very sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Has a low subangular cobble content.		0.90	79.96		AA101711	B	0.50		
1.0	MADE GROUND comprised of: Very dense dark grey GRAVEL. Gravel is fine to coarse and angular. Contains a medium subangular cobble content.		1.50	79.36						
2.0	Stiff grey mottled brown slightly gravelly very silty CLAY. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to subrounded cobble content. (Possible made ground).		3.00	77.86		AA101712 AA101713	B B	1.50 2.50		
3.0	Stiff dark grey sandy silty very gravelly CLAY. Sand us coarse. Gravel is fine to coarse and subangular to subrounded. Has a low subrounded cobble content and a low subrounded boulder content which are >300mm in size.		3.50	77.36	1 (Seepage)	AA101714	B	3.50		
	LIMESTONE rock head.		3.60	77.26						
4.0	End of Trial Pit at 3.60m									

Groundwater Conditions
Seepage at 3.4m.

Stability
Walls Collapsing from 0.9m to 1.5m.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP06**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,729.41 E 740,966.68 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.42	**EXCAVATION METHOD**	jcb
CLIENT			
ENGINEER	Pinnacle C.E.		

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND comprised of: Tarmacadam.		0.09	79.33						
	MADE GROUND comprised of: Dense light brown coarse SAND.		0.12	79.30						
	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is fine to coarse and angular.		0.70	78.72						
1.0	Stiff grey mottled brown slightly gravelly very clayey SILT. Gravel is fine to medium and subangular. Contains organic shell fragments.(Possible made ground).		1.60	77.82		AA101726	B	1.00		
	Very stiff blue grey slightly sandy slightly silty gravelly CLAY. Sand is fine. Gravel is fine to coarse and angular to subrounded. Has a medium angular to subrounded cobble content.		1.95	77.47		AA101727	B	1.90		
2.0	LIMESTONE rock head.		2.00	77.42	1 (Slow)	AA101728	B	2.00		
	End of Trial Pit at 2.00m									
3.0										
4.0										

Groundwater Conditions
Slow at 2m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP07**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,785.69 E 741,079.59 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	79.89	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.10	79.79						
	MADE GROUND comprised of: Firm dark grey brown sandy gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular.		0.40	79.49						
	MADE GROUND comprised of: Very dense dark grey slightly clayey sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a medium angular cobble content. Contains infrequent plastic.		1.00	78.89		AA01715	B	0.50		
1.0	Stiff dark grey mottled brown and red gravelly very silty CLAY. Gravel is fine to coarse and subangular to subrounded. (Possible made ground).		1.80	78.09		AA01716	B	1.00		
	LIMESTONE rock head.		2.00	77.89		AA01717	B	1.90		
2.0	End of Trial Pit at 2.00m									
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP08**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,788.09 E 741,062.56 N
GROUND LEVEL (m)	79.41	**DATE STARTED**	20/11/2018
		DATE COMPLETED	20/11/2018
CLIENT		**EXCAVATION METHOD**	JCB
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Dense grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Layer of haram cloth below the hard core.	▨	0.30	79.11						
	MADE GROUND comprised of: Stiff brown mottled grey gravelly very silty CLAY. Gravel is fine to coarse and subangular. Has a lowsubangular cobble content. Contains infrequent plastic.	▨	0.70	78.71		AA01718	B	0.50		
	Rock was found at 0.7m to the eastern side of the pit but 1.2m to the western side of the pit. End of Trial Pit at 0.70m									
1.0						AA01719	B	1.20		
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP09**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,804.33 E
740,968.96 N

GROUND LEVEL (m) 79.53

DATE STARTED 20/11/2018

DATE COMPLETED 20/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Very dense grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent concrete slabs and broken old wires.									
	Stiff grey mottled brown gravelly very clayey SILT. Gravel is fine to medium and angular. (Possible made ground).		0.80	78.73						
1.0						AA01720	B	1.00		
2.0						AA01721	B	2.00		
	Stiff dark blue grey silty very gravelly CLAY. Gravel is fine to coarse and angular to subrounded. Has a low angular cobble content.		2.50	77.03						
	LIMESTONE rock head.		2.80	76.73						
	End of Trial Pit at 2.90m		2.90	76.63	1 (Slow)	AA01722	B	2.90		
3.0										
4.0										

Groundwater Conditions
Slow at 2.9m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER

21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP10**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,747.59 E 740,923.02 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.41	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL									
	MADE GROUND comprised of: Dense grey slightly sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent plastic.		0.20	79.21						
1.0	Stiff grey mottled brown slightly sandy gravelly very clayey SILT. Sand is dine to medium. Gravel is fine to coarse and subangular to subrounded. (Possible made ground).		0.80	78.61		AA101730	B	1.00		
2.0	Very stiff grey blue silty very sandy very gravelly CLAY. Sand is coarse. Grave is fine to coarse and angular to subrounded. Has a low subangular to subrounded cobble content.		2.00	77.41		AA101731	B	2.00		
3.0	LIMESTONE rock head.		3.00	76.41	1 (Slow)	AA101732	B	3.00		
	End of Trial Pit at 3.10m		3.10	76.31						
4.0										

Groundwater Conditions
Slow at 3m.

Stability
Walls collapsing from 2.5m to 3m

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP11**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2108
CO-ORDINATES	709,643.17 E 740,903.55 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.60	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
MADE GROUND comprised of: Tarmacadam.		0.05	79.55						
MADE GROUND comprised of: Dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular.		0.20	79.40						
MADE GROUND comprised of: Dense brown very gravelly SAND. Sand is coarse. Gravel is fine and angular.		0.25	79.35						
MADE GROUND comprised of: Dense dark grey clayey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent rebar.		0.80	78.80						
Stiff light grey slightly gravelly sandy very clayey SILT. Sand is fine. Gravel is fine and subrounded. (Possible made ground).		1.60	78.00		AA101733	B	1.00		
Stiff dark grey mottled brown slightly sandy gravelly very clayey SILT. Sand is fine. Gravel is fine and angular. (Possible made ground).		2.20	77.40		AA101734	B	2.00		
Very stiff blue grey silty very sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular to rounded. Has a medium subangular to subrounded cobble content.		3.40	76.20	1 (Seepage)	AA101735	B	3.00		
LIMESTONE rock head.		3.50	76.10	2 (Moderate)					
End of Trial Pit at 3.40m									

Groundwater Conditions
Seepage at 2.9m and Moderate at 3.5m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP12**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,822.62 E 741,088.60 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	81.14	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.30	80.84						
MADE GROUND comprised of: Firm to stiff brown sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular. Contains occassional rootlets. Contains infrequent concrete bricjs, timber, broken old pipes and plastic.		1.10	80.04		AA101634 AA101635	B B	0.50 1.00		
Stiff very dark grey brown silty gravelly CLAY. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to subrounded cobble content. (Possible made ground).		2.40	78.74		AA101636	B	2.00		
Very stiff dark grey silty very gravelly CLAY. Gravel is fine to coarse and angular to subangular. Has a low angular to subangular cobble content.		3.10	78.04		AA101637	B	3.00		
LIMESTONE rock head.		3.20	77.94						
End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP13**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,893.42 E 741,091.10 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	82.31	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL	⁖	0.20	82.11						
	MADE GROUND comprised of: Stiff dark grey brown slightly sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular. Has a low angular to subangular cobble content. Contains infrequent timber, concrete pieces and old broken pipe.	▨				AA101643	B	0.50		
1.0		▨				AA101644	B	1.00		
2.0		▨				AA101645	B	2.00		
3.0	Stiff dark brown grey mottled green gravelly very clayey SILT. Gravel is fine to coarse and angular. (Possible made ground).	▨	2.90	79.41		AA101646	B	3.00		
	End of Trial Pit at 3.20m		3.20	79.11						
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP14**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,852.73 E 741,074.80 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	84.79	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.30	84.49						
	MADE GROUND comprised of: Stiff grey brown slightly sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular.		1.00	83.79		AA101638	B	0.50		
1.0	MADE GROUND comprised of: Stiff brown mottled grey and red gravelly very silty CLAY. Sand is medium to coarse. Gravel is fine to medium and subangular.		1.80	82.99		AA101639	B	1.00		
2.0	MADE GROUND comprised of dark grey mottled brown slightly gravellly very clayey SILT. Gravel is fine to medium and angular. Contains infrequent timber, hay and rope.		4.30	80.49		AA101640	B	2.00		
3.0						AA101641	B	3.00		
4.0						AA101642	B	4.00		
	End of Trial Pit at 4.30m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP15**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,848.44 E 741,008.88 N
		DATE STARTED	19/11/2018
		DATE COMPLETED	19/11/2018
CLIENT		**GROUND LEVEL (m)**	82.20
ENGINEER	Pinnacle C.E.	**EXCAVATION METHOD**	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL	▨	0.30	81.90						
	MADE GROUND comprised of: Stiff dark grey brown slightly silty very gravelly CLAY. Gravel is fine to coarse and subangular. Has a low subangular cobble content. Contains infrequent timber and plastic.	▨	1.10	81.10		AA106420	B	0.50		
1.0						AA106421	B	1.00		
	MADE GROUND comprised of: Dark grey stiff slightly silty gravelly CLAY. Contains infrequernt timber.	▨	2.60	79.60						
2.0					1 (Seepage)	AA106422	B	2.00		
	Stiff greenish grey very silty CLAY. Contains organic shell fragments. (Possible made ground).	▨	3.60	78.60						
3.0						AA106423	B	3.00		
	Stiff grey mottled brown gravelly very silty CLAY. Gravel is fine to coarse and angular. (Possible made ground).	▨	4.10	78.10						
4.0						AA106424	B	4.00		
	End of Trial Pit at 4.10m									

Groundwater Conditions
Seepage at 2.1m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP16**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,898.66 E 741,051.65 N	**DATE COMPLETED**	19/11/2018
CLIENT		**EXCAVATION METHOD**	JCB
ENGINEER	Pinnacle C.E.		
GROUND LEVEL (m)	80.99		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL and infrequent rebar.		0.30	80.69						
1.0	MADE GROUND comprised of: Firm brown gravelly CLAY. Gravel is fine to coarse and angular. Contains occassional rootlets and infrequent timber and plastic.		1.10	79.89		AA106430 AA106431	B B	0.50 1.00		
2.0	MADE GROUND compised of: Very stiff grey brown gravelly very clayey SILT. Gravel is fine and angular.		2.50	78.49		AA106432	B	2.00		
3.0	Very stiff dark grey slightly sandy slightly silty very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and subangular to subrounded. Hhas a low subangular to subrounded cobble content. (Possible made ground).		3.20	77.79		AA106433	B	3.00		
	LIMESTONE rock head.		3.30	77.69						
4.0	End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP17**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,865.22 E 740,977.86 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	80.75	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL and infrequent glass.									
	MADE GROUND comprised of: Firm to stiff silty sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular. Has a low angular cobble content. Contains infrequent rebar, rope, plastic and broken old pipe.		0.30	80.45		AA106425	B	0.50		
1.0						AA106426	B	1.00		
	Stiff grey mottled brown slightly gravelly very silty CLAY. Gravel is fine to medium and subangular to subrounded. Has a high organic shell content. (Possible made ground).		1.70	79.05						
2.0						AA106427	B	2.00		
3.0	Very stiff dark blue grey slightly sandy silty very gravelly CLAY. Sand is coarse. Gravel is coarse and angular.		3.00	77.75		AA106428	B	3.00		
	LIMESTONE rock head.		3.10	77.65						
	End of Trial Pit at 3.20m		3.20	77.55		AA106429	B	3.20		
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP18**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,808.09 E 740,941.26 N
CLIENT		**GROUND LEVEL (m)**	79.33
ENGINEER	Pinnacle C.E.		
DATE STARTED	21/11/2018	**DATE COMPLETED**	21/11/2018
EXCAVATION METHOD	JCB		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is fine to coarse and angular. Contains infrequent plastic.	▨	0.70	78.63	1 (Moderate)					
1.0	Stiff grey mottled brown gravelly very clayey SILT. Gravel is fine to coarse and angular. (Possible made ground).	×	1.90	77.43		AA101723	B	1.00		
2.0	Very stiff blue grey slightly silty very gravelly CLAY. Gravel is fine to coarse and angular to subrounded. Has a low subangular to subrounded cobble content.	─	2.30	77.03		AA101724	B	2.00		
	LIMESTONE rock head.	▦	2.40	76.93		AA101725	B	2.30		
	End of Trial Pit at 2.40m									
3.0										
4.0										

Groundwater Conditions
Moderate at 0.7m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP19**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES

GROUND LEVEL (m)

DATE STARTED 22/11/2018

DATE COMPLETED 22/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD 3 tonne digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	CONCRETE with a layer of plastic below it.		0.30							
1.0	MADE GROUND comprised of very dense slightly sandy GRAVEL. Sand is coarse. Gravel is medium to coarse and angular. Has a medium angular cobble content. Contains infrequent plastic.		1.80			AA101737	B	1.00		
2.0	Stiff dark grey mottled brown sandy gravelly very silty CLAY. Sand is medium to coarse. Gravel is fine to coarse and subangular to subrounded.Has a low subangular to subrounded cobble content.		3.10			AA101738 AA101739	B B	2.00 3.00		
3.0	Stiff dark grey silty very sandy very gravelly CLAY. Sand is coarse. Gravel is fine to medium and subangular to rounded. Has a low subangular to subrounded cobble content.		3.30		1 (Moderate) (Rapid)	AA101740	B	3.20		
4.0	Stopped as the machine couldn't reach further and high amount of water. End of Trial Pit at 3.30m									

Groundwater Conditions
Moderate at 3.2m and rapid at 3.3m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP20**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES

DATE STARTED 22/11/2018

DATE COMPLETED 22/11/2018

GROUND LEVEL (m)

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD 3 tonne digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE with a layer of plastic below it.									
1.0	MADE GROUND comprised of: Very dense grey very gravelly COBBLES. Gravel is coarse and angular. Cobbles are angular.		0.20							
2.0	Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		1.80			AA101741	B	1.80		
3.0	Stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.80		1 (Rapid)	AA101742 AA101743	B B	2.80 3.70		
4.0	Possible limestone rock head at 3.8m not visible due to groundwater. End of Trial Pit at 3.80m		3.80							

Groundwater Conditions
Rapid at 3.7m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP21**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	22/11/2018
CO-ORDINATES		**DATE COMPLETED**	22/11/2018
GROUND LEVEL (m)		**EXCAVATION METHOD**	3 tonne digger
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE with a layer of plastic below it.	▨	0.20							
	MADE GROUND comprised of: Very dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a high angular cobble content.	▨	1.70							
1.0										
	Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).	▨	2.00			AA101744	B	1.80		
2.0	Very stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.	▨	2.30			AA101745	B	2.10		
	LIMESTONE rock head.	▨	2.40			AA101746	B	2.30		
	End of Trial Pit at 2.30m									
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP22**
SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES

GROUND LEVEL (m)

DATE STARTED 22/11/2018
DATE COMPLETED 22/11/2018

CLIENT
ENGINEER Pinnacle C.E.

EXCAVATION METHOD 3 tonne digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	CONCRETE with a layer of plastic below it.		0.20							
1.0	MADE GROUND comprised of: Very dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a high angular cobble content.		1.50							
2.0	Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		2.20			AA101747	B	1.50		
	Very stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.90		1 (Seepage) 2 (Moderate)	AA101748	B	2.50		
3.0	LIMESTONE rock head.		3.00			AA101749	B	2.90		
	End of Trial Pit at 3.00m									
4.0										

Groundwater Conditions
Seepage at 2.5m and moderate at 2.8m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

Appendix 2

Laboratory Report

UKAS
TESTING
2183

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 18-38199-1 18-38199-1

Initial Date of Issue: 20/Dec/2018 20/Dec/2018

Client IGSL IGSL

Client Address:
M7 Business Park
Naas
County Kildare
Ireland M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh Darren Keogh

Project 21393 21393 Brian Daily Transport Site Ballycoolin

Quotation No.:

Date Received: 05/Dec/2018 0

Order No.:

Date Instructed: 05/Dec/2018 0

No. of Samples: 13 13

Turnaround (Wkdays): 7 7

Results Due: 13/Dec/2018 1

Date Approved: 20/Dec/2018 20/Dec/2018

Approved By:

Details: Martin Dyer, Laboratory Manager

Results - Leachate

Project: 21393

Client: IGSL				**Chemtest Job No.:**	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:				**Chemtest Sample ID.:**	736106	736107	736108	736109	736110	736111	736112	736113	736114	736115	736116	736117	738318
				Sample Location:	TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16	TP16	TP17	TP18	TP19
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20	2.00	1.00	1.00	1.00
				Bottom Depth (m):									0.50				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
Ammonium	U	1220	mg/l	0.050	0.16	0.15	0.22	0.30	0.24	0.19	13	1.5	0.23	0.18	0.13	0.15	0.26
Ammonium	N	1220	mg/kg	0.10	1.6	1.5	2.2	3.0	2.4	1.9	130	15	2.3	1.8	1.3	1.5	2.6
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20	< 20	< 20	38	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Boron (Dissolved)	U	1450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.38	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20
	Bottom Depth (m):												0.50
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	5.1	24	14	13	18	32	24	20
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.68	< 0.40	0.69	0.44	< 0.40	0.66	1.3	0.78	1.0
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] 1.2	[A] 1.5	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 2.9	[A] 180	[A] 4.5
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 9.8	[A] 8.4	[A] 4.1	[A] 9.8	[A] 11	[A] 7.5	[A] 7.6	[A] 13	[A] 4.6
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.11	[A] 0.057	[A] 0.053	[A] 0.078	[A] 0.042	[A] 0.079	[A] 0.14	[A] 0.087	[A] 0.11
Arsenic	U	2450	mg/kg	1.0	23	41	12	20	18	17	17	23	18
Barium	U	2450	mg/kg	10	130	61	380	57	47	370	360	110	370
Cadmium	U	2450	mg/kg	0.10	1.1	0.27	0.64	0.83	0.79	2.0	1.6	1.0	1.3
Chromium	U	2450	mg/kg	1.0	22	8.4	30	16	15	26	25	18	30
Molybdenum	U	2450	mg/kg	2.0	2.5	< 2.0	2.4	< 2.0	< 2.0	2.6	2.6	2.0	2.1
Antimony	N	2450	mg/kg	2.0	< 2.0	3.4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	21	11	14	18	15	31	28	23	36
Mercury	U	2450	mg/kg	0.10	0.11	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	0.28	0.19
Nickel	U	2450	mg/kg	0.50	37	15	47	35	34	57	48	45	61
Lead	U	2450	mg/kg	0.50	42	110	27	23	19	44	54	43	69
Selenium	U	2450	mg/kg	0.20	2.2	< 0.20	2.3	0.89	0.61	1.6	1.9	2.4	1.9
Zinc	U	2450	mg/kg	0.50	84	50	60	64	57	110	110	72	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	8.4	30	16	15	26	25	18	30
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 1.6	[A] 1.1	[A] 1.1	[A] 1.3	[A] 0.48	[A] 2.3	[A] 3.5	[A] 1.6	[A] 2.5
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20
	Bottom Depth (m):												0.50
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.34
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.28
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736115	736116	736117	738318
	Sample Location:				TP16	TP17	TP18	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				2.00	1.00	1.00	1.00
	Bottom Depth (m):							
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	16	12	0.55
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.45	0.45	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] 7.3	[A] < 1.0	[A] 4.8
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 19	[A] 12	[A] 20	[A] 4.6
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.023	[A] 0.034	[A] 0.042	[A] 0.062
Arsenic	U	2450	mg/kg	1.0	13	22	17	48
Barium	U	2450	mg/kg	10	70	180	67	46
Cadmium	U	2450	mg/kg	0.10	0.49	0.98	1.2	< 0.10
Chromium	U	2450	mg/kg	1.0	22	15	16	5.6
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	2.4
Copper	U	2450	mg/kg	0.50	9.8	17	16	2.8
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	34	32	47	5.0
Lead	U	2450	mg/kg	0.50	18	27	16	14
Selenium	U	2450	mg/kg	0.20	0.58	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	43	52	67	14
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	15	16	5.6
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 0.55	[A] 0.64	[A] 0.57	[A] 3.4
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736115	736116	736117	738318
	Sample Location:				TP16	TP17	TP18	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				2.00	1.00	1.00	1.00
	Bottom Depth (m):							
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[AC] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.40
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.42
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.35
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[AC] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No: 18-38199
Chemtest Sample ID: 736106
Sample Ref:
Sample ID:
Sample Location: TP3
Top Depth(m): 1.00
Bottom Depth(m):
Sampling Date:

					Landfill Waste Acceptance Criteria Limits		
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 1.6	3	5	6
Loss On Ignition	2610	U	%	4.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0029	0.029	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.8	28	800	15000	25000
Fluoride	1220	U	0.52	5.2	10	150	500
Sulphate	1220	U	42	420	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736107						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP4						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	0.86	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.14	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.018	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0017	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0016	0.016	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.2	32	800	15000	25000
Fluoride	1220	U	0.44	4.4	10	150	500
Sulphate	1220	U	25	250	1000	20000	50000
Total Dissolved Solids	1020	N	85	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No: 18-38199
Chemtest Sample ID: 736108
Sample Ref:
Sample ID:
Sample Location: TP12
Top Depth(m): 0.50
Bottom Depth(m):
Sampling Date:

					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.061	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0042	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0020	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0034	< 0.050	0.5	10	30
Nickel	1450	U	0.0022	< 0.050	0.4	10	40
Lead	1450	U	0.0013	0.013	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0030	0.030	0.1	0.5	7
Zinc	1450	U	0.0017	< 0.50	4	50	200
Chloride	1220	U	3.6	36	800	15000	25000
Fluoride	1220	U	0.36	3.6	10	150	500
Sulphate	1220	U	23	230	1000	20000	50000
Total Dissolved Solids	1020	N	78	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	17	170	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	24

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736109						
Sample Ref:							
Sample ID:							
Sample Location:	TP13				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.3	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		9.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.078	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0045	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0016	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0026	< 0.050	0.5	10	30
Nickel	1450	U	0.0016	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0023	0.023	0.1	0.5	7
Zinc	1450	U	0.0015	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	33	330	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736110						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.48	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.22	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0041	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0040	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0022	0.022	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	37	370	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736111						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 2.3	3	5	6
Loss On Ignition	2610	U	%	5.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.045	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0065	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0030	0.030	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	4.5	45	800	15000	25000
Fluoride	1220	U	0.46	4.6	10	150	500
Sulphate	1220	U	11	110	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	11	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736112						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	4.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 3.5	3	5	6
Loss On Ignition	2610	U	%	9.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.027	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0026	< 0.050	0.5	2	25
Barium	1450	U	0.0094	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0037	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0042	< 0.050	0.5	10	30
Nickel	1450	U	0.0035	< 0.050	0.4	10	40
Lead	1450	U	0.0022	0.022	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0025	0.025	0.1	0.5	7
Zinc	1450	U	0.0016	< 0.50	4	50	200
Chloride	1220	U	5.7	57	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	14	140	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	25	250	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	32

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736113						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP15						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.6	3	5	6
Loss On Ignition	2610	U	%	5.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.39	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.033	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0043	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.020	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.5	25	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	37	370	1000	20000	50000
Total Dissolved Solids	1020	N	78	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	24

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199
Chemtest Sample ID:	736114
Sample Ref:	
Sample ID:	
Sample Location:	TP16
Top Depth(m):	0.20
Bottom Depth(m):	0.50
Sampling Date:	

					Landfill Waste Acceptance Criteria Limits		
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 2.5	3	5	6
Loss On Ignition	2610	U	%	7.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.083	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0046	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0018	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.020	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.2	22	800	15000	25000
Fluoride	1220	U	0.73	7.3	10	150	500
Sulphate	1220	U	4.8	48	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	20

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736115						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.55	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.18	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0037	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0046	0.046	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.45	4.5	10	150	500
Sulphate	1220	U	22	220	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	14	140	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736116						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP17						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.64	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.22	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0053	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0027	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0015	0.015	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.58	5.8	10	150	500
Sulphate	1220	U	10	100	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736117						
Sample Ref:							
Sample ID:							
Sample Location:	TP18						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.57	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.49	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0014	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0039	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0014	0.014	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	17	170	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	738318						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP19						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 3.4	3	5	6
Loss On Ignition	2610	U	%	0.68	--	--	10
Total BTEX	2760	U	mg/kg	[AC] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[AC] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.26	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0061	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0016	0.016	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	19	190	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	16	160	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	0.55

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
736106			TP3		A	Amber Glass 250ml
736106			TP3		A	Amber Glass 60ml
736107			TP4		A	Amber Glass 250ml
736107			TP4		A	Amber Glass 60ml
736108			TP12		A	Amber Glass 250ml
736108			TP12		A	Amber Glass 60ml
736109			TP13		A	Amber Glass 250ml
736109			TP13		A	Amber Glass 60ml
736110			TP13		A	Amber Glass 250ml
736110			TP13		A	Amber Glass 60ml
736111			TP14		A	Amber Glass 250ml
736111			TP14		A	Amber Glass 60ml
736112			TP14		A	Amber Glass 250ml
736112			TP14		A	Amber Glass 60ml
736113			TP15		A	Amber Glass 250ml
736113			TP15		A	Amber Glass 60ml
736114			TP16		A	Amber Glass 250ml
736114			TP16		A	Amber Glass 60ml
736115			TP16		A	Amber Glass 250ml
736115			TP16		A	Amber Glass 60ml
736116			TP17		A	Amber Glass 250ml
736116			TP17		A	Amber Glass 60ml

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
736117			TP18		A	Amber Glass 250ml
736117			TP18		A	Amber Glass 60ml
738318			TP19		AC	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 3

Waste Classification Report

Waste Classification Report

AFU2V-S4Y9R-V7ZQL

Job name

19-001-01 17-05-04

Description/Comments

Project

19-001-01

Site

Ballycoolin

Related Documents

#	Name	Description
None		

Waste Stream Template

O'Callaghan Moran Waste Stream

Classified by

Name:
Austin Hynes
Date:
14 Jan 2019 14:15 GMT
Telephone:
021 4345366

Company:
OCallaghan Moran and Associates
Unit 15 Melbourne Business Park
Model Farm Road
Cork

Report

Created by: Austin Hynes
Created date: 14 Jan 2019 14:15 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP3	1.00	Non Hazardous		3
2	TP4	1.00	Non Hazardous		6
3	TP13	2.00	Non Hazardous		9
4	TP14	1.00	Non Hazardous		12
5	TP15	2.00	Non Hazardous		15
6	TP16	0.20-0.50	Non Hazardous		18
7	TP16[1]	2.00	Non Hazardous		21
8	TP18	1.00	Non Hazardous		24
9	TP19	1.00	Non Hazardous		27

Classification of sample: TP3

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP3
Sample Depth:
1.00 m
Moisture content:
15%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2		arsenic { arsenic trioxide }				23	mg/kg	1.32	30.367	mg/kg	0.00304 %		
		033-003-00-0	215-481-4	1327-53-3									
3		boron { diboron trioxide; boric oxide }				0.68	mg/kg	3.22	2.19	mg/kg	0.000219 %		
		005-008-00-8	215-125-8	1303-86-2									
4		cadmium { cadmium oxide }				1.1	mg/kg	1.142	1.257	mg/kg	0.000126 %		
		048-002-00-0	215-146-2	1306-19-0									
5		chromium in chromium(III) compounds { chromium(III) oxide }				22	mg/kg	1.462	32.154	mg/kg	0.00322 %		
			215-160-9	1308-38-9									
6		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7		copper { dicopper oxide; copper (I) oxide }				21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
		029-002-00-X	215-270-7	1317-39-1									
8		lead { lead chromate }			1	42	mg/kg	1.56	65.512	mg/kg	0.0042 %		
		082-004-00-2	231-846-0	7758-97-6									
9		mercury { mercury dichloride }				0.11	mg/kg	1.353	0.149	mg/kg	0.0000149 %		
		080-010-00-X	231-299-8	7487-94-7									
10		molybdenum { molybdenum(VI) oxide }				2.5	mg/kg	1.5	3.75	mg/kg	0.000375 %		
		042-001-00-9	215-204-7	1313-27-5									
11		nickel { nickel chromate }				37	mg/kg	2.976	110.122	mg/kg	0.011 %		
		028-035-00-7	238-766-5	14721-18-7									
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.2	mg/kg	2.554	5.618	mg/kg	0.000562 %		
		034-002-00-8											
13		zinc { zinc chromate }				84	mg/kg	2.774	233.028	mg/kg	0.0233 %		
		024-007-00-3											
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		7.9 pH		7.9 pH	7.9 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0501 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP4

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP4		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
5.1% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 5.1% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				3.4	mg/kg	1.197	4.07	mg/kg	0.000407 %		
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				41	mg/kg	1.32	54.133	mg/kg	0.00541 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				0.27	mg/kg	1.142	0.308	mg/kg	0.0000308 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				8.4	mg/kg	1.462	12.277	mg/kg	0.00123 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				11	mg/kg	1.126	12.385	mg/kg	0.00124 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	110	mg/kg	1.56	171.58	mg/kg	0.011 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				15	mg/kg	2.976	44.644	mg/kg	0.00446 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
		034-002-00-8											
13	■	zinc { zinc chromate }				50	mg/kg	2.774	138.707	mg/kg	0.0139 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	▨	pH		PH		8.6	pH		8.6	pH	8.6 pH		
22		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene	205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	▨	fluorene	201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene	201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	▨	anthracene	204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene	205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	▨	pyrene	204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene 601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene	205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol 604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
										Total:	0.0395 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP13		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	■	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	■	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18	mg/kg	1.32	23.766	mg/kg	0.00238 %		
3	■	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	■	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.79	mg/kg	1.142	0.902	mg/kg	0.0000902 %		
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }		215-160-9	1308-38-9		15	mg/kg	1.462	21.923	mg/kg	0.00219 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15	mg/kg	1.126	16.888	mg/kg	0.00169 %		
8	■	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19	mg/kg	1.56	29.636	mg/kg	0.0019 %		
9	■	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	■	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	■	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.61	mg/kg	2.554	1.558	mg/kg	0.000156 %		
13	■	zinc { zinc chromate }	024-007-00-3				57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
14	■	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number								
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	■	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	■	cyanides { ■ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	■	pH			PH		8.3	pH		8.3	pH	8.3 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	■	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	■	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	■	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	■	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	■	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	■	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	■	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	■	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	■	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	■	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0364 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP14		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
18% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
1	■	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	■	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
3	■	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.66	mg/kg	3.22	2.125	mg/kg	0.000213 %		
4	■	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2	mg/kg	1.142	2.285	mg/kg	0.000228 %		
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }		215-160-9	1308-38-9		26	mg/kg	1.462	38	mg/kg	0.0038 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		31	mg/kg	1.126	34.903	mg/kg	0.00349 %		
8	■	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	44	mg/kg	1.56	68.632	mg/kg	0.0044 %		
9	■	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	■	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.9	mg/kg	0.00039 %		
11	■	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		57	mg/kg	2.976	169.647	mg/kg	0.017 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.6	mg/kg	2.554	4.086	mg/kg	0.000409 %		
13	■	zinc { zinc chromate }	024-007-00-3				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
14	■	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	■	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	■	cyanides { ■ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	■	pH			PH		7.9	pH		7.9	pH	7.9 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	■	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	■	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	■	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	■	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	■	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	■	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	■	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	■	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	■	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	■	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0643 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP15		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
24% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 24% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				23	mg/kg	1.32	30.367	mg/kg	0.00304 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				0.78	mg/kg	3.22	2.512	mg/kg	0.000251 %		
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				1	mg/kg	1.142	1.142	mg/kg	0.000114 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	43	mg/kg	1.56	67.072	mg/kg	0.0043 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				0.28	mg/kg	1.353	0.379	mg/kg	0.0000379 %		
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				2	mg/kg	1.5	3	mg/kg	0.0003 %		
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				45	mg/kg	2.976	133.932	mg/kg	0.0134 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.4	mg/kg	2.554	6.129	mg/kg	0.000613 %		
		034-002-00-8											
13	■	zinc { zinc chromate }				72	mg/kg	2.774	199.739	mg/kg	0.02 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
18	▨	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
21	▨	pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
22		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
23	▨	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
24	▨	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
25	▨	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
26	▨	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
27	▨	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
28	▨	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
29	▨	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
30		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
31		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
32		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
33		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
34		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
35	▨	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
36		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
37	▨	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
38		phenol				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
39	▨	polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0489 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16

▨ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP16		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.20-0.50 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
20% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 20% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**	Conv. Factor	Compound conc.	**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	▨	antimony { antimony trioxide }				<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		**<LOD**
		051-005-00-X	215-175-0	1309-64-4							
2	▨	arsenic { arsenic trioxide }				18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
		033-003-00-0	215-481-4	1327-53-3							
3	▨	boron { diboron trioxide; boric oxide }				1 mg/kg	3.22	3.22 mg/kg	0.000322 %		
		005-008-00-8	215-125-8	1303-86-2							
4	▨	cadmium { cadmium oxide }				1.3 mg/kg	1.142	1.485 mg/kg	0.000149 %		
		048-002-00-0	215-146-2	1306-19-0							
5	▨	chromium in chromium(III) compounds { ▨ chromium(III) oxide }				30 mg/kg	1.462	43.847 mg/kg	0.00438 %		
			215-160-9	1308-38-9							
6	▨	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0							
7	▨	copper { dicopper oxide; copper (I) oxide }				36 mg/kg	1.126	40.532 mg/kg	0.00405 %		
		029-002-00-X	215-270-7	1317-39-1							
8	▨	lead { lead chromate }			1	69 mg/kg	1.56	107.627 mg/kg	0.0069 %		
		082-004-00-2	231-846-0	7758-97-6							
9	▨	mercury { mercury dichloride }				0.19 mg/kg	1.353	0.257 mg/kg	0.0000257 %		
		080-010-00-X	231-299-8	7487-94-7							
10	▨	molybdenum { molybdenum(VI) oxide }				2.1 mg/kg	1.5	3.15 mg/kg	0.000315 %		
		042-001-00-9	215-204-7	1313-27-5							
11	▨	nickel { nickel chromate }				61 mg/kg	2.976	181.552 mg/kg	0.0182 %		
		028-035-00-7	238-766-5	14721-18-7							
12	▨	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.9 mg/kg	2.554	4.852 mg/kg	0.000485 %		
		034-002-00-8									
13	▨	zinc { zinc chromate }				130 mg/kg	2.774	360.639 mg/kg	0.0361 %		
		024-007-00-3									
14		TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		**<LOD**
				TPH							

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.1	pH		8.1	pH	8.1 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		0.34	mg/kg		0.34	mg/kg	0.000034 %		
27	▨	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		0.29	mg/kg		0.29	mg/kg	0.000029 %		
29	▨	pyrene		204-927-3	129-00-0		0.28	mg/kg		0.28	mg/kg	0.000028 %		
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0749 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16[1]

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP16[1]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
14% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				0.45	mg/kg	3.22	1.449	mg/kg	0.000145 %		
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				0.49	mg/kg	1.142	0.56	mg/kg	0.000056 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				22	mg/kg	1.462	32.154	mg/kg	0.00322 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				9.8	mg/kg	1.126	11.034	mg/kg	0.0011 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	18	mg/kg	1.56	28.077	mg/kg	0.0018 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.58	mg/kg	2.554	1.481	mg/kg	0.000148 %		
		034-002-00-8											
13	■	zinc { zinc chromate }				43	mg/kg	2.774	119.288	mg/kg	0.0119 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.2 pH		8.2 pH	8.2 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0322 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP18

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:		
TP18	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)	
Sample Depth:			
1.00 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)	
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				1.2	mg/kg	1.142	1.371	mg/kg	0.000137 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				16	mg/kg	1.126	18.014	mg/kg	0.0018 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	16	mg/kg	1.56	24.957	mg/kg	0.0016 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				47	mg/kg	2.976	139.884	mg/kg	0.014 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
		034-002-00-8											
13	■	zinc { zinc chromate }				67	mg/kg	2.774	185.868	mg/kg	0.0186 %		
		024-007-00-3											
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	■	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	■	cyanides { ■ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	■	pH			PH		8.3	pH		8.3	pH	8.3 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	■	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	■	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	■	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	■	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	■	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	■	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	■	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	■	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	■	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	■	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0428 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP19

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP19		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
0.55% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 0.55% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				2.4	mg/kg	1.197	2.873	mg/kg	0.000287 %		
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				48	mg/kg	1.32	63.376	mg/kg	0.00634 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				5.6	mg/kg	1.462	8.185	mg/kg	0.000818 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				2.8	mg/kg	1.126	3.152	mg/kg	0.000315 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	14	mg/kg	1.56	21.837	mg/kg	0.0014 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				5	mg/kg	2.976	14.881	mg/kg	0.00149 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
		034-002-00-8											
13	■	zinc { zinc chromate }				14	mg/kg	2.774	38.838	mg/kg	0.00388 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	■	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	■	cyanides { ■salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	■	pH			PH		8.5	pH		8.5	pH	8.5 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	■	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	■	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	■	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	■	phenanthrene		201-581-5	85-01-8		0.4	mg/kg		0.4	mg/kg	0.00004 %		
27	■	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	■	fluoranthene		205-912-4	206-44-0		0.42	mg/kg		0.42	mg/kg	0.000042 %		
29	■	pyrene		204-927-3	129-00-0		0.35	mg/kg		0.35	mg/kg	0.000035 %		
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	■	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	■	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	■	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0165 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.3.3745.7658 (03 Jan 2019)
HazWasteOnline Database: 2019.3.3745.7658 (03 Jan 2019)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Waste Classification Report

45PVF-HCTQR-HCW35

Job name

19-001-01 17-09-04

Description/Comments

Project

19-001-01

Site

Ballycoolin

Related Documents

#	Name	Description
None		

Waste Stream Template

O'Callaghan Moran Waste Stream

Classified by

Name:
Austin Hynes
Date:
14 Jan 2019 14:16 GMT
Telephone:
021 4345366

Company:
OCallaghan Moran and Associates
Unit 15 Melbourne Business Park
Model Farm Road
Cork

Report

Created by: Austin Hynes
Created date: 14 Jan 2019 14:16 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP12	0.50	Non Hazardous		2
2	TP13	1.00	Non Hazardous		5
3	TP14	4.00	Non Hazardous		8
4	TP17	1.00	Non Hazardous		11

Classification of sample: TP12

■ **Non Hazardous Waste**
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP12		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.50 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
24% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 24% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				0.69	mg/kg	3.22	2.222	mg/kg	0.000222 %		
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				0.64	mg/kg	1.142	0.731	mg/kg	0.0000731 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				30	mg/kg	1.462	43.847	mg/kg	0.00438 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	27	mg/kg	1.56	42.115	mg/kg	0.0027 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				2.4	mg/kg	1.5	3.6	mg/kg	0.00036 %		
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				47	mg/kg	2.976	139.884	mg/kg	0.014 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.3	mg/kg	2.554	5.873	mg/kg	0.000587 %		
		034-002-00-8											
13	■	zinc { zinc chromate }				60	mg/kg	2.774	166.449	mg/kg	0.0166 %		
		024-007-00-3											
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.1 pH		8.1 pH	8.1 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0438 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▪	Determinand defined or amended by HazWasteOnline (see Appendix A)
▪	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13

■ **Non Hazardous Waste**
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP13		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
14% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	■	arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		20	mg/kg	1.32	26.407	mg/kg	0.00264 %		
3	■	boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		0.44	mg/kg	3.22	1.417	mg/kg	0.000142 %		
4	■	cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		0.83	mg/kg	1.142	0.948	mg/kg	0.0000948 %		
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }	215-160-9	1308-38-9		16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.126	20.266	mg/kg	0.00203 %		
8	■	lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	23	mg/kg	1.56	35.876	mg/kg	0.0023 %		
9	■	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	■	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	■	nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		35	mg/kg	2.976	104.169	mg/kg	0.0104 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				0.89	mg/kg	2.554	2.273	mg/kg	0.000227 %		
13	■	zinc { zinc chromate } 024-007-00-3				64	mg/kg	2.774	177.545	mg/kg	0.0178 %		
14	■	TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane											
		603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene											
		601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene											
		601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	☐	ethylbenzene											
		601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene											
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
20	☐	cyanides { ☐ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }											
		006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	☐	pH											
				PH		9.5	pH		9.5	pH	9.5 pH		
22		naphthalene											
		601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	☐	acenaphthylene											
			205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	☐	acenaphthene											
			201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	☐	fluorene											
			201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	☐	phenanthrene											
			201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	☐	anthracene											
			204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	☐	fluoranthene											
			205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	☐	pyrene											
			204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene											
		601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	☐	indeno[123-cd]pyrene											
			205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene											
		601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	☐	benzo[ghi]perylene											
			205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol											
		604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	☐	polychlorobiphenyls; PCB											
		602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
										Total:	0.0399 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14

■ **Non Hazardous Waste**
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP14		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
4.00 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
32% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 32% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				1.3	mg/kg	3.22	4.186	mg/kg	0.000419 %		
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				1.6	mg/kg	1.142	1.828	mg/kg	0.000183 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				28	mg/kg	1.126	31.525	mg/kg	0.00315 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	54	mg/kg	1.56	84.23	mg/kg	0.0054 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				2.6	mg/kg	1.5	3.9	mg/kg	0.00039 %		
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				48	mg/kg	2.976	142.861	mg/kg	0.0143 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.9	mg/kg	2.554	4.852	mg/kg	0.000485 %		
		034-002-00-8											
13	■	zinc { zinc chromate }				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number								
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	■	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
20	■	cyanides { ■ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	■	pH			PH		7.7	pH		7.7	pH	7.7 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	■	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	■	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	■	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	■	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	■	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	■	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	■	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	■	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	■	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	■	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0624 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP17

Non Hazardous Waste
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP17		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**	Conv. Factor	Compound conc.	**Classification value**	MC Applied	Conc. Not Used
1	■	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	■	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22 mg/kg	1.32	29.047 mg/kg	0.0029 %		
3	■	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.45 mg/kg	3.22	1.449 mg/kg	0.000145 %		
4	■	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.98 mg/kg	1.142	1.119 mg/kg	0.000112 %		
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	19.14 mg/kg	0.00191 %		
8	■	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	27 mg/kg	1.56	42.115 mg/kg	0.0027 %		
9	■	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	■	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	■	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32 mg/kg	2.976	95.24 mg/kg	0.00952 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	■	zinc { zinc chromate }	024-007-00-3				52 mg/kg	2.774	144.256 mg/kg	0.0144 %		
14	■	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	■	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
20	■	cyanides { ■salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	■	pH			PH		8.4 pH		8.4 pH	8.4 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	■	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	■	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	■	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	■	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	■	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	■	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	■	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	■	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	■	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	■	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0359 %		

Key

🟨	User supplied data
▒	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)
Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)
Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)
CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.3.3745.7658 (03 Jan 2019)
HazWasteOnline Database: 2019.3.3745.7658 (03 Jan 2019)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Appendix 6

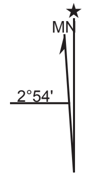
As-Surveyed Site Plan

ExpertGPS Basemap: mapbox, OpenStreetMap

ExpertGPS

21393 BDT Ballycoolin

Scale: 1 : 1500.



APPENDIX C

WASTE CHARACTERISATION ASSESSMENT, BALLYCOOLIN ROAD, GRANGE, DUBLIN 15; (O' CALLAGHAN MORAN & ASSOCIATES, 2019)

Unit 15
Melbourne Business Park
Model Farm Road
Cork T12 WR89

O'Callaghan Moran & Associates
ENVIRONMENTAL MANAGEMENT FOR BUSINESS

T: 021 434 5366
E:info@ocallaghanmoran.com
www.ocallaghanmoran.com

Waste Characterisation Assessment
Ballycoolin Road,
Grange,
Dublin 15

Prepared For: -

IGSL Limited
Unit F,
M7 Business Park,
Naas,
County Kildare.

Prepared By: -

O' Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road,
Cork.

January 2019

Project	Waste Characterisation : Ballycoolin, Dublin 15			
Client	IGSL Limited.			
Report No	**Date**	**Status**	**Prepared By**	**Reviewed By**
190010101	18/01/2019	Draft	Austin Hynes	Sean Moran

TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION

IGSL Limited (IGSL) requested O'Callaghan Moran & Associates (OCM) to undertake a waste characterisation assessment of samples of made and natural ground collected from ten trial pits (TP3, TP4, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19) at the Brian Daly Transport Site in Ballycoolin Business Park in Grange, Dublin 15.

1.1 Methodology

IGSL provided a description of the ground conditions and collected samples of the soils from ten trial pit locations. The samples were analysed at an accredited laboratory and the results formed the basis for a waste classification assessment, which was undertaken by OCM in accordance with the Environmental Protection Agency (EPA) Guidelines on the Classification of Waste (2015).

2 WASTE CLASSIFICATION ASSESSMENT

2.1 Soil Sampling and Laboratory Analysis

2.1.1 *Site Investigation*

The site investigation was completed by IGSL in November 2018 and included the collection of thirteen composite samples from ten trial pits (TP3, TP4, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19). The locations are shown on Figure 2.1.

The logs of the trial pits indicate that the subsurface of the site comprises of MADE GROUND the depth of which varies across the site from 1.80-4.00m underlain by natural ground. In areas covered by concrete/tarmacadam (TP4, TP19), the sub surface consists of dense, grey slightly sandy GRAVEL to c.1.80m underlain by stiff, dark grey, mottled brown, slightly sandy gravelly SILT/CLAY. In areas covered by topsoil (TP3, TP12-18), the subsurface comprises of MADE GROUND consisting of firm to stiff, grey brown, gravelly CLAY containing timber, plastic and concrete to between 1.90-3.00m. The natural ground consists of very stiff, blue grey, slightly sandy very gravelly CLAY and is found at depths generally greater than 2.0m which was found to overlie Limestone bedrock. Bedrock was encountered at varying depths across the site. In TP12, TP16 and TP17 bedrock was encountered at c.3.0m. In TP18 bedrock was encountered at 2.30m. The Trial Pit sample logs are contained in Appendix 1.

2.1.2 *Sample Collection*

The samples were collected by IGSL and were placed in laboratory prepared containers and stored in coolers prior to shipment to Chemtest Ltd.

2.1.3 *Laboratory Analysis*

The samples were tested for Total Heavy Metals, Total Organic Carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, Polychlorinated Biphenyls (PCB), Mineral Oil, Polyaromatic Hydrocarbons (PAH) and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range facilitates an assessment of the hazardous properties of the waste, and also allows a determination of appropriate off-site management options based on the Waste Acceptance Criteria (WAC) applied by landfill operators.

The analytical methods were all ISO/CEN approved and the method detection limits were below the relevant guidance/threshold values. The full laboratory report is in Appendix 2.

2.2 Waste Classification

The Haz Waste Online Classification Engine, developed in the UK by One Touch Data Ltd, was used to determine the waste classification. This tool was developed specifically to establish whether waste is non-hazardous or hazardous and has been approved for use in Ireland by the Environmental Protection Agency.

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366
Email: info@ocallaghanmoran.com

Title:

Figure 2.1 Site Layout

Legend

● - Trial Pit

○ - Waste Characterisation Carried out

Client:

IGSL

The full Waste Classification Report is in Appendix 3 and the results are summarised in Table 2.1.

Table 2.1 Waste Classification

Sample No.	Depth	Classification	LoW Code
TP3	1.00	Non-Hazardous	17 05 04
TP4	1.00	Non-Hazardous	17 05 04
TP12	0.50	Non-Hazardous	17 09 04
TP13	1.00	Non-Hazardous	17 09 04
TP13	2.00	Non-Hazardous	17 05 04
TP14	1.00	Non-Hazardous	17 05 04
TP14	4.00	Non-Hazardous	17 09 04
TP15	2.00	Non-Hazardous	17 05 04
TP16	0.20-0.50	Non-Hazardous	17 05 04
TP16	2.00	Non-Hazardous	17 09 04
TP17	1.00	Non-Hazardous	17 05 04
TP18	1.00	Non-Hazardous	17 05 04
TP19	1.00	Non-Hazardous	17 05 04

Asbestos was not detected in any of the samples.

The soils are all classified as non-hazardous. The Made Ground samples from TP12, TP13 (1.0m), TP14 (4.0m) and TP16 (2.0m) contain construction demolition waste. The appropriate LoW Code for these samples is 17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 03). The appropriate LoW Code for the remaining samples is 17 05 04 (Soil and stone other than those mentioned in 17 05 03).

2.3 Waste Acceptance Criteria

The results of the WAC testing are presented in Table 2.2, which includes for comparative purposes the WAC for Inert, Non Hazardous and Hazardous Waste Landfills pursuant to Article 16 of the EU Landfill Directive 1999/31/EC Annex II which establishes criteria and procedures for the acceptance of waste at landfills.

The made ground meets the Inert WAC, with the exception of TP14 at 4.0m and TP19 at 1.0m which exceeds the Inert WAC for Total Organic Carbon (TOC).

The natural ground meets the inert WAC.

2.4 Waste Management Options

Asbestos was not detected in any of the samples analysed from the site.

Samples from TP3, TP4, TP13, TP15, TP16 (0.2-0.5m), TP17 and TP18 meet the inert WAC and the appropriate LoW is code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03). This material is suitable for retention on site or if it requires removal is suitable for recovery at a permitted waste recovery facility subject to the approval of the facility operator.

Samples from TP-14 (1m) and TP-19 exceed the inert WAC for TOC and the appropriate LoW is code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03). Annex II of the Directive allows a derogation for TOC if the DOC is less than 500mg/kg then the TOC can be considered as meeting the inert WAC. The DOC are below 500mg/kg in these samples. The material may be suitable for recovery at a permitted waste recovery facility if the derogation is accepted. Otherwise the material in these trial pits must be sent to a Non Hazardous Waste Landfill subject to the approval of the facility operator.

The sample from TP-12, TP-14 (4m) and TP-16 (2m) contains construction demolition waste and the appropriate LoW is 17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 03). This material is suitable for disposal to non-hazardous landfill in Ireland subject to approval of the facility operator.

Table 2.2 WAC Results

Parameter	Unit	TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16	TP16	TP17	TP18	TP19	Inert Landfill	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	**1.00**	**1.00**	**0.50**	**1.00**	**2.00**	**1.00**	**4.00**	**2.00**	**0.20-0.50**	**2.00**	**1.00**	**1.00**	**1.00**			
		Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Nat. Ground	Made Ground			
Antimony	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.06	0.7	5
Arsenic	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.5	2	25
Barium	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	20	100	300
Cadmium	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.04	1	5
Chromium	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.5	10	70
Copper	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	2	50	100
Lead	mg/kg	< 0.010	< 0.010	0.013	< 0.010	< 0.010	< 0.010	0.022	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.5	10	50
Molybdenum	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.5	10	30
Nickel	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.4	10	40
Selenium	mg/kg	0.029	0.016	0.030	0.023	0.022	0.030	0.025	0.020	0.020	0.046	0.015	0.014	0.016	0.1	0.5	7
Zinc	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4	50	200
Mercury	mg/kg	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	NE	NE
Fluoride	mg/kg	5.2	4.4	3.6	2.5	2.2	4.6	2.5	2.5	7.3	4.5	5.8	3.0	2.3	10	150	500
Chloride	mg/kg	28	32	36	30	30	45	57	25	22	21	21	12	< 10	800	15,000	25,000
Sulphate	mg/kg	420	250	230	330	370	110	140	370	48	220	100	170	190	1000*	20000*	50,000
DOC **	mg/kg	150	180	170	130	150	110	250	210	150	140	130	130	160	500	800	1,000
pH	pH units	7.9	8.6	8.1	9.5	8.3	7.9	7.7	8.1	8.1	8.2	8.4	8.3	8.5	NE	NE	NE
TDS ***	mg/kg	1200	850	770	840	910	1000	1200	770	710	710	780	910	1400	4,000	60,000	100,000
TOC	%	1.6	1.1	1.1	1.3	0.48	2.3	3.5	1.6	2.5	0.55	0.64	0.57	3.4	3	NE	6
Benzene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
Toluene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
Ethylbenze	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
m/p-Xylene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
o-Xylene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	6	NE	NE
PCB Total o	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1	NE	NE
Total 17 PA	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	NE	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

Asbestos was not detected in any of the samples analysed from the site.

Samples from TP3, TP4, TP13, TP15, TP16 (0.2-0.5m), TP17 and TP18 meet the inert WAC. This material is suitable for retention on site or if it requires removal is suitable for recovery at a permitted waste recovery facility subject to the approval of the facility operator

Samples from TP-14 (1m) and TP-19 exceed the inert WAC for TOC but may be suitable for recovery at a permitted waste recovery facility if the derogation for TOC is accepted. Otherwise the material in these trial pits must be sent to a Non Hazardous Waste Landfill subject to approval of the facility operator.

The sample from TP-12, TP-14 (4m) and TP-16 (2m) contain construction demolition waste and is suitable for disposal to non-hazardous landfill in Ireland subject to approval of the facility operator.

3.2 Recommendations

OCM recommend that a copy of this report be provided in full to the relevant waste management facilities to which the made ground and subsoils may be consigned to confirm its suitability for acceptance.

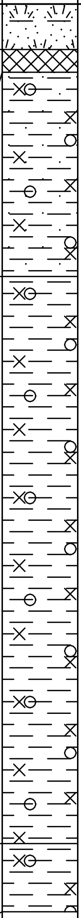
Appendix 1

Trial Pit Logs

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport			**TRIAL PIT NO.** **SHEET**	**TP01** Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,621.85 E 741,053.74 N	**DATE STARTED** **DATE COMPLETED**	20/11/2018 20/11/2018
CLIENT **ENGINEER**	 Pinnacle C.E.	**GROUND LEVEL (m)**	80.98	**EXCAVATION METHOD**	JCB



	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.20	80.78						
	MADE GROUND comprised of: Firm brown gravelly CLAY. Gravel is fine to coarse and angular. Contains occassional rootlets and infrequent old broken pipes.		0.30	80.68						
	Firm to stiff dark grey mottled brown and red slightly sandy gravelly silty CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular. Has a low subangular cobble content. (Possible made ground).		1.20	79.78		AA101701 AA101702	B B	0.50 1.00		
1.0 2.0 3.0	Stiff dark grey gravelly silty CLAY. Gravel is fine to coarse and angular. Has a low subangular cobble content.		3.70	77.28	1 (Seepage)	AA101703 AA101704	B B	2.00 3.00		
	Very stiff blue grey slightly silty very gravelly CLAY. Gravel is fine to coarse and angular. Has a low rounded to angular cobble content.		4.00	76.98	2 (Moderate)	AA101705	B	3.80		
4.0	LIMESTONE rock head. End of Trial Pit at 4.00m									

Groundwater Conditions
Seepage at 3.5m and moderate at 4m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,646.00 E 740,950.91 N
DATE STARTED	21/11/2018	**DATE COMPLETED**	21/11/2018
CLIENT		**GROUND LEVEL (m)**	79.58
ENGINEER	Pinnacle C.E.	**EXCAVATION METHOD**	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE		0.25	79.33						
	MADE GROUND comprised of: Very dense dark grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular.		0.50	79.08						
	Stiff grey mottled brown sandy gravelly very clayey SILT. Sand is fine. Gravel is fine to coarse and angular to subangular.									
1.0	5 inch black pipe uncovered alone northern side of pit.		1.10	78.48		AA101736	B	1.00		
	Very stiff blue grey silty sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular to subrounded. Has a medium angular to subrounded cobble content.		1.20	78.38						
	LIMESTONE rock head.		1.30	78.28						
	End of Trial Pit at 1.20m									
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Walls collapsing from 0.5m to 1.1m around the pipe in pea gravel to the north side of the pit.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER
21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,684.02 E 741,062.88 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	80.98	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL	░	0.20	80.78						
	MADE GROUND Comprised of: Firm brown sandy gravelly CLAY. Sand is coarse. Gravel is fine to medium and angular. Has a low subangular cobble content. Contains occassional rootlets and rare old broken pipe.	▨	0.70	80.28		AA101706	B	0.50		
1.0	MADE GROUND comprised of: Stiff brown grey mottled red very gravelly very silty CLAY. Gravel is fine to coarse and angular to subrounded. Has a medium subangular to subrounded cobble content. Contains frequent plastic and infrequent broken old pipe and timber.	▨	1.50	79.48		AA101707	B	1.00		
	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is coarse and angular.	▨	1.90	79.08		AA101708	B	1.60		
2.0	MADE GROUND comprised of: Stiff brown very clayey SILT. Stopped pit due to walls collapsing.	▨	2.20	78.78		AA101709	B	2.10		
	MADE GROUND comprised of: Stiff grey gravelly very clayey SILT. Gravel is fine to medium and angular. 5 inch black cable uncovered at the western side of the pit.	▨	3.00	77.98		AA101710	B	2.30		
3.0	MADE GROUND comprised of: Fine angular to rounded PEA GRAVEL.	▨	3.05	77.93						
	Stopped pit due to pea gravel found at 3m. End of Trial Pit at 3.05m									
4.0										

Groundwater Conditions
Dry

Stability
Walls Collapsing from 1.5m to 1.9m.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP04**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,694.85 E 740,960.43 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.44	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND comprised of: Tarmacadam.	▨	0.10	79.34						
	MADE GROUND comprised of: Dense grey GRAVEL. Gravel is fine to coarse and angular. Contains infrequent plastic.	▨								
1.0						AA101729	B	1.00		
					1 (Slow)					
2.0	End of Trial Pit at 2.00m		2.00	77.44						
3.0										
4.0										

Groundwater Conditions
Moderate at 1.7m.

Stability
Walls collapsing from 0.1m to base of pit.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP05**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,733.43 E
741,070.94 N

GROUND LEVEL (m) 80.86

DATE STARTED 20/11/2018

DATE COMPLETED 20/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL									
	MADE GROUND comprised of: Very dense dark grey clayey very sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Has a low subangular cobble content.		0.40	80.46		AA101711	B	0.50		
1.0	MADE GROUND comprised of: Very dense dark grey GRAVEL. Gravel is fine to coarse and angular. Contains a medium subangular cobble content.		0.90	79.96						
	Stiff grey mottled brown slightly gravelly very silty CLAY. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to subrounded cobble content. (Possible made ground).		1.50	79.36		AA101712	B	1.50		
2.0										
						AA101713	B	2.50		
3.0	Stiff dark grey sandy silty very gravelly CLAY. Sand us coarse. Gravel is fine to coarse and subangular to subrounded. Has a low subrounded cobble content and a low subrounded boulder content which are >300mm in size.		3.00	77.86	1 (Seepage)					
	LIMESTONE rock head.		3.50	77.36		AA101714	B	3.50		
	End of Trial Pit at 3.60m		3.60	77.26						
4.0										

Groundwater Conditions
Seepage at 3.4m.

Stability
Walls Collapsing from 0.9m to 1.5m.

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP06**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,729.41 E 740,966.68 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.42	**EXCAVATION METHOD**	jcb
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND comprised of: Tarmacadam.		0.09	79.33						
	MADE GROUND comprised of: Dense light brown coarse SAND.		0.12	79.30						
	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is fine to coarse and angular.		0.70	78.72						
1.0	Stiff grey mottled brown slightly gravelly very clayey SILT. Gravel is fine to medium and subangular. Contains organic shell fragments.(Possible made ground).		1.60	77.82		AA101726	B	1.00		
	Very stiff blue grey slightly sandy slightly silty gravelly CLAY. Sand is fine. Gravel is fine to coarse and angular to subrounded. Has a medium angular to subrounded cobble content.		1.95	77.47		AA101727	B	1.90		
2.0	LIMESTONE rock head.		2.00	77.42	1 (Slow)	AA101728	B	2.00		
	End of Trial Pit at 2.00m									
3.0										
4.0										

Groundwater Conditions
Slow at 2m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393
CONTRACT	Brian Daly Transport
TRIAL PIT NO.	TP07
SHEET	Sheet 1 of 1
LOGGED BY	EK
CO-ORDINATES	709,785.69 E 741,079.59 N
GROUND LEVEL (m)	79.89
DATE STARTED	20/11/2018
DATE COMPLETED	20/11/2018
CLIENT	
ENGINEER	Pinnacle C.E.
EXCAVATION METHOD	JCB

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.10	79.79						
MADE GROUND comprised of: Firm dark grey brown sandy gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular.	▨	0.40	79.49						
MADE GROUND comprised of: Very dense dark grey slightly clayey sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a medium angular cobble content. Contains infrequent plastic.	▨	1.00	78.89		AA01715	B	0.50		
Stiff dark grey mottled brown and red gravelly very silty CLAY. Gravel is fine to coarse and subangular to subrounded. (Possible made ground).		1.80	78.09		AA01716	B	1.00		
LIMESTONE rock head.		2.00	77.89		AA01717	B	1.90		
End of Trial Pit at 2.00m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP08**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,788.09 E 741,062.56 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	79.41	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Dense grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Layer of haram cloth below the hard core.	▨	0.30	79.11						
	MADE GROUND comprised of: Stiff brown mottled grey gravelly very silty CLAY. Gravel is fine to coarse and subangular. Has a lowsubangular cobble content. Contains infrequent plastic.	▨	0.70	78.71		AA01718	B	0.50		
1.0	Rock was found at 0.7m to the eastern side of the pit but 1.2m to the western side of the pit. End of Trial Pit at 0.70m									
						AA01719	B	1.20		
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP09**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	20/11/2018
CO-ORDINATES	709,804.33 E 740,968.96 N	**DATE COMPLETED**	20/11/2018
GROUND LEVEL (m)	79.53	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND comprised of: Very dense grey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent concrete slabs and broken old wires.									
	Stiff grey mottled brown gravelly very clayey SILT. Gravel is fine to medium and angular. (Possible made ground).		0.80	78.73						
1.0						AA01720	B	1.00		
2.0						AA01721	B	2.00		
	Stiff dark blue grey silty very gravelly CLAY. Gravel is fine to coarse and angular to subrounded. Has a low angular cobble content.		2.50	77.03						
	LIMESTONE rock head.		2.80	76.73						
	End of Trial Pit at 2.90m		2.90	76.63	1 (Slow)	AA01722	B	2.90		
3.0										
4.0										

Groundwater Conditions
Slow at 2.9m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP10**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,747.59 E 740,923.02 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.41	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.20	79.21						
	MADE GROUND comprised of: Dense grey slightly sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent plastic.		0.80	78.61						
1.0	Stiff grey mottled brown slightly sandy gravelly very clayey SILT. Sand is dine to medium. Gravel is fine to coarse and subangular to subrounded. (Possible made ground).		2.00	77.41		AA101730	B	1.00		
2.0	Very stiff grey blue silty very sandy very gravelly CLAY. Sand is coarse. Grave is fine to coarse and angular to subrounded. Has a low subangular to subrounded cobble content.		3.00	76.41		AA101731	B	2.00		
3.0	LIMESTONE rock head.		3.10	76.31	1 (Slow)	AA101732	B	3.00		
	End of Trial Pit at 3.10m									
4.0										

Groundwater Conditions
Slow at 3m.

Stability
Walls collapsing from 2.5m to 3m

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP11**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2108
CO-ORDINATES	709,643.17 E 740,903.55 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.60	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
MADE GROUND comprised of: Tarmacadam.		0.05	79.55						
MADE GROUND comprised of: Dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular.		0.20	79.40						
MADE GROUND comprised of: Dense brown very gravelly SAND. Sand is coarse. Gravel is fine and angular.		0.25	79.35						
MADE GROUND comprised of: Dense dark grey clayey sandy GRAVEL. Sand is coarse. Gravel is fine to coarse and angular. Contains infrequent rebar.		0.80	78.80						
Stiff light grey slightly gravelly sandy very clayey SILT. Sand is fine. Gravel is fine and subrounded. (Possible made ground).		1.60	78.00		AA101733	B	1.00		
Stiff dark grey mottled brown slightly sandy gravelly very clayey SILT. Sand is fine. Gravel is fine and angular. (Possible made ground).		2.20	77.40		AA101734	B	2.00		
Very stiff blue grey silty very sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular to rounded. Has a medium subangular to subrounded cobble content.		3.40	76.20	1 (Seepage)	AA101735	B	3.00		
LIMESTONE rock head.		3.50	76.10	2 (Moderate)					
End of Trial Pit at 3.40m									

Depth scale: 0.0, 1.0, 2.0, 3.0, 4.0

Groundwater Conditions
Seepage at 2.9m and Moderate at 3.5m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP12**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES 709,822.62 E
741,088.60 N

GROUND LEVEL (m) 81.14

DATE STARTED 19/11/2018

DATE COMPLETED 19/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.30	80.84						
1.0	MADE GROUND comprised of: Firm to stiff brown sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular. Contains occassional rootlets. Contains infrequent concrete bricjs, timber, broken old pipes and plastic.		1.10	80.04		AA101634 AA101635	B B	0.50 1.00		
2.0	Stiff very dark grey brown silty gravelly CLAY. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to subrounded cobble content. (Possible made ground).		2.40	78.74		AA101636	B	2.00		
3.0	Very stiff dark grey silty very gravelly CLAY. Gravel is fine to coarse and angular to subangular. Has a low angular to subangular cobble content.		3.10	78.04		AA101637	B	3.00		
	LIMESTONE rock head.		3.20	77.94						
4.0	End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP13**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,893.42 E 741,091.10 N
DATE STARTED	19/11/2018	**DATE COMPLETED**	19/11/2018
CLIENT		**GROUND LEVEL (m)**	82.31
ENGINEER	Pinnacle C.E.	**EXCAVATION METHOD**	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL		0.20	82.11						
	MADE GROUND comprised of: Stiff dark grey brown slightly sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular. Has a low angular to subangular cobble content. Contains infrequent timber, concrete pieces and old broken pipe.	▨				AA101643	B	0.50		
1.0						AA101644	B	1.00		
2.0			2.90	79.41		AA101645	B	2.00		
3.0	Stiff dark brown grey mottled green gravelly very clayey SILT. Gravel is fine to coarse and angular. (Possible made ground).	▨	3.20	79.11		AA101646	B	3.00		
	End of Trial Pit at 3.20m									
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP14**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,852.73 E 741,074.80 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	84.79	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL	░	0.30	84.49						
	MADE GROUND comprised of: Stiff grey brown slightly sandy very gravelly CLAY. Sand is medium to coarse. Gravel is fine to coarse and angular to subangular.	▨	1.00	83.79		AA101638	B	0.50		
1.0	MADE GROUND comprised of: Stiff brown mottled grey and red gravelly very silty CLAY. Sand is medium to coarse. Gravel is fine to medium and subangular.	▨	1.80	82.99		AA101639	B	1.00		
	MADE GROUND comprised of dark grey mottled brown slightly gravellly very clayey SILT. Gravel is fine to medium and angular. Contains infrequent timber, hay and rope.	▨	4.30	80.49						
2.0						AA101640	B	2.00		
3.0						AA101641	B	3.00		
4.0						AA101642	B	4.00		
	End of Trial Pit at 4.30m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP15**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,848.44 E 741,008.88 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	82.20	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL		0.30	81.90						
	MADE GROUND comprised of: Stiff dark grey brown slightly silty very gravelly CLAY. Gravel is fine to coarse and subangular. Has a low subangular cobble content. Contains infrequent timber and plastic.		1.10	81.10		AA106420 AA106421	B B	0.50 1.00		
1.0 2.0	MADE GROUND comprised of: Dark grey stiff slightly silty gravelly CLAY. Contains infrequernt timber.		2.60	79.60	1 (Seepage)	AA106422	B	2.00		
3.0	Stiff greenish grey very silty CLAY. Contains organic shell fragments. (Possible made ground).		3.60	78.60		AA106423	B	3.00		
4.0	Stiff grey mottled brown gravelly very silty CLAY. Gravel is fine to coarse and angular. (Possible made ground).		4.10	78.10		AA106424	B	4.00		
	End of Trial Pit at 4.10m									

Groundwater Conditions
Seepage at 2.1m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP16**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**CO-ORDINATES**	709,898.66 E 741,051.65 N
DATE STARTED	19/11/2018	**DATE COMPLETED**	19/11/2018
CLIENT		**GROUND LEVEL (m)**	80.99
ENGINEER	Pinnacle C.E.	**EXCAVATION METHOD**	JCB

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	TOPSOIL and infrequent rebar.		0.30	80.69						
1.0	MADE GROUND comprised of: Firm brown gravelly CLAY. Gravel is fine to coarse and angular. Contains occassional rootlets and infrequent timber and plastic.		1.10	79.89		AA106430 AA106431	B B	0.50 1.00		
2.0	MADE GROUND compised of: Very stiff grey brown gravelly very clayey SILT. Gravel is fine and angular.		2.50	78.49		AA106432	B	2.00		
3.0	Very stiff dark grey slightly sandy slightly silty very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and subangular to subrounded. Hhas a low subangular to subrounded cobble content. (Possible made ground).		3.20	77.79		AA106433	B	3.00		
	LIMESTONE rock head.		3.30	77.69						
4.0	End of Trial Pit at 3.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393		
CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP17**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	19/11/2018
CO-ORDINATES	709,865.22 E 740,977.86 N	**DATE COMPLETED**	19/11/2018
GROUND LEVEL (m)	80.75	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL and infrequent glass.		0.30	80.45						
	MADE GROUND comprised of: Firm to stiff silty sandy very gravelly CLAY. Sand is coarse. Gravel is fine to coarse and angular. Has a low angular cobble content. Contains infrequent rebar, rope, plastic and broken old pipe.		1.70	79.05		AA106425 AA106426	B B	0.50 1.00		
1.0										
2.0	Stiff grey mottled brown slightly gravelly very silty CLAY. Gravel is fine to medium and subangular to subrounded. Has a high organic shell content. (Possible made ground).		3.00	77.75		AA106427	B	2.00		
3.0	Very stiff dark blue grey slightly sandy silty very gravelly CLAY. Sand is coarse. Gravel is coarse and angular.		3.10	77.65		AA106428	B	3.00		
	LIMESTONE rock head.		3.20	77.55		AA106429	B	3.20		
	End of Trial Pit at 3.20m									
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP18**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	21/11/2018
CO-ORDINATES	709,808.09 E 740,941.26 N	**DATE COMPLETED**	21/11/2018
GROUND LEVEL (m)	79.33	**EXCAVATION METHOD**	JCB
CLIENT			
ENGINEER	Pinnacle C.E.		

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND comprised of: Very dense grey GRAVEL. Gravel is fine to coarse and angular. Contains infrequent plastic.									
	Stiff grey mottled brown gravelly very clayey SILT. Gravel is fine to coarse and angular. (Possible made ground).		0.70	78.63	1 (Moderate)					
1.0						AA101723	B	1.00		
	Very stiff blue grey slightly silty very gravelly CLAY. Gravel is fine to coarse and angular to subrounded. Has a low subangular to subrounded cobble content.		1.90	77.43						
2.0						AA101724	B	2.00		
	LIMESTONE rock head.		2.30	77.03		AA101725	B	2.30		
	End of Trial Pit at 2.40m		2.40	76.93						
3.0										
4.0										

Groundwater Conditions
Moderate at 0.7m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER	21393
CONTRACT	Brian Daly Transport
TRIAL PIT NO.	**TP19**
SHEET	Sheet 1 of 1
LOGGED BY	EK
CO-ORDINATES	
GROUND LEVEL (m)	
DATE STARTED	22/11/2018
DATE COMPLETED	22/11/2018
CLIENT	
ENGINEER	Pinnacle C.E.
EXCAVATION METHOD	3 tonne digger

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE with a layer of plastic below it.		0.30							
1.0	MADE GROUND comprised of very dense slightly sandy GRAVEL. Sand is coarse. Gravel is medium to coarse and angular. Has a medium angular cobble content. Contains infrequent plastic.		1.80			AA101737	B	1.00		
2.0	Stiff dark grey mottled brown sandy gravelly very silty CLAY. Sand is medium to coarse. Gravel is fine to coarse and subangular to subrounded.Has a low subangular to subrounded cobble content.		3.10			AA101738 AA101739	B B	2.00 3.00		
3.0	Stiff dark grey silty very sandy very gravelly CLAY. Sand is coarse. Gravel is fine to medium and subangular to rounded. Has a low subangular to subrounded cobble content.		3.30		1 (Moderate) (Rapid)	AA101740	B	3.20		
4.0	Stopped as the machine couldn't reach further and high amount of water. End of Trial Pit at 3.30m									

Groundwater Conditions
Moderate at 3.2m and rapid at 3.3m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER
21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP20**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	22/11/2018
CO-ORDINATES		**DATE COMPLETED**	22/11/2018
GROUND LEVEL (m)		**EXCAVATION METHOD**	3 tonne digger
CLIENT			
ENGINEER	Pinnacle C.E.		

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	CONCRETE with a layer of plastic below it.									
1.0	MADE GROUND comprised of: Very dense grey very gravelly COBBLES. Gravel is coarse and angular. Cobbles are angular.		0.20							
2.0	Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		1.80			AA101741	B	1.80		
3.0	Stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.80		1 (Rapid)	AA101742 AA101743	B B	2.80 3.70		
4.0	Possible limestone rock head at 3.8m not visible due to groundwater. End of Trial Pit at 3.80m		3.80							

Groundwater Conditions
Rapid at 3.7m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT	Brian Daly Transport	**TRIAL PIT NO.**	**TP21**
		SHEET	Sheet 1 of 1
LOGGED BY	EK	**DATE STARTED**	22/11/2018
CO-ORDINATES		**DATE COMPLETED**	22/11/2018
GROUND LEVEL (m)		**EXCAVATION METHOD**	3 tonne digger
CLIENT			
ENGINEER	Pinnacle C.E.		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
CONCRETE with a layer of plastic below it.		0.20							
MADE GROUND comprised of: Very dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a high angular cobble content.		1.70							
Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		2.00			AA101744	B	1.80		
Very stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.30			AA101745 AA101746	B B	2.10 2.30		
LIMESTONE rock head.		2.40							
End of Trial Pit at 2.30m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

TRIAL PIT RECORD

REPORT NUMBER 21393

CONTRACT Brian Daly Transport

TRIAL PIT NO. **TP22**

SHEET Sheet 1 of 1

LOGGED BY EK

CO-ORDINATES

GROUND LEVEL (m)

DATE STARTED 22/11/2018

DATE COMPLETED 22/11/2018

CLIENT

ENGINEER Pinnacle C.E.

EXCAVATION METHOD 3 tonne digger

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
					Sample Ref	Type	Depth		
CONCRETE with a layer of plastic below it.		0.20							
MADE GROUND comprised of: Very dense dark grey slightly sandy GRAVEL. Sand is coarse. Gravel is coarse and angular. Has a high angular cobble content.		1.50							
Stiff grey mottled brown sandy gravelly silty CLAY. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded. (Possible made ground).		2.20			AA101747	B	1.50		
Very stiff blue grey sandy silty very gravelly CLAY. Sand is medium to coase. Gravel is fine to coarse and subangular to subrounded. Has a low subangular to rounded cobble content. Has a low subangular to rounded boulder content which are >300mm in size.		2.90		1 (Seepage) 2 (Moderate)	AA101748	B	2.50		
LIMESTONE rock head.		3.00			AA101749	B	2.90		
End of Trial Pit at 3.00m									

Groundwater Conditions
Seepage at 2.5m and moderate at 2.8m.

Stability
Stable

General Remarks
CAT scanned location and hand dug inspection pit to 1.2m.

Appendix 2

Laboratory Report

The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

2183

Final Report

Report No.: 18-38199-1 18-38199-1

Initial Date of Issue: 20/Dec/2018 20/Dec/2018

Client IGSL IGSL

Client Address:
M7 Business Park
Naas
County Kildare
Ireland M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh Darren Keogh

Project 21393 21393 Brian Daily Transport Site
Ballycoolin

Quotation No.: **Date Received:** 05/Dec/2018 0

Order No.: **Date Instructed:** 05/Dec/2018 0

No. of Samples: 13 13

Turnaround (Wkdays): 7 7 **Results Due:** 13/Dec/2018 1

Date Approved: 20/Dec/2018 20/Dec/2018

Approved By:

Details: Martin Dyer, Laboratory Manager

Results - Leachate

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114	736115	736116	736117	738318
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16	TP16	TP17	TP18	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20	2.00	1.00	1.00	1.00
	Bottom Depth (m):												0.50				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
Ammonium	U	1220	mg/l	0.050	0.16	0.15	0.22	0.30	0.24	0.19	13	1.5	0.23	0.18	0.13	0.15	0.26
Ammonium	N	1220	mg/kg	0.10	1.6	1.5	2.2	3.0	2.4	1.9	130	15	2.3	1.8	1.3	1.5	2.6
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20	< 20	< 20	38	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Boron (Dissolved)	U	1450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.38	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Chemtest

The right chemistry to deliver results

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20
	Bottom Depth (m):												0.50
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	5.1	24	14	13	18	32	24	20
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.68	< 0.40	0.69	0.44	< 0.40	0.66	1.3	0.78	1.0
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] 1.2	[A] 1.5	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 2.9	[A] 180	[A] 4.5
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 9.8	[A] 8.4	[A] 4.1	[A] 9.8	[A] 11	[A] 7.5	[A] 7.6	[A] 13	[A] 4.6
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.11	[A] 0.057	[A] 0.053	[A] 0.078	[A] 0.042	[A] 0.079	[A] 0.14	[A] 0.087	[A] 0.11
Arsenic	U	2450	mg/kg	1.0	23	41	12	20	18	17	17	23	18
Barium	U	2450	mg/kg	10	130	61	380	57	47	370	360	110	370
Cadmium	U	2450	mg/kg	0.10	1.1	0.27	0.64	0.83	0.79	2.0	1.6	1.0	1.3
Chromium	U	2450	mg/kg	1.0	22	8.4	30	16	15	26	25	18	30
Molybdenum	U	2450	mg/kg	2.0	2.5	< 2.0	2.4	< 2.0	< 2.0	2.6	2.6	2.0	2.1
Antimony	N	2450	mg/kg	2.0	< 2.0	3.4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	21	11	14	18	15	31	28	23	36
Mercury	U	2450	mg/kg	0.10	0.11	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	0.28	0.19
Nickel	U	2450	mg/kg	0.50	37	15	47	35	34	57	48	45	61
Lead	U	2450	mg/kg	0.50	42	110	27	23	19	44	54	43	69
Selenium	U	2450	mg/kg	0.20	2.2	< 0.20	2.3	0.89	0.61	1.6	1.9	2.4	1.9
Zinc	U	2450	mg/kg	0.50	84	50	60	64	57	110	110	72	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	8.4	30	16	15	26	25	18	30
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 1.6	[A] 1.1	[A] 1.1	[A] 1.3	[A] 0.48	[A] 2.3	[A] 3.5	[A] 1.6	[A] 2.5
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736106	736107	736108	736109	736110	736111	736112	736113	736114
	Sample Location:				TP3	TP4	TP12	TP13	TP13	TP14	TP14	TP15	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	1.00	0.50	1.00	2.00	1.00	4.00	2.00	0.20
	Bottom Depth (m):												0.50
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.34
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.28
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Soil

Project: 21393

Client: IGSL	**Chemtest Job No.:**				18-38199	18-38199	18-38199	18-38199
Quotation No.:	**Chemtest Sample ID.:**				736115	736116	736117	738318
	Sample Location:				TP16	TP17	TP18	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				2.00	1.00	1.00	1.00
	Bottom Depth (m):							
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	16	12	0.55
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.45	0.45	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] 7.3	[A] < 1.0	[A] 4.8
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 19	[A] 12	[A] 20	[A] 4.6
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.023	[A] 0.034	[A] 0.042	[A] 0.062
Arsenic	U	2450	mg/kg	1.0	13	22	17	48
Barium	U	2450	mg/kg	10	70	180	67	46
Cadmium	U	2450	mg/kg	0.10	0.49	0.98	1.2	< 0.10
Chromium	U	2450	mg/kg	1.0	22	15	16	5.6
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	2.4
Copper	U	2450	mg/kg	0.50	9.8	17	16	2.8
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	34	32	47	5.0
Lead	U	2450	mg/kg	0.50	18	27	16	14
Selenium	U	2450	mg/kg	0.20	0.58	< 0.20	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	43	52	67	14
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	15	16	5.6
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 0.55	[A] 0.64	[A] 0.57	[A] 3.4
Mineral Oil	N	2670	mg/kg	10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0

Results - Soil

Project: 21393

Client: IGSL				**Chemtest Job No.:**	18-38199	18-38199	18-38199	18-38199
Quotation No.:				**Chemtest Sample ID.:**	736115	736116	736117	738318
				Sample Location:	TP16	TP17	TP18	TP19
				Sample Type:	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.00	1.00	1.00	1.00
				Bottom Depth (m):				
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[AC] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.40
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.42
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.35
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[AC] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[AC] < 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No: 18-38199
Chemtest Sample ID: 736106
Sample Ref:
Sample ID:
Sample Location: TP3
Top Depth(m): 1.00
Bottom Depth(m):
Sampling Date:

Determinand	**SOP**	**Accred.**	**Units**		**Landfill Waste Acceptance Criteria Limits**		
					Inert Waste Landfill	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 1.6	3	5	6
Loss On Ignition	2610	U	%	4.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0029	0.029	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.8	28	800	15000	25000
Fluoride	1220	U	0.52	5.2	10	150	500
Sulphate	1220	U	42	420	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736107						
Sample Ref:							
Sample ID:							
Sample Location:	TP4						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	0.86	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.14	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.018	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0017	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0016	0.016	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.2	32	800	15000	25000
Fluoride	1220	U	0.44	4.4	10	150	500
Sulphate	1220	U	25	250	1000	20000	50000
Total Dissolved Solids	1020	N	85	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736108						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP12						
Top Depth(m):	0.50						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.061	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0042	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0020	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0034	< 0.050	0.5	10	30
Nickel	1450	U	0.0022	< 0.050	0.4	10	40
Lead	1450	U	0.0013	0.013	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0030	0.030	0.1	0.5	7
Zinc	1450	U	0.0017	< 0.50	4	50	200
Chloride	1220	U	3.6	36	800	15000	25000
Fluoride	1220	U	0.36	3.6	10	150	500
Sulphate	1220	U	23	230	1000	20000	50000
Total Dissolved Solids	1020	N	78	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	17	170	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	24

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No: 18-38199
Chemtest Sample ID: 736109
Sample Ref:
Sample ID:
Sample Location: TP13
Top Depth(m): 1.00
Bottom Depth(m):
Sampling Date:

Determinand	**SOP**	**Accred.**	**Units**		**Landfill Waste Acceptance Criteria Limits** **Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 1.3	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		9.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.078	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0045	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0016	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0026	< 0.050	0.5	10	30
Nickel	1450	U	0.0016	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0023	0.023	0.1	0.5	7
Zinc	1450	U	0.0015	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	33	330	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfilll Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736110						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.48	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.22	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0041	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0040	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0022	0.022	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	37	370	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736111						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 2.3	3	5	6
Loss On Ignition	2610	U	%	5.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.045	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0065	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0030	0.030	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	4.5	45	800	15000	25000
Fluoride	1220	U	0.46	4.6	10	150	500
Sulphate	1220	U	11	110	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	11	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-38199						
Chemtest Sample ID:	736112						
Sample Ref:							
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	4.00						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 3.5	3	5	6
Loss On Ignition	2610	U	%	9.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.027	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0026	< 0.050	0.5	2	25
Barium	1450	U	0.0094	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0037	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0042	< 0.050	0.5	10	30
Nickel	1450	U	0.0035	< 0.050	0.4	10	40
Lead	1450	U	0.0022	0.022	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0025	0.025	0.1	0.5	7
Zinc	1450	U	0.0016	< 0.50	4	50	200
Chloride	1220	U	5.7	57	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	14	140	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	25	250	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	32

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

					Landflll Waste Acceptance Criteria Limits		
Chemtest Job No:	18-38199						
Chemtest Sample ID:	736113						
Sample Ref:							
Sample ID:							
Sample Location:	TP15						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.6	3	5	6
Loss On Ignition	2610	U	%	5.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.39	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.033	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0043	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.020	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.5	25	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	37	370	1000	20000	50000
Total Dissolved Solids	1020	N	78	770	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	24

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landflll Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736114						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	0.20						
Bottom Depth(m):	0.50						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 2.5	3	5	6
Loss On Ignition	2610	U	%	7.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.083	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0046	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0018	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0020	0.020	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.2	22	800	15000	25000
Fluoride	1220	U	0.73	7.3	10	150	500
Sulphate	1220	U	4.8	48	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	20

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736115						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.55	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.18	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0037	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0046	0.046	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.45	4.5	10	150	500
Sulphate	1220	U	22	220	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	14	140	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736116						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP17						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.64	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.22	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0053	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0027	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0015	0.015	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.58	5.8	10	150	500
Sulphate	1220	U	10	100	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	736117						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP18						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.57	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.49	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0014	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0039	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0014	0.014	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	17	170	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 21393 Brian Daily Transport Site Ballycoolin

Chemtest Job No:	18-38199
Chemtest Sample ID:	738318
Sample Ref:	
Sample ID:	
Sample Location:	TP19
Top Depth(m):	1.00
Bottom Depth(m):	
Sampling Date:	

Determinand	**SOP**	**Accred.**	**Units**		**Landfill Waste Acceptance Criteria Limits** **Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 3.4	3	5	6
Loss On Ignition	2610	U	%	0.68	--	--	10
Total BTEX	2760	U	mg/kg	[AC] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	[AC] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.26	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0061	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0024	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0016	0.016	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	19	190	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	16	160	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	0.55

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
736106			TP3		A	Amber Glass 250ml
736106			TP3		A	Amber Glass 60ml
736107			TP4		A	Amber Glass 250ml
736107			TP4		A	Amber Glass 60ml
736108			TP12		A	Amber Glass 250ml
736108			TP12		A	Amber Glass 60ml
736109			TP13		A	Amber Glass 250ml
736109			TP13		A	Amber Glass 60ml
736110			TP13		A	Amber Glass 250ml
736110			TP13		A	Amber Glass 60ml
736111			TP14		A	Amber Glass 250ml
736111			TP14		A	Amber Glass 60ml
736112			TP14		A	Amber Glass 250ml
736112			TP14		A	Amber Glass 60ml
736113			TP15		A	Amber Glass 250ml
736113			TP15		A	Amber Glass 60ml
736114			TP16		A	Amber Glass 250ml
736114			TP16		A	Amber Glass 60ml
736115			TP16		A	Amber Glass 250ml
736115			TP16		A	Amber Glass 60ml
736116			TP17		A	Amber Glass 250ml
736116			TP17		A	Amber Glass 60ml

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
736117			TP18		A	Amber Glass 250ml
736117			TP18		A	Amber Glass 60ml
738318			TP19		AC	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 3

Waste Classification Report

Waste Classification Report

AFU2V-S4Y9R-V7ZQL

Job name

19-001-01 17-05-04

Description/Comments

Project

19-001-01

Site

Ballycoolin

Related Documents

#	Name	Description
None		

Waste Stream Template

O'Callaghan Moran Waste Stream

Classified by

Name: **Austin Hynes** Date: **14 Jan 2019 14:15 GMT** Telephone: **021 4345366**	Company: **OCallaghan Moran and Associates** **Unit 15 Melbourne Business Park** **Model Farm Road** **Cork**

Report

Created by: Austin Hynes
Created date: 14 Jan 2019 14:15 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP3	1.00	Non Hazardous		3
2	TP4	1.00	Non Hazardous		6
3	TP13	2.00	Non Hazardous		9
4	TP14	1.00	Non Hazardous		12
5	TP15	2.00	Non Hazardous		15
6	TP16	0.20-0.50	Non Hazardous		18
7	TP16[1]	2.00	Non Hazardous		21
8	TP18	1.00	Non Hazardous		24
9	TP19	1.00	Non Hazardous		27

Classification of sample: TP3

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP3		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				23	mg/kg	1.32	30.367	mg/kg	0.00304 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				0.68	mg/kg	3.22	2.19	mg/kg	0.000219 %		
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				1.1	mg/kg	1.142	1.257	mg/kg	0.000126 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				22	mg/kg	1.462	32.154	mg/kg	0.00322 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	42	mg/kg	1.56	65.512	mg/kg	0.0042 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				0.11	mg/kg	1.353	0.149	mg/kg	0.0000149 %		
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				2.5	mg/kg	1.5	3.75	mg/kg	0.000375 %		
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				37	mg/kg	2.976	110.122	mg/kg	0.011 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.2	mg/kg	2.554	5.618	mg/kg	0.000562 %		
		034-002-00-8											
13	■	zinc { zinc chromate }				84	mg/kg	2.774	233.028	mg/kg	0.0233 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		7.9 pH		7.9 pH	7.9 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0501 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP4

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP4		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
5.1% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 5.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		3.4	mg/kg	1.197	4.07	mg/kg	0.000407 %		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		41	mg/kg	1.32	54.133	mg/kg	0.00541 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.27	mg/kg	1.142	0.308	mg/kg	0.0000308 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		8.4	mg/kg	1.462	12.277	mg/kg	0.00123 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11	mg/kg	1.126	12.385	mg/kg	0.00124 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	110	mg/kg	1.56	171.58	mg/kg	0.011 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15	mg/kg	2.976	44.644	mg/kg	0.00446 %		
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3				50	mg/kg	2.774	138.707	mg/kg	0.0139 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
18	▨	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
21	▨	pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
22		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
23	▨	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
24	▨	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
25	▨	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
26	▨	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
27	▨	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
28	▨	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
29	▨	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
30		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
31		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
32		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
33		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
34		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
35	▨	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
36		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
37	▨	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
38		phenol				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
39	▨	polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0395 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	**TP13**	LoW Code:	
Sample Depth:	**2.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**13%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				18	mg/kg	1.32	23.766	mg/kg	0.00238 %		
	033-003-00-0	215-481-4	1327-53-3									
3	boron { diboron trioxide; boric oxide }				<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		**<LOD**
	005-008-00-8	215-125-8	1303-86-2									
4	cadmium { cadmium oxide }				0.79	mg/kg	1.142	0.902	mg/kg	0.0000902 %		
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in chromium(III) compounds { chromium(III) oxide }				15	mg/kg	1.462	21.923	mg/kg	0.00219 %		
		215-160-9	1308-38-9									
6	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		**<LOD**
	024-001-00-0	215-607-8	1333-82-0									
7	copper { dicopper oxide; copper (I) oxide }				15	mg/kg	1.126	16.888	mg/kg	0.00169 %		
	029-002-00-X	215-270-7	1317-39-1									
8	lead { lead chromate }			1	19	mg/kg	1.56	29.636	mg/kg	0.0019 %		
	082-004-00-2	231-846-0	7758-97-6									
9	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		**<LOD**
	080-010-00-X	231-299-8	7487-94-7									
10	molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		**<LOD**
	042-001-00-9	215-204-7	1313-27-5									
11	nickel { nickel chromate }				34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
	028-035-00-7	238-766-5	14721-18-7									
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.61	mg/kg	2.554	1.558	mg/kg	0.000156 %		
	034-002-00-8											
13	zinc { zinc chromate }				57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
	024-007-00-3											
14	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
			TPH									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4							
16		benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
17		toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3							
18	▨	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4							
19		xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
20	▨	cyanides { ▨salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
		006-007-00-5									
21	▨	pH				8.3 pH		8.3 pH	8.3 pH		
				PH							
22		naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3							
23	▨	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8							
24	▨	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9							
25	▨	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7							
26	▨	phenanthrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8							
27	▨	anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7							
28	▨	fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0							
29	▨	pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0							
30		benzo[a]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3							
31		chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9							
32		benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2							
33		benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9							
34		benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8							
35	▨	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5							
36		dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3							
37	▨	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2							
38		phenol				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
39	▨	polychlorobiphenyls; PCB				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3							
								Total:	0.0364 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14

▨ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP14		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
18% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**	Conv. Factor	Compound conc.	**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	▨	antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	▨	arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	▨	boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		0.66 mg/kg	3.22	2.125 mg/kg	0.000213 %		
4	▨	cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		2 mg/kg	1.142	2.285 mg/kg	0.000228 %		
5	▨	chromium in chromium(III) compounds { ▨ chromium(III) oxide }	215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
6	▨	chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	▨	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		31 mg/kg	1.126	34.903 mg/kg	0.00349 %		
8	▨	lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	44 mg/kg	1.56	68.632 mg/kg	0.0044 %		
9	▨	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	▨	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.6 mg/kg	1.5	3.9 mg/kg	0.00039 %		
11	▨	nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		57 mg/kg	2.976	169.647 mg/kg	0.017 %		
12	▨	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				1.6 mg/kg	2.554	4.086 mg/kg	0.000409 %		
13	▨	zinc { zinc chromate } 024-007-00-3				110 mg/kg	2.774	305.156 mg/kg	0.0305 %		
14	▨	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		7.9	pH		7.9	pH	7.9 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0643 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP15		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
24% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 24% No Moisture Correction applied (MC)

#	Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		23	mg/kg	1.32	30.367	mg/kg	0.00304 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.78	mg/kg	3.22	2.512	mg/kg	0.000251 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	1.142	mg/kg	0.000114 %		
5	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	43	mg/kg	1.56	67.072	mg/kg	0.0043 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.28	mg/kg	1.353	0.379	mg/kg	0.0000379 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2	mg/kg	1.5	3	mg/kg	0.0003 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		45	mg/kg	2.976	133.932	mg/kg	0.0134 %		
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.4	mg/kg	2.554	6.129	mg/kg	0.000613 %		
13	zinc { zinc chromate }	024-007-00-3				72	mg/kg	2.774	199.739	mg/kg	0.02 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.1 pH		8.1 pH	8.1 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0489 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP16		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.20-0.50 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
20% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 20% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18	mg/kg	1.32	23.766	mg/kg	0.00238 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1	mg/kg	3.22	3.22	mg/kg	0.000322 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.485	mg/kg	0.000149 %		
5		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30	mg/kg	1.462	43.847	mg/kg	0.00438 %		
6		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		36	mg/kg	1.126	40.532	mg/kg	0.00405 %		
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	69	mg/kg	1.56	107.627	mg/kg	0.0069 %		
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.19	mg/kg	1.353	0.257	mg/kg	0.0000257 %		
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.1	mg/kg	1.5	3.15	mg/kg	0.000315 %		
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		61	mg/kg	2.976	181.552	mg/kg	0.0182 %		
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.9	mg/kg	2.554	4.852	mg/kg	0.000485 %		
13		zinc { zinc chromate }	024-007-00-3				130	mg/kg	2.774	360.639	mg/kg	0.0361 %		
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.1	pH		8.1	pH	8.1 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		0.34	mg/kg		0.34	mg/kg	0.000034 %		
27	▨	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		0.29	mg/kg		0.29	mg/kg	0.000029 %		
29	▨	pyrene		204-927-3	129-00-0		0.28	mg/kg		0.28	mg/kg	0.000028 %		
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0749 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16[1]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:		
TP16[1]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
2.00 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
14% (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
		051-005-00-X	215-175-0	1309-64-4									
2		arsenic { arsenic trioxide }				13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
		033-003-00-0	215-481-4	1327-53-3									
3		boron { diboron trioxide; boric oxide }				0.45	mg/kg	3.22	1.449	mg/kg	0.000145 %		
		005-008-00-8	215-125-8	1303-86-2									
4		cadmium { cadmium oxide }				0.49	mg/kg	1.142	0.56	mg/kg	0.000056 %		
		048-002-00-0	215-146-2	1306-19-0									
5		chromium in chromium(III) compounds { chromium(III) oxide }				22	mg/kg	1.462	32.154	mg/kg	0.00322 %		
			215-160-9	1308-38-9									
6		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0									
7		copper { dicopper oxide; copper (I) oxide }				9.8	mg/kg	1.126	11.034	mg/kg	0.0011 %		
		029-002-00-X	215-270-7	1317-39-1									
8		lead { lead chromate }			1	18	mg/kg	1.56	28.077	mg/kg	0.0018 %		
		082-004-00-2	231-846-0	7758-97-6									
9		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
10		molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		**<LOD**
		042-001-00-9	215-204-7	1313-27-5									
11		nickel { nickel chromate }				34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
		028-035-00-7	238-766-5	14721-18-7									
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.58	mg/kg	2.554	1.481	mg/kg	0.000148 %		
		034-002-00-8											
13		zinc { zinc chromate }				43	mg/kg	2.774	119.288	mg/kg	0.0119 %		
		024-007-00-3											
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
				TPH									

#		Determinand				CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number							
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.2 pH		8.2 pH	8.2 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0322 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▪	Determinand defined or amended by HazWasteOnline (see Appendix A)
▪	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP18

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP18		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**	Conv. Factor	Compound conc.	**Classification value**	MC Applied	Conc. Not Used
1	■	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	■	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	■	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	■	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2 mg/kg	1.142	1.371 mg/kg	0.000137 %		
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
8	■	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	16 mg/kg	1.56	24.957 mg/kg	0.0016 %		
9	■	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	■	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	■	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		47 mg/kg	2.976	139.884 mg/kg	0.014 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	■	zinc { zinc chromate }	024-007-00-3				67 mg/kg	2.774	185.868 mg/kg	0.0186 %		
14	■	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		603-181-00-X	216-653-1	1634-04-4									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18	■	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20	■	cyanides { ■ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
21	■	pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
22		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
23	■	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
24	■	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
25	■	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
26	■	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
27	■	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
28	■	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
29	■	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
30		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
31		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
32		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
33		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
34		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
35	■	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
36		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
37	■	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
38		phenol				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
39	■	polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0428 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP19

■ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP19		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
0.55% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 0.55% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	■	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.4	mg/kg	1.197	2.873	mg/kg	0.000287 %		
2	■	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		48	mg/kg	1.32	63.376	mg/kg	0.00634 %		
3	■	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	■	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }		215-160-9	1308-38-9		5.6	mg/kg	1.462	8.185	mg/kg	0.000818 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		2.8	mg/kg	1.126	3.152	mg/kg	0.000315 %		
8	■	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14	mg/kg	1.56	21.837	mg/kg	0.0014 %		
9	■	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	■	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	■	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		5	mg/kg	2.976	14.881	mg/kg	0.00149 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	■	zinc { zinc chromate }	024-007-00-3				14	mg/kg	2.774	38.838	mg/kg	0.00388 %		
14	■	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
20	▨	cyanides { ▨salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
21	▨	pH			PH		8.5	pH		8.5	pH	8.5 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
24	▨	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
25	▨	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
26	▨	phenanthrene		201-581-5	85-01-8		0.4	mg/kg		0.4	mg/kg	0.00004 %		
27	▨	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
28	▨	fluoranthene		205-912-4	206-44-0		0.42	mg/kg		0.42	mg/kg	0.000042 %		
29	▨	pyrene		204-927-3	129-00-0		0.35	mg/kg		0.35	mg/kg	0.000035 %		
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		**<LOD**
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
											Total:	0.0165 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.3.3745.7658 (03 Jan 2019)
HazWasteOnline Database: 2019.3.3745.7658 (03 Jan 2019)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Waste Classification Report

45PVF-HCTQR-HCW35

Job name

19-001-01 17-09-04

Description/Comments

Project

19-001-01

Site

Ballycoolin

Related Documents

#	Name	Description
None		

Waste Stream Template

O'Callaghan Moran Waste Stream

Classified by

Name:
Austin Hynes
Date:
14 Jan 2019 14:16 GMT
Telephone:
021 4345366

Company:
OCallaghan Moran and Associates
Unit 15 Melbourne Business Park
Model Farm Road
Cork

Report

Created by: Austin Hynes
Created date: 14 Jan 2019 14:16 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP12	0.50	Non Hazardous		2
2	TP13	1.00	Non Hazardous		5
3	TP14	4.00	Non Hazardous		8
4	TP17	1.00	Non Hazardous		11

Classification of sample: TP12

▨ **Non Hazardous Waste**
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP12		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.50 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
24% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 24% No Moisture Correction applied (MC)

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
1	▨	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	▨	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3	▨	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.69	mg/kg	3.22	2.222	mg/kg	0.000222 %		
4	▨	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.64	mg/kg	1.142	0.731	mg/kg	0.0000731 %		
5	▨	chromium in chromium(III) compounds { ▨ chromium(III) oxide }		215-160-9	1308-38-9		30	mg/kg	1.462	43.847	mg/kg	0.00438 %		
6	▨	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	▨	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
8	▨	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	27	mg/kg	1.56	42.115	mg/kg	0.0027 %		
9	▨	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	▨	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.4	mg/kg	1.5	3.6	mg/kg	0.00036 %		
11	▨	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		47	mg/kg	2.976	139.884	mg/kg	0.014 %		
12	▨	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.3	mg/kg	2.554	5.873	mg/kg	0.000587 %		
13	▨	zinc { zinc chromate }	024-007-00-3				60	mg/kg	2.774	166.449	mg/kg	0.0166 %		
14	▨	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
18	▨	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
21	▨	pH				8.1	pH		8.1	pH	8.1 pH		
				PH									
22		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
23	▨	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
24	▨	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
25	▨	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
26	▨	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
27	▨	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
28	▨	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
29	▨	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
30		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
31		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
32		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
33		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
34		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
35	▨	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
36		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
37	▨	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
38		phenol				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
39	▨	polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0438 %		

Key

🟨	User supplied data
▒	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▪	Determinand defined or amended by HazWasteOnline (see Appendix A)
▪	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13

Non Hazardous Waste
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP13		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
14% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
		051-005-00-X	215-175-0	1309-64-4									
2		arsenic { arsenic trioxide }				20	mg/kg	1.32	26.407	mg/kg	0.00264 %		
		033-003-00-0	215-481-4	1327-53-3									
3		boron { diboron trioxide; boric oxide }				0.44	mg/kg	3.22	1.417	mg/kg	0.000142 %		
		005-008-00-8	215-125-8	1303-86-2									
4		cadmium { cadmium oxide }				0.83	mg/kg	1.142	0.948	mg/kg	0.0000948 %		
		048-002-00-0	215-146-2	1306-19-0									
5		chromium in chromium(III) compounds { chromium(III) oxide }				16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
			215-160-9	1308-38-9									
6		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0									
7		copper { dicopper oxide; copper (I) oxide }				18	mg/kg	1.126	20.266	mg/kg	0.00203 %		
		029-002-00-X	215-270-7	1317-39-1									
8		lead { lead chromate }			1	23	mg/kg	1.56	35.876	mg/kg	0.0023 %		
		082-004-00-2	231-846-0	7758-97-6									
9		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
10		molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		**<LOD**
		042-001-00-9	215-204-7	1313-27-5									
11		nickel { nickel chromate }				35	mg/kg	2.976	104.169	mg/kg	0.0104 %		
		028-035-00-7	238-766-5	14721-18-7									
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.89	mg/kg	2.554	2.273	mg/kg	0.000227 %		
		034-002-00-8											
13		zinc { zinc chromate }				64	mg/kg	2.774	177.545	mg/kg	0.0178 %		
		024-007-00-3											
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
				TPH									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		9.5 pH		9.5 pH	9.5 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0399 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▨	Determinand defined or amended by HazWasteOnline (see Appendix A)
▨	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14

■ **Non Hazardous Waste**
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name: **TP14**	LoW Code:		
Sample Depth: **4.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)	
Moisture content: **32%** (no correction)	Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)	

Hazard properties

None identified

Determinands

Moisture content: 32% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
1	■	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	■	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
3	■	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.3	mg/kg	3.22	4.186	mg/kg	0.000419 %		
4	■	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.828	mg/kg	0.000183 %		
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
7	■	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		28	mg/kg	1.126	31.525	mg/kg	0.00315 %		
8	■	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	54	mg/kg	1.56	84.23	mg/kg	0.0054 %		
9	■	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
10	■	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.9	mg/kg	0.00039 %		
11	■	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		48	mg/kg	2.976	142.861	mg/kg	0.0143 %		
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.9	mg/kg	2.554	4.852	mg/kg	0.000485 %		
13	■	zinc { zinc chromate }	024-007-00-3				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
14	■	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		603-181-00-X	216-653-1	1634-04-4							
16		benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		601-020-00-8	200-753-7	71-43-2							
17		toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		601-021-00-3	203-625-9	108-88-3							
18	▨	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		601-023-00-4	202-849-4	100-41-4							
19		xylene				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
		006-007-00-5									
21	▨	pH				7.7 pH		7.7 pH	7.7 pH		
				PH							
22		naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3							
23	▨	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			205-917-1	208-96-8							
24	▨	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			201-469-6	83-32-9							
25	▨	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			201-695-5	86-73-7							
26	▨	phenanthrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			201-581-5	85-01-8							
27	▨	anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			204-371-1	120-12-7							
28	▨	fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			205-912-4	206-44-0							
29	▨	pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			204-927-3	129-00-0							
30		benzo[a]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-033-00-9	200-280-6	56-55-3							
31		chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-048-00-0	205-923-4	218-01-9							
32		benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-034-00-4	205-911-9	205-99-2							
33		benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-036-00-5	205-916-6	207-08-9							
34		benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-032-00-3	200-028-5	50-32-8							
35	▨	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			205-893-2	193-39-5							
36		dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3							
37	▨	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
			205-883-8	191-24-2							
38		phenol				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		**<LOD**
		604-001-00-2	203-632-7	108-95-2							
39	▨	polychlorobiphenyls; PCB				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
		602-039-00-4	215-648-1	1336-36-3							
								Total:	0.0624 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
▪	Determinand defined or amended by HazWasteOnline (see Appendix A)
▪	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP17

■ **Non Hazardous Waste**
Classified as **17 09 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
TP17		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00 m		Entry:	17 09 04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	■	antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
		051-005-00-X	215-175-0	1309-64-4									
2	■	arsenic { arsenic trioxide }				22	mg/kg	1.32	29.047	mg/kg	0.0029 %		
		033-003-00-0	215-481-4	1327-53-3									
3	■	boron { diboron trioxide; boric oxide }				0.45	mg/kg	3.22	1.449	mg/kg	0.000145 %		
		005-008-00-8	215-125-8	1303-86-2									
4	■	cadmium { cadmium oxide }				0.98	mg/kg	1.142	1.119	mg/kg	0.000112 %		
		048-002-00-0	215-146-2	1306-19-0									
5	■	chromium in chromium(III) compounds { ■ chromium(III) oxide }				15	mg/kg	1.462	21.923	mg/kg	0.00219 %		
			215-160-9	1308-38-9									
6	■	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0									
7	■	copper { dicopper oxide; copper (I) oxide }				17	mg/kg	1.126	19.14	mg/kg	0.00191 %		
		029-002-00-X	215-270-7	1317-39-1									
8	■	lead { lead chromate }			1	27	mg/kg	1.56	42.115	mg/kg	0.0027 %		
		082-004-00-2	231-846-0	7758-97-6									
9	■	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
10	■	molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		**<LOD**
		042-001-00-9	215-204-7	1313-27-5									
11	■	nickel { nickel chromate }				32	mg/kg	2.976	95.24	mg/kg	0.00952 %		
		028-035-00-7	238-766-5	14721-18-7									
12	■	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		**<LOD**
		034-002-00-8											
13	■	zinc { zinc chromate }				52	mg/kg	2.774	144.256	mg/kg	0.0144 %		
		024-007-00-3											
14	■	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
				TPH									

#		Determinand				CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number							
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	▨	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
20	▨	cyanides { ▨ salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	▨	pH			PH		8.4 pH		8.4 pH	8.4 pH		
22		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	▨	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	▨	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	▨	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	▨	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	▨	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	▨	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	▨	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	▨	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	▨	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		phenol	604-001-00-2	203-632-7	108-95-2		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
39	▨	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
									Total:	0.0359 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s)/Risk Phrase(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.3.3745.7658 (03 Jan 2019)
HazWasteOnline Database: 2019.3.3745.7658 (03 Jan 2019)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

APPENDIX D

GROUNDWATER SAMPLE TEST REPORT (2 NO. SAMPLES), ELEMENT MATERIALS TECHNOLOGY, 2019)

Element Materials Technology
Unit 3 Deeside Point
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W: www.element.com

AWN Consulting
Tecpro Building
Clonshaugh Business & Technology Park
Dublin
Dublin 17
Ireland

Attention : Jonathan Gauntlet

Date : 24th July, 2019

Your reference : Orion

Our reference : Test Report 19/11092 Batch 1

Location : Dublin

Date samples received : 9th July, 2019

Status : Final report

Issue : 2

Two samples were received for analysis on 9th July, 2019 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Lucas Halliwell
Project Co-ordinator

Client Name: AWN Consulting
Reference: Orion
Location: Dublin
Contact: Jonathan Gauntlet
EMT Job No: 19/11092

Report : **Liquid**

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12											
Sample ID	RC01	RC03											
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G											
Sample Date	04/07/2019	04/07/2019											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1									LOD/LOR	Units	Method No.
Date of Receipt	09/07/2019	09/07/2019											
Dissolved Arsenic #	14.7	<2.5									<2.5	ug/l	TM30/PM14
Dissolved Barium #	95	34									<3	ug/l	TM30/PM14
Dissolved Boron	31	29									<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5									<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5									<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7									<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5									<5	ug/l	TM30/PM14
Dissolved Mercury #	<1	<1									<1	ug/l	TM30/PM14
Dissolved Nickel #	28	21									<2	ug/l	TM30/PM14
Dissolved Selenium #	<3	<3									<3	ug/l	TM30/PM14
Dissolved Vanadium #	<1.5	<1.5									<1.5	ug/l	TM30/PM14
Dissolved Zinc #	13	13									<3	ug/l	TM30/PM14
EPH (C8-C40) #	<10	<10									<10	ug/l	TM5/PM30
C8-C40 Mineral Oil (Calculation)	<10	<10									<10	ug/l	TM5/PM30
PCB 28	<0.1	<0.1									<0.1	ug/l	TM17/PM30
PCB 52	<0.1	<0.1									<0.1	ug/l	TM17/PM30
PCB 101	<0.1	<0.1									<0.1	ug/l	TM17/PM30
PCB 118	<0.1	<0.1									<0.1	ug/l	TM17/PM30
PCB 138	<0.1	<0.1									<0.1	ug/l	TM17/PM30
PCB 153	<0.1	<0.1									<0.1	ug/l	TM17/PM30
PCB 180	<0.1	<0.1									<0.1	ug/l	TM17/PM30
Total 7 PCBs	<0.7	<0.7									<0.7	ug/l	TM17/PM30
Sulphate as SO4 #	195.9	398.7									<0.5	mg/l	TM38/PM0
Chloride #	18.3	15.8									<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	<0.2	0.3									<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	0.11	4.92									<0.03	mg/l	TM38/PM0
Total Alkalinity as CaCO3 #	2258	668									<1	mg/l	TM75/PM0
Electrical Conductivity @25C #	1368	1267									<2	uS/cm	TM76/PM0
pH #	7.16	7.30									<0.01	pH units	TM73/PM0
Total Nitrogen	8.2	7.8									<0.5	mg/l	TM38/TM125/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: AWN Consulting
Reference: Orion
Location: Dublin
Contact: Jonathan Gauntlet
EMT Job No: 19/11092

Report : **Liquid (Duplicate results)**

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6												
Sample ID	RC01												
Depth													
COC No / misc													
Containers	V H HN P G												
Sample Date	04/07/2019												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	09/07/2019										LOD/LOR	Units	Method No.
Dissolved Arsenic #	15.4										<2.5	ug/l	TM30/PM14

Client Name: AWN Consulting **SVOC Report :** **Liquid**
Reference: Orion
Location: Dublin
Contact: Jonathan Gauntlet
EMT Job No: 19/11092

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12									LOD/LOR	Units	Method No.
Sample ID	RC01	RC03											
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G											
Sample Date	04/07/2019	04/07/2019											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	09/07/2019	09/07/2019											
SVOC MS													
Phenols													
2-Chlorophenol#	<1	<1									<1	ug/l	TM16/PM30
2-Methylphenol#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5									<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1									<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1									<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1									<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10									<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1									<1	ug/l	TM16/PM30
Phenol	<1	<1									<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene#	<1	<1									<1	ug/l	TM16/PM30
2-Methylnaphthalene#	<1	<1									<1	ug/l	TM16/PM30
Naphthalene#	<1	<1									<1	ug/l	TM16/PM30
Acenaphthylene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Acenaphthene#	<1	<1									<1	ug/l	TM16/PM30
Fluorene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Phenanthrene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Anthracene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Fluoranthene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Pyrene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Benzo(a)anthracene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Chrysene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene#	<1	<1									<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1									<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1									<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene#	<0.5	<0.5									<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<5									<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1									<1	ug/l	TM16/PM30
Di-n-butyl phthalate#	<1.5	<1.5									<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1									<1	ug/l	TM16/PM30
Diethyl phthalate#	<1	<1									<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1									<1	ug/l	TM16/PM30

Client Name: AWN Consulting **SVOC Report :** **Liquid**
Reference: Orion
Location: Dublin
Contact: Jonathan Gauntlet
EMT Job No: 19/11092

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12										
Sample ID	RC01	RC03										
Depth												
COC No / misc												
Containers	V H HN P G	V H HN P G										
Sample Date	04/07/2019	04/07/2019										
Sample Type	Ground Water	Ground Water										
Batch Number	1	1									LOD/LOR	Units	Method No.
Date of Receipt	09/07/2019	09/07/2019											
SVOC MS												
Other SVOCs												
1,2-Dichlorobenzene #	<1	<1								<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1								<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1								<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1								<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1								<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1								<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1								<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1								<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1								<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1								<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1								<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1								<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1								<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1								<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1								<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1								<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	84	92								<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	87	95								<0	%	TM16/PM30

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: AWN Consulting
Reference: Orion
Location: Dublin
Contact: Jonathan Gauntlet
EMT Job No: 19/11092

VOC Report : **Liquid**

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-6	7-12											
Sample ID	RC01	RC03											
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G											
Sample Date	04/07/2019	04/07/2019											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	09/07/2019	09/07/2019									LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2									<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1									<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3									<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1									<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1									<1	ug/l	TM15/PM10
Chloroethane #	<3	<3									<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3									<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3									<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<5	<5									<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3									<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3									<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3									<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1									<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2									<2	ug/l	TM15/PM10
Chloroform #	<2	<2									<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2									<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3									<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2									<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2									<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5									<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2									<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3									<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2									<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2									<2	ug/l	TM15/PM10
Toluene #	<5	<5									<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2									<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2									<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3									<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2									<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2									<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2									<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2									<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2									<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1									<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2									<2	ug/l	TM15/PM10
o-Xylene #	<1	<1									<1	ug/l	TM15/PM10
Styrene	<2	<2									<2	ug/l	TM15/PM10
Bromoform #	<2	<2									<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4									<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2									<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3									<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3									<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3									<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3									<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3									<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3									<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3									<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3									<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2									<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3									<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3									<3	ug/l	TM15/PM10
Naphthalene	<2	<2									<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3									<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	95	97									<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	100	100									<0	%	TM15/PM10

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: AWN Consulting
Reference: Orion
Location: Dublin
Contact: Jonathan Gauntlet

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/11092						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 19/11092

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 19/11092

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes			

EMT Job No: 19/11092

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM75	Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1. Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			